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Adult Attachment Interview Classification: Comparing Two Coding Systems

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ADULT ATTACHMENT INTERVIEW CLASSIFICATION:

COMPARING TWO CODING SYSTEMS

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ABSTRACT

ADULT ATTACHMENT INTERVIEW CLASSIFICATION:

COMPARING TWO CODING SYSTEMS

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Research on the Adult Attachment Interview (AAI) provides an opportunity to study the ways in which early childhood relational experiences might influence an individual over a lifetime. It is not yet clear, however, whether results from different coding systems for the AAI are equally useful. The first purpose of this study was to compare attachment classification distributions obtained from coding AAIs with the Berkeley and Dynamic-Maturational Model (DMM) coding systems. The second purpose was to explore whether AAI classifications derived from the Berkeley or DMM system were more strongly associated with mother and mother-child dyad outcome variables. Participants were a subset of 45 women from the national Early Head Start Research and Evaluation Project (EHSREP), 1996–2010 sample, and archival data from that research project was used for this study. AAI transcripts were classified using both the Berkeley and DMM coding methods. Attachment classification distributions from the two systems were evaluated for associations with (a) each other and (b) outcome variables. (A) A significant association was found between the attachment security or insecurity distributions resulting from the Berkeley and DMM coding systems. No other significant associations were found for distribution comparisons made (e.g., presence of unresolved trauma and/or loss or the combination of both dismissing and preoccupied attachment). (B) Significant associations were found between the Berkeley three-category "forced" attachment classification distribution and Maternal Depression, the Berkeley four-category main attachment classification distribution and Maternal Parenting Distress, and the Berkeley presence or absence of a combination of dismissing and preoccupied attachment distribution and Regular Bedtime Routine. No other associations between Berkeley or DMM attachment distributions and outcome variables were significant. Limitations to this study were noted and further research recommended. This dissertation is available in open access at AURA, http://aura.antioch.edu/ and Ohio Link ETD Center, https://etd.ohiolink.edu/etd.

Keywords: Adult Attachment Interview (AAI), attachment theory, Berkeley system, Dynamic-Maturational Model (DMM), validity

Dedication

To Brad

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CHAPTER I: INTRODUCTION

This study was intended to examine two systems of coding Adult Attachment Interview (AAI; George et al., 1984, 1985, 1996) transcripts: the Berkeley system, created by Mary Main and Ruth Goldwyn (1984a), and the Dynamic-Maturational Model of Attachment and Adaptation (DMM) system, created by Patricia Crittenden and Andrea Landini (2011). Research on the AAI is valuable because it provides an opportunity to study how early childhood relational experiences might influence the individual over a lifetime, affecting areas such as adult relationships and mental health. It is not yet clear, however, whether results obtained from different coding systems for the AAI are equally useful in understanding the influence of early relational experiences on adult and mother-child dyad outcomes. Since the issue has not been previously addressed in the literature, the goal of this study was to explore that question. Results from this study could contribute to attachment theory as well as to provide evidence for researchers and clinicians about which classification system would be most useful for the coding of AAI transcripts for different purposes (e.g., research, treatment planning, and custody decisions in family court).

Research Questions

The first purpose of this study was to determine whether results obtained from coding AAIs with the Berkeley and DMM systems were comparable. The distributions of attachment classifications derived from the Berkeley and DMM coding systems were compared. The second purpose of this study was to explore whether AAI classifications derived from the Berkeley or DMM system were more strongly associated with mother and mother-child dyad outcome variables. No study so far has examined the relative strength of associations between AAI classifications for the two systems and mother and mother-child outcome variables.

Research Question One

Is there a difference between the attachment classification distributions obtained from coding AAI transcripts with the Berkeley and DMM systems?

Research Question Two

Is there a difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI attachment classification distributions are associated with mother and mother-child outcome variables?

CHAPTER II: REVIEW OF LITERATURE

Early life experiences, particularly early relationship experiences with primary caregiving figures such as mothers, influence development in childhood and on into adulthood (Bowlby, 1988). Attachment is an important possible mechanism for how that influence operates. There are two different but related meanings of the word *attachment* in the context used here: one is a behavioral system, and the other is an affectional bond (Ainsworth et al., 2015; Bowlby, 1988). Regarding the first meaning, the attachment behavioral system is understood to mean behavior that serves to promote physical proximity between one person and another (Bowlby, 1988). In the sense of the second meaning, attachment is understood to mean a specific bond of affection that one person develops in relationship to another person (Ainsworth, 1969).

Attachment theory suggests that early life relational experiences influence outcomes for individuals in areas such as relationships, parenting, mental health, and achievement. Early relational experiences with primary attachment figures are foundational in forming internal working models, or representational models, of self-in-relationship (Bowlby, 1988). Therefore, traces of early relationship patterns can be found in all later significant relationships, including that of parent and child. The effect of early relationship experiences might be a child following the same pattern of behavior or reacting against it by going in the opposite direction. For example, the child of an authoritarian parent might become an authoritarian parent themselves or react against it by becoming a permissive parent.

Research on adverse childhood experiences (ACES) has shown a relationship between such experiences and later negative health outcomes, both physical and psychological (see, for example, Sachs-Ericsson et al., 2017). However, having a good enough attachment relationship with a primary caregiver, or in other words a secure base, can help buffer the effects of a child's adverse experience. People who, as children, experienced both adverse events and insecure attachments are likely to have relatively more negative mental health outcomes (e.g., depression or feelings of stress) as adults than those who experienced adverse events and secure attachments.

Attachment theory asserts that children with a secure base experience relatively more freedom to explore their environments than children with less attachment security (Bowlby, 1988). They know that they can return to their caregiver to recharge their batteries as needed. On the other hand, children with less attachment security might not have access to recharging when needed. Also, they might have to expend more energy—watching for danger in their environment, assuring themselves that their caregiver is still there, and/or managing themselves/their emotions in order to maintain their caregiver's emotional availability—than children with a secure base. Therefore, at least some children with less attachment security might achieve relatively less educational and/or employment success in life because they have less emotional energy available to devote to such things.

Bowlby and the Attachment Behavioral System

John Bowlby first introduced his theory of an attachment behavior system in the late 1950's (Ainsworth et al., 2015; Bowlby, 1982). Bowlby had trained as a psychoanalyst and that training, along with his clinical experiences, helped to inform his new ideas about the behavior of infants and the importance of mothering for personality development. However, in developing his theory Bowlby moved away from some psychoanalytic concepts, such as drive theory (Bowlby, 1988). Bowlby also thought, unlike most psychoanalysts, that his theory should be one that could be defined and measured, and that could be tested through research (Bowlby, 1988; Sroufe & Waters, 1977).

Bowlby theorized that attachment behavior began in infancy and continued throughout adulthood. He regarded attachment behavior as an important system of social behavior, like mating or parenting, that has a specific biological purpose (Bowlby, 1982). Bowlby suggested that such a biological purpose has an evolutionary basis in that it contributes to the individual's survival and ability to reproduce. He thought that in attachment behavior, which fosters proximity between the child and caregiver and stimulates the caregiver's parental behavior, the likely biological function was one of protection, such as from predators (Ainsworth et al., 2015; Bowlby, 1982).

Bowlby later refined his theory to include in the goal of attachment behavior the stimulation of the emotional availability/responsiveness of the caregiver as well their physical proximity. He recognized that both are initially necessary for attachment security and the need for physical proximity of the caregiver changes as children develop language and locomotion skills and their cognitive development allows for the formation of internal working models of an available attachment figure (Bowlby, 1988). Indeed, Bowlby thought that infants develop internal working models of attachment figures based on their dynamic interpersonal interactions with such figures (Bowlby, 1988). The concept of internal working models is one aspect of psychoanalytic theory that Bowlby maintained (Crittenden, 1990; Main et al., 1985). It has attracted theoretical and research interest in the attachment field (Thompson & Raikes, 2003).

Ainsworth and Patterns of Attachment in Infancy

Mary Ainsworth was a developmental psychologist and a colleague of Bowlby's. She was influenced by both Bowlby and James Robertson, who was using naturalistic infant observation methods in the early 1950s (Ainsworth, 1985). Ainsworth observed infants in both Uganda and Baltimore. Her observations led her to think that an important influence on the development of the infant's repertoire of behavior with their primary caregiver is the interaction that the infant experiences in relationship with that primary caregiver during the first year of life (Ainsworth et al., 2015). Ainsworth saw infants as active participants in attachment relationships, rather than passive recipients of stimulation, and agreed with Bowlby that infant attachment has a psychological basis, rather than merely a physiological one such as the need to be fed (Ainsworth, 1964).

Early attachment researchers noticed that patterns of attachment behaviors could be observed in infants in the first couple of years of life. Ainsworth designed a novel way of assessing attachment, which she called the Strange Situation Procedure (SSP; Ainsworth et al., 2015). The SSP provided a standardized research protocol to evaluate the attachment behavior of a 12-month-old infant in relation to their mother (Bowlby, 1982). The SSP involves eight brief episodes, each lasting three minutes or less, beginning with the mother and infant entering a room containing toys and a couple of chairs (Ainsworth et al., 2015). During the episodes, the infant remains in the room while the mother and a stranger go through a structured series of behaviors, including the stranger entering the room and the mother briefly leaving, that are intended to moderately stress the infant and stimulate the infant's attachment behaviors (Ainsworth et al., 2015). Although Ainsworth originally used written narratives of observations made during the procedure to classify attachment behavior, more recently the SSP has been videorecorded for later use in coding and classifying the infant's pattern of attachment behaviors. The patterns of attachment behavior assessed by the SSP at one year of age have also been found in the SSPs of 2-year-old children, although the behaviors are more subtle in the slightly older children (Ainsworth et al., 2015).

Ainsworth developed an attachment classification system, to be used with the SSP, beyond the general secure-insecure dimension. Her system consisted of three main patterns of infant behavior which she labeled “A,” “B,” and “C” (Ainsworth et al., 2015; Bowlby, 1982). The three patterns came to be understood as indicative of insecure-avoidant behavior (A), secure behavior (B), and insecure-ambivalent (sometimes called insecure-resistant) behavior (C) (Ainsworth et al., 2015; Ainsworth, 1985; Main, 2000). Ainsworth also identified eight subclassifications of infant attachment behavior patterns (A1, A2, B1, B2, B3, B4, C1, and C2) which she associated with specific infant attachment behavior (Ainsworth et al., 2015).

Ainsworth’s SSP attachment classification system was developed based on information from a limited, white, middle-class sample of families in Baltimore. There were some infants whose attachment behavior did not fit well into the three categories (A, B, and C) of her original classification system (Ainsworth, 1990; Main & Solomon, 1990). Those children often came from samples that differed from Ainsworth’s original sample in terms of including families in higher-risk circumstances (Ainsworth, 1990). Two of Ainsworth’s graduate students, Mary Main and Patricia Crittenden, were both interested in the infants whose behavior during the SSP did not fit well into Ainsworth’s A, B, and C categories. Ainsworth supported both Main and Crittenden in their work on that issue (Landa & Duschinsky, 2013a; Spieker & Crittenden, 2018).

Main’s Theory of Attachment

Main became a professor at University of California, Berkeley after completing her graduate training. There she continued her work on attachment. Main and her colleagues theorized that disorganized attachment behavior in infants was related to frightening and/or frightened behavior on the part of the child’s attachment figure that put the child in a position of behavioral conflict (Hesse & Main, 2000). The attachment behavioral system that Bowlby originally identified would make the infant predisposed to seek proximity to the attachment figure, usually a parent, in times of fear or stress. If the child had experienced the parent as being a source of fear or stress, however, they might have learned that proximity to that parent would not lead to relief. If the child was then confronted with a fear- or stress-inducing situation, they might find themselves in a behavioral conflict about whether to approach the parent (Granqvist et al., 2017), resulting in behavior that Main thought of as disorganized.

The question of frightening/frightened caregiver behavior as a mechanism contributing to disorganized childhood attachment was addressed by van IJzendoorn et al. (1999) in a meta-analysis. They concluded that frightening parental behavior, without maltreatment, appears to be one factor that might contribute to disorganized childhood attachment. Other factors that van IJzendoorn et al. (1999) identified as possible contributors included parental maltreatment of the child, dissociative behavior on the part of the parent, the child having been exposed to marital discord, and parental mental health issues such as bipolar depression.

Main and her colleagues concluded that children whose attachment behavior did not fit into Ainsworth's three categories did not have an organized strategy for seeking proximity to a caregiver; these infants' attachment behavior appeared to be disorganized or disoriented (Hesse & Main, 2000; Lyons-Ruth & Jacobvitz, 2008). Main and her colleague, Judith Solomon, introduced a fourth pattern of behavior, D – disorganized/disoriented, to account for children who did not fit well into Ainsworth's A, B, and C classifications (Main & Solomon, 1986; 1990). Until that time, the attachment behavior of such infants had either been considered unclassifiable or "forced" into whichever one of the ABC categories seemed the nearest fit, although neither solution was thought to be completely satisfactory (Main & Solomon, 1986).

The addition of a disorganized category of attachment behavior resulted in the ABC+D model of infant attachment classification. Infants who were classified as disorganized demonstrated, at least briefly, seemingly contradictory Strange Situation behaviors. For example, they might approach the parent and then turn away before reaching them, approach the parent and avoid them at the same time, cry when the parent leaves the room and then ignore their return, appear distressed without seeking proximity to the parent, appear dazed or depressed while in the parent's presence, fall prone or wander aimlessly while in the parent's presence, or show aggression toward the parent (Hesse & Main, 2000; Main & Solomon, 1986).

The theory of Main and her colleagues suggested that an adult's state of mind regarding attachment, developed through their own early attachment experiences and how those affected them, would influence the adult's parenting and responses to their own child, which in turn influence the child's behavior, development, and attachment to the parent (van IJzendoorn, 1995). For example, autonomous (i.e., secure) adults would tend to be appropriately responsive, leading to a securely attached child. Some insecure adults would tend to not respond to some of their child's cues, especially related to attachment needs, leading to a child with insecure-avoidant attachment. Other insecure adults would tend to respond inconsistently, due to their focus on their own attachment needs, leading to a child with an insecure-ambivalent attachment. Finally, adults with unresolved trauma and/or loss in their background would tend to respond in frightened or frightening ways to their child, leading to disorganized attachment in the child (van IJzendoorn, 1995).

Crittenden's Theory of Attachment

Crittenden, like Main, was interested in infants whose behavior during the SSP did not fit well into the description of any one of Ainsworth's A, B, C categories. Crittenden's doctoral dissertation research had involved work with a diverse population that included infants in maltreating as well as non-maltreating families (Crittenden, 1983). She continued her work on attachment after completing her graduate training, and she eventually founded the Family Relations Institute. Based on Crittenden's observations of maltreating parents and their children during the SSP, she interpreted their behavior differently than did Main. Crittenden thought that the infants whose attachment behavior did not fit into the original Ainsworth attachment categories were using an organized pattern of attachment behavior to seek the availability of a caregiver, not necessarily their physical proximity (Crittenden, 2001; Farnfield & Stokowy, 2014).

Crittenden posited that the purpose of attachment behavior is to stay alive, find a mate, reproduce, and help offspring to stay alive so that they can reproduce (Crittenden, 2016). She noted that there is great variability in terms of circumstances and situations that human beings encounter, in infancy and throughout life. The same set of attachment behaviors will not be equally effective in all cases. To be successful, therefore, attachment behavior needs to be adaptable. As Ainsworth demonstrated, even young infants use different attachment behaviors that appear to be related to the attachment state of mind of their primary caregiver. Crittenden also noted that as people mature they become capable of more complex thought and behavior. The same set of attachment behaviors, then, likely will not be equally effective at all ages and stages of life. Crittenden theorized that attachment behavior changes in a dynamic relationship with the maturation of the individual and the encountering of additional life experiences. Crittenden's ongoing work with attachment and the ideas that it brought forth led her to think that previous attachment theory was insufficient to account for all aspects of human attachment.

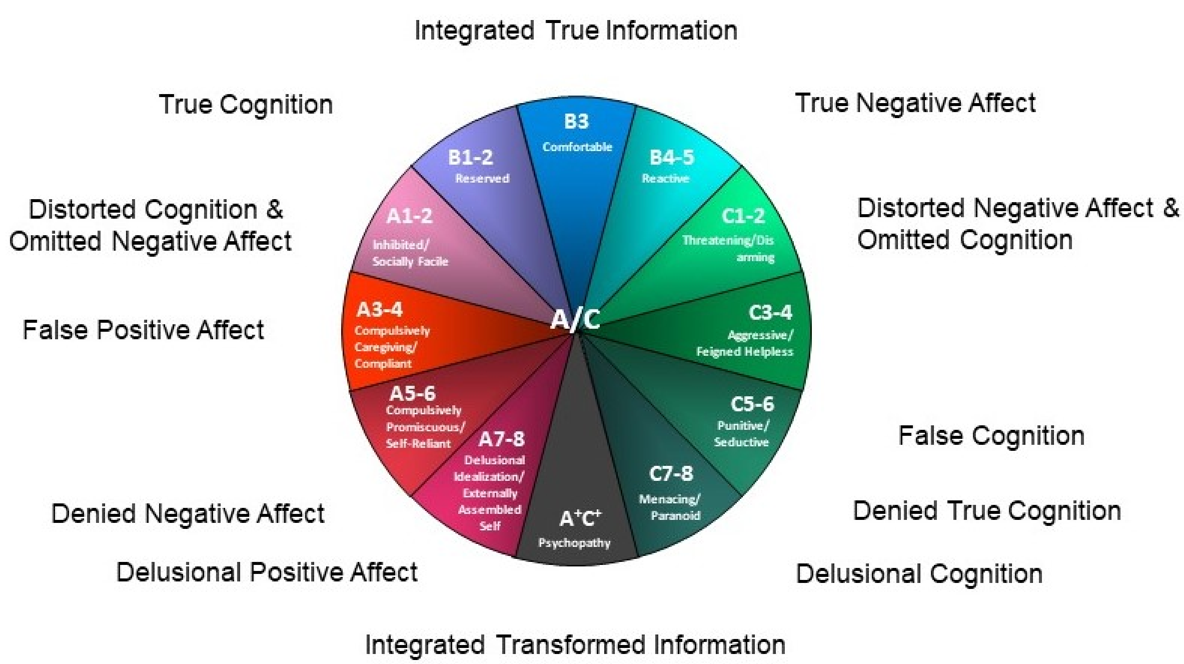
In response, she developed a new branch of attachment theory which she called the Dynamic-Maturational Model (DMM) of Attachment and Adaptation (Crittenden, 2016).

In the development of the DMM, Crittenden's thinking was informed by other theories and researchers (Crittenden, 2016). During Crittenden's time studying under Ainsworth, for example, Ainsworth had introduced her to Bowlby's ideas about information processing (Landa & Duschinsky, 2013b). Thompson and Raikes (2003) suggest that the DMM is a theoretical contribution that extends Bowlby's theory of attachment beyond early childhood and through adolescence. Some concepts basic to the DMM are that attachment patterns are strategies learned within attachment relationships to protect the self from danger, self-protective strategies continue to evolve and change as the individual grows and matures, and the development and use of such self-protective strategies involves information processing (Crittenden, 1999; Crittenden, 2006; Crittenden, 2016; Landa & Duschinsky, 2013b). Crittenden theorized that individuals could develop self-protection strategies that are more extreme versions of the ones originally identified by Ainsworth, especially as they grow older and become more cognitively and emotionally complex (Crittenden, 2000; Crittenden, 2016). The DMM posits that for adults, there are 21 possible individual self-protection strategies, or attachment classifications, as well as mixed strategies (Crittenden & Landini, 2011).

The following descriptions of DMM self-protective strategies are based on Crittenden and Landini (2011). The DMM Type B strategies (B1 – B5) are secure attachment classifications, similar to Ainsworth's original B attachment classification. They are referred to as Balanced because people using those strategies use a balanced combination of affect and cognition. In DMM theory, affect and cognition refer to types of information processing. Affect involves the processing of information about intensity of stimulation, and cognition involves the processing of information about timing and causation. In terms of information processing, people with DMM Type A strategies (A1 – A8) tend to use more cognition and less affect, whereas people with DMM Type C strategies (C1 – C8) tend to use more affect and less cognition. DMM Type A and Type C strategies with low numbers (e.g., A1, A2, C1, and C2) are considered relatively normative and similar to Ainsworth's original A and C classifications. DMM theory indicates that people using Type A and Type C strategies with higher numbers use information processing with higher levels of distortion. As can be seen in Figure 1, the DMM strategies are organized along two continuous dimensions. On the horizontal axis, increasing distance from the center is associated with decreasing integration of cognition and affect. On the vertical axis, increasing distance from the top is associated with increasing type numbers.

Figure 1

DMM Attachment Classifications



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Information processing is a central concept in the DMM. Crittenden's model includes the ideas that there are different memory systems that process and store information, and stored information takes the form of dispositional representations (DRs), defined below. Memory systems in the DMM are identified as procedural, imaged, semantic, connotative, episodic, and reflective (Crittenden & Landini, 2011). Procedural and imaged memory are implicit memory systems that begin in infancy and operate largely outside of conscious awareness. Semantic and connotative memory are explicit memory systems that come into use later as the individual develops the ability to use language. Procedural and semantic memory are used to process information about time, or the order in which things occur, which Crittenden refers to as cognition (Crittenden & Landini, 2011). Imaged and connotative memory are used to process information about the intensity of feeling states and are referred to by Crittenden as affect (Crittenden & Landini, 2011). Episodic memory and reflective integration are integrative memory systems that are available for use only later still, as the individual develops the ability for thinking that is more complex, and involve a putting together, or integration, of cognition and affect (Crittenden & Landini, 2011).

DRs are one result of information that has been processed through the memory systems listed above. Crittenden uses the term DR to identify her own, updated version of Bowlby's internal working model. Like Bowlby's internal working models, DRs are often developed early in life and are implicit. One difference between DRs and internal working models is that the concept of DR incorporates relatively recent (i.e., since Bowlby's time) findings in the neurosciences regarding how memory works (Crittenden, 2006; Farnfield & Stokowy, 2014). Therefore, DRs are understood to be somewhat dynamic rather than static. Another difference between DRs and internal working models is that the concept of DR involves an impulse, or disposition, toward action (Crittenden & Landini, 2011; Crittenden, 2016; Farnfield & Stokowy, 2014). DRs tend to predispose the individual to act in ways that are consistent with their early life experiences in attachment relationships.

DMM theory also contains the idea that information processing can result in distortions of information. Crittenden identifies several types of distortion that can occur during information processing. They include inaccurate perceptions, including those that are the result of systematic avoiding of some ideas and/or feelings; memories that have been unconsciously altered in response to wishes or expectations; and the inability to remember, for unconscious reasons, information that was, in fact, processed (Crittenden, 1990). Information in the form of both cognitions and affect can be distorted (Crittenden & Landini, 2011). Distortions of information affect both DRs and self-protective strategies. For example, the increasing numbers associated with attachment patterns in the DMM indicate increasing levels of distortion of information (Crittenden, 2006), and increasing deviation from the "normative" Ainsworth patterns.

Assessing Patterns of Attachment in Adults

The focus of research in the field of attachment quickly expanded beyond infancy to include interest in the attachment status of adults. In the 1980s the AAI was designed by Carol George, Nancy Kaplan, and Mary Main (Main & Goldwyn, 1984b; Main et al., 1985). A semi-structured interview protocol and associated discourse analysis coding method for the AAI were created by Main and her colleagues at Berkeley (George et al., 1984, 1985, 1996; Main & Goldwyn, 1984a).

The Adult Attachment Interview Protocol

The AAI protocol involves a series of 15 to 20 standard questions (Main, 2000; Main et al., 2008). The interviewee is asked to name five words that describe their relationship with their mother or other primary caregiver, for example, and then to give examples of experiences that illustrate why they chose those words (Hesse, 2008; Main, 1996; Main & Goldwyn, 1984b; Main et al., 1985). That process is then repeated for the father or another significant caregiver. The questions in the AAI are organized such that they begin with those that are relatively non-threatening and progress gradually to those that are more likely to produce attachment-related stress in the interviewee. The content and order of the questions is intended to access the unconscious and elicit information about the interviewee's attitude toward attachment that would not necessarily be accessible under other circumstances (Hesse, 2008; Main, 2000; Main et al., 2008). The interview lasts approximately an hour and is administered by a trained interviewer (Crowell, 2014; Main, 1996; Main et al., 2008).

The purpose of the AAI is to assess an adult's state of mind toward attachment and allow for adult attachment classification (Hesse, 2008; Main, 1996). Development of the AAI originally took place in the context of assessing parents of infants who had already been assigned attachment classifications based on the SSP, and associations were found between the assessed attachment classifications of parent and child (Hesse, 2008; Main, 2000; Main & Goldwyn, 1984b). Parents with secure-autonomous (F) AAI results, for example, tended to have a child with secure (B) SSP results. Other associations were parents with dismissing (Ds) AAI results to children with avoidant (A) SSP results and parents with preoccupied (E) AAI results to children with resistant-ambivalent SSP results (Main, 2000; Hesse, 2008).

Berkeley Coding System for the AAI

The original coding system for the AAI was developed by Main and Goldwyn at the University of California at Berkeley in the early 1980s (George et al., 1984, 1985, 1996; Hesse, 2008). It is referred to here as the Berkeley system (Baldoni et al., 2018). All AAI interviews are audio-recorded and then transcribed verbatim, including sounds (e.g., "uh" and "um") and pauses with the length of time noted (Hesse, 2008; Main, 1996; Main, 2000, Main et al., 1985). AAI coders for the Berkeley system are required to have completed a two-week training led by a certified trainer and passed a reliability check in that system (Crowell, 2014; Hesse, 2008).

The Berkeley AAI coding procedure has two main parts. One part involves scoring a transcript on two sets of rating scales, each of which are scored on a 9-point scale. The first set to be scored, inferred-experience, consists of ten rating scales for attachment figure behavior: maternal and paternal loving, maternal and paternal rejecting, maternal and paternal neglecting, maternal and paternal involving or role-inverting, and maternal and paternal pressure to achieve (Booth-LaForce & Roisman, 2014; Crowell, 2014; Hesse, 2008). The second set scored, state of mind, can only be scored after the first set (Hesse, 2008). The second set consists of maternal and paternal idealization, maternal and paternal involving anger, maternal and paternal derogation, lack of memory, metacognitive monitoring, passivity of discourse, fear of loss of a child, unresolved loss, unresolved trauma, coherence of transcript, and coherence of mind (Booth-LaForce & Roisman, 2014; Crowell, 2014; Hesse, 2008).

The last part of the Berkeley AAI coding procedure involves using the state of mind scale scores, as well as an analysis of transcript discourse based on Grice's four maxims (i.e., quality, quantity, relevance, and manner), to assign an attachment classification to the individual (Hesse, 2008; Main, 2000). Berkeley coding of individual AAI transcripts originally resulted in classification into one of three main groups—secure-autonomous (F), dismissing (Ds), and preoccupied-entangled (E)—with a fourth, unresolved/disorganized (U/D), group added later (Hesse, 2008; Main, 1996). This 4-group classification system is intentionally similar to the ABC+D model used for infants in the SSP (Thompson & Raikes, 2003). In addition, the

Berkeley system includes a cannot classify (CC) classification for situations when an AAI cannot be found to fit any of the organized classifications (Hesse, 2008).

There are AAI subclassifications that have been developed for the Berkeley coding system. For example, the dismissing category of adult attachment is comprised of four subclassifications: Ds1, Ds2, Ds3, and Ds4 (Hesse, 2008). Similarly, the secure-autonomous category includes five subclassifications, the preoccupied category has three subclassifications, and the unresolved/disorganized category has two subclassifications (Hesse, 2008).

DMM Coding System for the AAI

The DMM coding system for the AAI was developed by Crittenden and her colleague Italian psychiatrist Andrea Landini (Crittenden & Landini, 2011; Sahhar, 2014). AAI interviews that are to be used for DMM coding are audio-recorded and transcribed verbatim, as described above for the Berkeley coding system (Farnfield et al., 2010 ; Sahhar, 2014). In order to become qualified to classify AAIs using the DMM system, it is necessary to complete 18 days of training led by a certified trainer and then pass a reliability test (Crittenden, 2016; Crittenden & Landini, 2011; Sahhar, 2014). The training days are divided into three segments of six days each, separated by a period of time during which the trainee practices classifying transcripts.

The DMM coding procedure for the AAI has three main parts. The following description of the DMM coding procedure is based on Crittenden and Landini (2011). During the coding process, coders are advised to read the AAI transcript multiple times and code, or make notes about, things they notice that appear relevant. The first part of the procedure involves reading the transcript to get familiar with the facts of the interviewee's early attachment experiences and how they talk about them. In the second part of the procedure, the coder looks for dysfluencies, or places where there is evidence of transformations of information having happened, that could be used to help classify the transcript. For example, an interviewee might have provided five positive adjectives to describe their early relationship with their mother but then been unable to think of any story or experience to support one or more of those adjectives. In the third part of the procedure, the coder focuses on evidence in the transcript regarding the interviewee's overall ability to reflect in a fluent and cohesive way on their attachment experiences and how they have been influenced by them. Finally, an attachment classification that appears to best fit the transcript is assigned to it. In the DMM coding system, the basic strategies include B, A, C, and a mixed AC-A/C category. There are subclassifications in the DMM, which include B1-5, A1-8, and C1-8. In addition, the DMM classification of an AAI might include other components, such as unresolved trauma or loss, depression or disorientation, intrusion of negative affect or expressed somatic symptoms, or evidence that the strategy is being reorganized (Crittenden & Landini, 2011). The DMM system includes a not classifiable or cannot classify (CC) classification, which differs from the Berkeley CC because it is only used for the relatively rare situation when there is insufficient information available from an AAI (Sahhar, 2014).

Comparison of Berkeley and DMM Coding Systems for the AAI

The DMM coding system for the AAI differs somewhat from that of Main and her colleagues at Berkeley. DMM coding of the AAI includes attachment classifications intended to reflect the increasing cognitive sophistication individuals acquire as they mature. The result is an array of attachment classifications that are appropriate for adults with a wide variety of attachment strategies while eliminating the cannot classify category, both refinements potentially increase the usefulness of the AAI (Spieker & Crittenden, 2018). One way that the different classifications were identified was through increased attention to variations in information processing about danger and the effect of such variations on discourse markers in the transcript. The result is a classification for the transcript that is intended to identify what pattern of self-protective strategies the interviewee uses in attachment relationships.

The procedure for coding AAI transcripts differs between the Berkeley and DMM systems. For example, the Berkeley system first uses rating scales and then determines a classification based on both the rating scales and discourse analysis. The DMM system includes no rating scales. The attachment classifications that result from coding of the AAI also differ between the two systems. It is not clear whether there is a direct comparison between all classifications in the two systems (see Table 1). For example, it might be possible to compare the Berkeley dismissing classifications (Ds 1-4) to the DMM A1-8 classifications and the Berkeley preoccupied classifications (E1-3) to the DMM C1-8 classifications. DMM theory, however, suggests that the High Level Type A (A3-A8) and High Level Type C (C3-C8) classifications are qualitatively different from the Low Level Type A (A1-A2) and Low Level Type C (C1-C2) classifications.

One example of differences in attachment classification between the Berkeley and DMM systems is the difficult-to-classify pattern of behavior first identified in infants by Main and colleagues. Where Main and colleagues used the D-disorganized category to describe what they saw as behavior that was both unorganized and not focused on maintaining proximity to the caregiver, Crittenden suggested mixed AC or A/C categories to describe what she saw as behavior that was both organized in its own way and focused on maintaining the emotional availability of the caregiver in situations of maltreatment (Landa & Duschinsky, 2013b).

Table 1

Comparison of Similar Berkeley and DMM Attachment Classifications

Berkeley [a]	DMM [b]
Dismissing	Low level Type A
Ds1 – Highly dismissing and idealizing of parents	A1 – Idealizing
	A2 – Distancing
Ds2 – Highly dismissing and derogating of parents	High Level Type A
	A3 – Compulsive caregiving
Ds3 – Moderately dismissing	A4 – Compulsive compliance/performance
Ds4 – Dismissing and prospective fear of death of child	A5 – Compulsively promiscuous, sexual/social
	A6 – Compulsively self-reliant, isolated/social
	A7 – Delusional idealization
	A8 – Externally assembled self
Free-Autonomous	Type B
F1 – Secure, some signs of dismissal	B1 – Distanced from past
F2 – Secure, some signs of dismissal	B2 – Accepting
F3 – Prototypically secure	B3 – Comfortably balanced
F4 – Secure, slightly preoccupied	B4 – Sentimental
F5 – Secure, mildly angrily preoccupied	B5 – Complaining acceptance
	BO – Balanced other
Preoccupied	Low Level Type C
E1 – Passively preoccupied	C1 – Threateningly angry
E2 – Angrily preoccupied	C2 – Disarmingly desirous of comfort
E3 – Fearfully preoccupied	High Level Type C
	C3 – Aggressively angry
	C4 – Feigned helplessness
	C5 – Punitively angry and obsessed with revenge
	C6 – Seductive and obsessed with rescue
	C7 – Menacing
	C8 – Paranoid
Unresolved/Disorganized U/D	Mixed
Ul – Unresolved Loss	AC – Blended Mix of A and C Strategies
Ut – Unresolved Trauma	A/C – Alternating Mix of A and C Strategies
Cannot Classify	
CC	

[a] From Hesse, 2008, pp. 567-569.

[b] From Crittenden & Landini, 2011, pp. 385-386.

Another example of differences in attachment classification between the Berkeley and DMM systems is that the Berkeley classifications are considered to be categorical only, while the DMM classifications can be understood as existing on two dimensions. On one dimension, a higher number sub-pattern represents both an increase in distortion of information during processing and an increase in risk of psychopathology (for the individual) and/or child maltreatment (for a parent) (Crittenden & Landini, 2011). On the other dimension, the extent to which cognition and affect are integrated varies.

A third example of differences between the two systems is that, in the DMM, there is a larger array of classifications and subclassifications than in the Berkeley system, plus 'modifiers.' Modifiers in the DMM system include "depression, disorientation, intrusions of forbidden negative affect, expressed somatic symptoms, and reorganizing" (Crittenden & Landini, 2011, p. 254). A modifier is used in a DMM attachment classification to indicate that there is something interfering with the functioning of the individual's self-protective strategy and, as a result, the AAI transcript does not quite fit in any classification (Crittenden & Landini, 2011).

One result of the differences between the Berkeley and DMM coding systems is that the DMM tends to classify a higher proportion of participants, on the various DMM assessments of attachment, as insecure, and this is a criticism that has been made of the DMM (Spieker & Crittenden, 2018). Spieker and Crittenden (2018) suggest that more research is needed to empirically compare the two classification systems and evaluate the relative validity of classification derived from both. Such studies would help clarify whether the DMM coding system's higher rates of insecurity are validated.

Previous Research Comparing ABC+D/Berkeley and DMM Coding Systems

To date, there have been few studies that have compared the Berkeley (or ABC+D) and DMM coding systems. Six of them will be briefly reviewed here. Three studies (Crittenden et al., 2007; Shah et al., 2010; Spieker & Crittenden, 2010) compared SSP classifications of attachment assessments derived from coding with both the ABC+D and DMM coding systems.

Shah et al. (2010) conducted a study of 47 mothers and their infants, looking at how the mother's AAI classifications compared to their infant's SSP classifications. In addition, they compared the infant classifications derived from the two methods of coding (ABC+D and DMM). The authors found a low level of agreement between the two methods overall, with relatively higher agreement regarding secure infants as compared to insecure. Also, they found that the ABC+D method resulted in a higher rate of secure infants than did the DMM. This study did not assess the validation of either coding method.

Two studies (Crittenden et al., 2007; Spieker & Crittenden, 2010) compared preschool-age SSP classifications derived from coding with the ABC+D and DMM systems. Crittenden et al. (2007) compared the Ainsworth-extended, Cassidy-Marvin (C-M) ABC+D, and the preschool assessment of attachment (PAA) DMM coding systems. The focus of this description will be on the ABC+D and DMM only. The sample included 51 children, 38 of whom had been identified as abused or neglected. Maltreatment status, maternal sensitivity, child developmental quotient (DQ), and maternal attachment strategy were all used as validation variables. The authors found that the child's C-M and PAA attachment classifications matched only 37% of the time. They also found that the PAA differentiated secure and insecure kids on all four variables, where the C-M differentiated them on only one (maltreatment status).

Spieker and Crittenden (2010) compared the MacArthur (MAC) (renamed from the C-M system described above) ABC+D and PAA DMM coding systems. Their sample included 306 3-year-old children from the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD). Validation variables used were dyadic affective mutuality, teacher-reported externalizing and internalizing problems, and child-reported symptoms of depression, collected longitudinally through grade 5. The authors found that the two coding systems resulted in agreement on child attachment classifications 50% of the time. The MAC classifications had associations with 5% of the outcome variables, with some counter to expectations, and the PAA classifications had associations with 12% of the outcome variables.

Three studies (Baldoni et al., 2018; Crittenden & Newman, 2010; Zachrisson et al., 2011) involved some comparison of attachment classifications obtained by the coding of AAI transcripts using the Berkeley and DMM systems. Baldoni and colleagues (2018) coded a sample of AAI transcripts using the two methods and compared distributions of classifications in a sample of 45 Italian couples. This article did not include validation variables. The authors reported finding no significant associations between attachment classifications obtained from the two coding systems. They suggested that the Berkeley and DMM classification systems result in different distributions of attachment classifications because the two systems are based on different theoretical understandings of attachment (Baldoni et al., 2018). The authors called for more research comparing these two attachment coding systems and recommended that future studies include the use of variables for validation.

Crittenden and Newman (2010) compared the AAI classifications obtained by coding transcripts with the Berkeley system and the DMM system in a study involving a sample of 32

Australian mothers, 15 of whom had been diagnosed with borderline personality disorder. The comparison of AAI classifications was a secondary focus in a study with a primary focus on comparing mothers with a diagnosis of borderline personality disorder to those without in terms of attachment. A significant relationship was found overall between the classifications from the two coding systems. However, it was mainly accounted for by agreement between the Berkeley unresolved category and the DMM A/C category, with little agreement found on comparisons of other categories.

Zachrisson et al. (2011) similarly compared the Berkeley and DMM classifications of AAIs from a sample of 20 female patients being treated for anorexia nervosa in Denmark. No significant relationship was found between the classifications obtained from coding with the two systems. None of the three studies comparing AAI classifications mentioned here included validation of those classifications with outcome measures. More research comparing AAI classification systems, and validating them with outcome measures, is needed.

Controversy Between Attachment Theories

Both Main and Crittenden studied attachment as graduate students in the lab of Mary Ainsworth, and both have contributed to theory on attachment (Landa & Duschinsky, 2013b; Shah & Strathearn, 2014). However, the work of Main and Crittenden led them to different understandings about some aspects of attachment theory. For example, they have different views about how to understand those children whose attachment behavior did not fit well into Ainsworth's original A, B, C classification categories based on the SSP (Landa & Duschinsky, 2013b; Shah & Strathearn, 2014). Those different views led them to different positions on the issues of (a) attachment behavior (dis)organization, (b) whether to focus on attachment security or adaptation to danger as motivating attachment behavior, (c) the array of possible attachment classifications, and (d) the transmission of attachment security from one generation to the next.

Disorganization, Fear, and Lack of Security

Main and some of her colleagues (Main et al., 1985; Main & Solomon, 1986) introduced a new category of attachment for infants whose behavior during the SSP did not classify easily into any of Ainsworth's A, B, or C categories, referring to their behavior as disorganized and/or disoriented because the authors did not perceive those infants as having an organized strategy to promote proximity to their caregiver. The role of early experiences of fear in attachment relationships was emphasized as leading to the development of disorganized attachment (Hesse & Main, 2000). Thus, Main and colleagues theorized that fear leads to disorganization of the attachment behavioral system (Hesse & Main, 2000; Main, 2000; Main et al., 1985).

Organization and Adaptation to Danger

Meanwhile, Crittenden was developing another view of infants whose behavior during the SSP did not classify easily into any of Ainsworth's A, B, or C categories. She saw them as having a combination of those behaviors used by both infants with A strategies and those with C strategies, resulting in an A/C category of attachment behavior (Crittenden, 1999; Crittenden, 2001). Crittenden theorized that fear, rather than causing behavioral disorganization, organizes behavior (Crittenden, 1999; Spieker & Crittenden, 2018). She identified the development of strategies to protect oneself from danger (i.e., adaptation to danger) as the motivating factor in attachment behavior (Crittenden, 1999; Crittenden, 2006; Spieker & Crittenden, 2018). Crittenden saw those strategies, in infants and preschoolers, as intended to "maintain the availability of the caregiver" (Landa & Duschinsky, 2013b, p. 328).

Possible Attachment Classifications

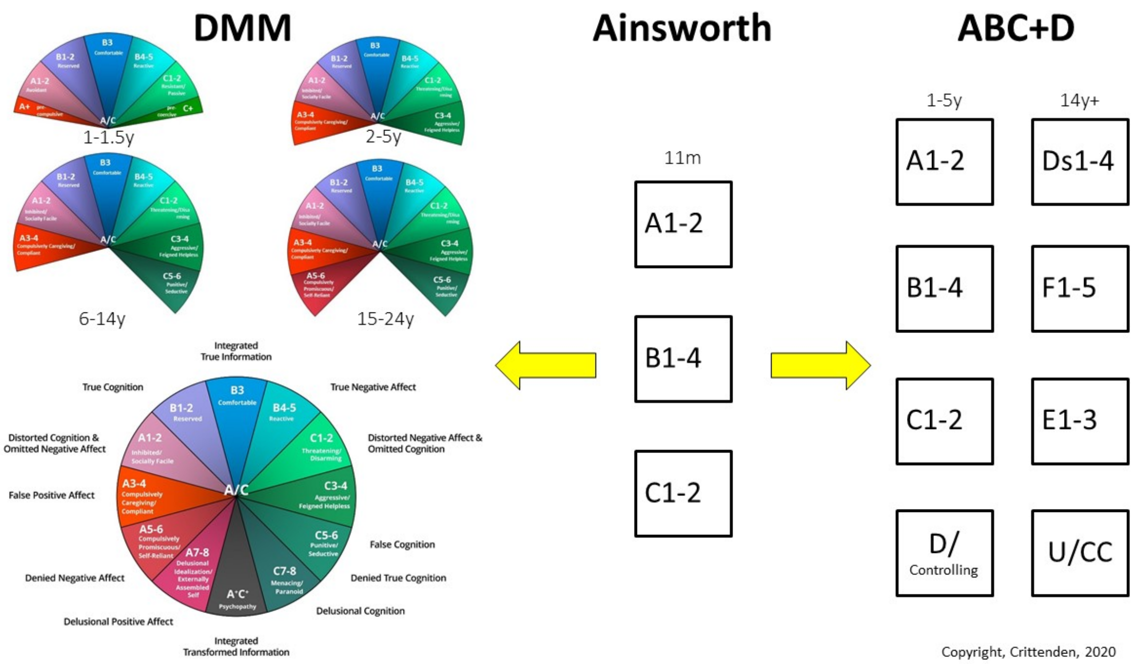
In terms of the array of attachment classifications offered, both the Berkeley (ABC+D) and the DMM system offer an expansion of the original Ainsworth categories and sub-categories (see Figure 2). Main's ABC+D model theorizes four main categories for individuals of all ages (abbreviated as A, B, C, and D for children and Ds, F, E, and U/D for adults), with 12 sub-classifications (Hesse, 2008). Crittenden's DMM theorizes three main categories (A, B, and C for both children and adults), with 21 possible subcategories for adults, fewer for children, and the fewest for infants (Crittenden, 2001). The DMM, theorizing both a wider range of self-protective strategies for adults than infants and the ongoing potential for change in strategies with experience, is a developmental model (Crittenden, 2006; Landa & Duschinsky, 2013b; Spieker & Crittenden, 2018). Thompson and Raikes (2003) note that Crittenden is the only attachment researcher to have discussed the way in which development into adulthood might influence attachment behavior.

Transmission of Attachment Security

The theories of Main and Crittenden also differ on the question of intergenerational, or transgenerational, transmission of attachment classifications (Shah & Strathearn, 2014). Main and colleagues had found associations, in the dyads they studied while developing the AAI, between the AAI attachment classification of the parent and the SSP attachment classification of the infant. The researchers found that a parent with a secure attachment classification was more likely to have a child with a secure attachment classification and that a parent with an insecure attachment classification was more likely to have a child with an insecure attachment classification (Main, 2000). Those associations seemed to support the view that there is an intergenerational transmission of attachment status.

Figure 2

DMM, Ainsworth, and Berkeley (ABC+D) Attachment Classifications



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Theoretically, an adult's previous attachment experiences and state of mind toward attachment affect their caregiving behavior and the adult's caregiving behavior affects their child's attachment status (Belsky & Fearon, 2008; Bowlby, 1982; Main et al., 1985). In a meta-analysis, van IJzendoorn (1995) found relationships between parent AAI classifications and infant SSP classifications for analyses of both the four-category (Ds, F, E, U and A, B, C, D) and "forced" three-category (Ds, F, E and A, B, C) categories that support the concept of the intergenerational transmission of attachment classifications. In the four-category analysis, effect sizes for the secure-secure (F and B) mother to child classification transmission were highest, those for the dismissing-avoidant (Ds and A) and the preoccupied-resistant/ambivalent (E and C) mother to child classification transmission were less high, and those for the unresolved and disorganized (U and D) mother to child classification transmission were the smallest of the four (van IJzendoorn, 1995). Similarly in the three-category analysis, effect sizes for the secure-secure (F and B) mother and child classifications were the highest, those between the dismissing-avoidant (Ds and A) classifications were less high, and those between the preoccupied-resistant/ambivalent classifications were the smallest of the three (van IJzendoorn, 1995).

A later meta-analysis, by Verhage et al. (2016), also found relationships between parent AAI classifications and infant SSP classifications for analyses of both the four-category (Ds, F, E, U and A, B, C, D) and “forced” three-category (Ds, F, E and A, B, C) categories. However, the effect sizes they found were smaller than those in the earlier meta-analysis (van IJzendoorn, 1995). In addition, Verhage et al. (2016) found that unpublished studies on the intergenerational transmission of attachment classifications tended to have smaller effect sizes that published studies, suggesting a publication bias. They also found smaller effect sizes in, for example, families with higher risk status and families with non-biological parents. Similarly, Crittenden has suggested that much of the matching of classifications between parent and child happens among those in the secure category, there is more switching from A to C (or vice versa) between generations among insecure dyads, and families living in less advantaged circumstances are both less likely to be secure and more likely to switch classifications (Crittenden, 2016; Crittenden & Landini, 2011).

One factor that might have contributed to eventual differences in the theories of Main and Crittenden is the populations with which they were working as they developed those theories. In one case, Main was working primarily with a white, middle-class population (Main, 1995; Main & Solomon, 1986; Main & Weston, 1981). In the other case, Crittenden was working with a population with a majority of participants who were both below middle-class in SES and identified as being maltreating of their children (Crittenden, 1984; Crittenden, 1985). Crittenden and Landini (2011) have suggested that it is an advantage of the DMM that it was developed with the inclusion of samples that represent a wider array of cultures and life circumstances than was part of the original Ainsworth sample.

Conclusion

Both Main and Crittenden made important contributions to attachment theory. Unfortunately, the differences between the theories of Main and Crittenden and the controversy surrounding that disagreement has resulted in little productive dialogue between proponents of the two sides (Fonagy, 2013). Spieker and Crittenden (2018) recently called for dialogue and working together. This study was intended to both contribute to that goal and respond to the call by Baldoni et al. (2018) for more research comparing the Berkeley and DMM coding systems for the AAI, with validation variables included.

CHAPTER III: METHOD

This quantitative study evaluated attachment classifications obtained by coding AAI transcripts from a low-income sample of mothers using the Berkeley and DMM coding systems. The first purpose of this study was to assess the relationship between the two distributions of attachment classifications, one from the Berkeley system and one from the DMM system. The second purpose of the study was to assess the significance of the relationships between the distributions of attachment classifications derived from the Berkeley and DMM coding systems with maternal and dyad outcome variables. Archival data provided by Susan Spieker, PhD was used in this study. Details of the original King County sample and procedures can be found in Spieker et al. (2003).

Research Questions and Null Hypotheses

Research question one: Is there a statistically significant relationship between the attachment classification distributions obtained from coding AAI transcripts with the Berkeley and DMM systems?

Hypothesis 1a: There is no statistically significant relationship between the secure/insecure (S/I) attachment classification distributions obtained from coding AAI transcripts in this study with the Berkeley and DMM systems.

Hypothesis 1b: There is no statistically significant relationship between the unresolved/not unresolved (U/Not U) attachment classification distributions obtained from coding AAI transcripts in this study with the Berkeley and DMM systems.

Hypothesis 1c: There is no statistically significant relationship between the mixed dismissing and preoccupied/not mixed dismissing and preoccupied (AC/Not AC) attachment classification distributions obtained from coding AAI transcripts in this study with the Berkeley and DMM systems.

Research question two: Is there a difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI attachment classification distributions are associated with mother and mother-child outcome variables?

Hypothesis 2a: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI S/I distributions are associated with the Maternal Depression outcome variable.

Hypothesis 2b: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI U/Not U distributions are associated with the Maternal Depression outcome variable.

Hypothesis 2c: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI AC/Not AC attachment distributions are associated with the Maternal Depression outcome variable.

Hypothesis 2d: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI four-category main attachment classification distributions are associated with the Maternal Depression outcome variable.

Hypothesis 2e: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI three-category “forced” attachment classification distributions are associated with the Maternal Depression outcome variable.

Hypothesis 2f: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI S/I distributions are associated with the Global Severity Index outcome variable.

Hypothesis 2g: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI U/Not U distributions are associated with the Global Severity Index outcome variable.

Hypothesis 2h: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI AC/Not AC attachment distributions are associated with the Maternal Depression outcome variable.

Hypothesis 2i: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI four-category main attachment classification distributions are associated with the Global Severity Index outcome variable.

Hypothesis 2j: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI three-category “forced” attachment classification distributions are associated with the Global Severity Index outcome variable.

Hypothesis 2k: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI S/I distributions are associated with the Maternal Parenting Distress outcome variable.

Hypothesis 2l: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI U/Not U distributions are associated with the Maternal Parenting Distress outcome variable.

Hypothesis 2m: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI AC/Not AC attachment distributions are associated with the Maternal Parenting Distress outcome variable.

Hypothesis 2n: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI four-category main attachment classification distributions are associated with the Maternal Parenting Distress outcome variable.

Hypothesis 2o: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI three-category “forced” attachment classification distributions are associated with the Maternal Parenting Distress Depression outcome variable.

Hypothesis 2p: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI S/I distributions are associated with the Mother-Child Dysfunctional Interaction outcome variable.

Hypothesis 2q: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI U/Not U distributions are associated with the Mother-Child Dysfunctional Interaction outcome variable.

Hypothesis 2r: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI AC/Not AC attachment distributions are associated with the Mother-Child Dysfunctional Interaction outcome variable.

Hypothesis 2s: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI four-category main attachment classification distributions are associated with the Mother-Child Dysfunctional Interaction outcome variable.

Hypothesis 2t: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI three-category “forced” attachment classification distributions are associated with the Mother-Child Dysfunctional Interaction outcome variable.

Hypothesis 2u: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI S/I distributions are associated with the Regular Child Bedtime outcome variable.

Hypothesis 2v: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI U/Not U distributions are associated with the Regular Child Bedtime outcome variable.

Hypothesis 2w: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI AC/Not AC attachment distributions are associated with the Regular Child Bedtime outcome variable.

Hypothesis 2x: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI S/I distributions are associated with the Regular Bedtime Routine outcome variable.

Hypothesis 2y: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI U/Not U distributions are associated with the Regular Bedtime Routine outcome variable.

Hypothesis 2z: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI AC/Not AC attachment distributions are associated with the Regular Bedtime Routine outcome variable.

Participants

A subset of 47 women from the national Early Head Start Research and Evaluation Project (EHSREP), 1996–2010 sample was used in this study. The purpose of the EHSREP, a randomized control study, was to evaluate the impact of different Early Head Start programs on the families who participated in them, as Early Head Start was a new program at that time. Participants in the original program study were 3,001 children from low-income families who had applied to be involved in the Early Head Start program in 17 different sites across the country. The original King County sample included 179 women who were either pregnant at the beginning of the study or had a child up to 6 months of age (Spieker et al., 2003). Inclusion criteria for the subset sample, available for use in this study, were that (a) the mother had been pregnant during the initial AAI, (b) the mother retained custody of the child throughout the original study, and (c) both the initial AAI transcript for the mother and the 19-month SSP video for the dyad were available for coding with the DMM method. This sample was considered appropriate for the present study for two reasons. First, this American sample adds further cultural diversity to the Italian, Australian, and Danish samples from previous studies comparing AAI classifications (reviewed above). Second, results from this study provide information about possible associations between the low-income status of the mothers in the sample and their attachment classifications.

Measures

The AAI was used in this study so that a comparison could be made of the distributions of attachment classifications from the two different coding methods (Berkeley and DMM), as well as comparison of the associations between classifications from each coding method with outcome measures. Outcome measures to demonstrate relevant mother and dyad variables were chosen, based on the literature, to assess the usefulness of classifications from each coding method. Table 2 provides information on variables in this study.

Table 2

Study Variables

Variable	Measure	Scores
Independent:		
Mothers' Berkeley attachment classifications	Adult Attachment Interview [a]	Categorical
Mothers' DMM attachment classifications	Adult Attachment Interview [a]	Categorical
Dependent:		
Maternal depression (M1)	Center for Epidemiological Studies – Depression Scale (CES-D) and Center for Epidemiological Studies – Depression Scale short form (CES-D-SF) [d]	Continuous [b c]
Global Severity Index (M2)	Brief Symptom Inventory (BSI) [d]	Continuous [e f]
Maternal Parenting Distress (M3)	Parenting Stress Index Short Form (PSI-SF) 3rd edition, Parental Distress subscale [d]	Continuous [e g]
Mother-Child Dysfunctional Interaction (D1)	Parenting Stress Index Short Form (PSI-SF) 3rd edition, Parent-Child Dysfunctional Interaction subscale [d]	Continuous [e g]
Regular Child Bedtime (D2)	Parent Interview [d]	Ordinal [h i]
Regular Bedtime Routine (D3)	Parent Interview [d]	Ordinal [i j]

[a] semi-structured interview.
[b] 4-point Likert scale, higher score equals higher level of depression.
[c] Scores for CES-D and CES-D-SF were adjusted to be comparable in scale and then averaged across the 3 time points.
[d] Self-report.
[e] 5-point Likert scale, higher score equals higher level of distress.
[f] Scores for the 2 time points were averaged.
[g] Scores for the 3 time points were averaged.
[h] One means child has a regular bedtime. Zero means child does not have a regular bedtime.
[i] The answer reported at the last interview completed was used.
[j] One means mother and child have a regular bedtime routine. Zero means they do not have a regular bedtime routine.

Adult Attachment Interview

The AAI is a semi-structured interview developed to allow for classification of adult attachment (George et al., 1984, 1985, 1996; Main & Goldwyn, 1984a). Questions on the AAI were chosen to elicit the interviewee's attitude toward their early attachment experiences and how those experiences influenced who they are as adults. The AAI interview is audio-recorded, transcribed, and then coded via discourse analysis (Crowell, 2014; Hesse, 2008; Sahhar, 2014). Research has shown the AAI to have reliability (Bakermans-Kranenburg & van IJzendoorn, 1993; Benoit & Parker, 1994; Sagi et al., 1994), discriminant validity (Bakermans-Kranenburg & van IJzendoorn, 1993; Crowell et al., 1996; Sagi et al., 1994), and predictive validity (Benoit & Parker, 1994; van IJzendoorn, 1995).

For this study, AAIs were given to mothers during pregnancy. AAI transcripts were previously classified using the Berkeley coding method. The transcripts were recoded using the DMM coding method for this study. Both coding systems can result in complex attachment classifications that indicate a primary classification, one or more secondary classifications, and other information. For grouping purposes for data analysis, therefore, complex attachment classifications were simplified by using only the primary classification. A full DMM classification of Utr(p)$_{\text{PAN}}$ (ds$_{\text{Bro}}$,dx, b$_{\text{F}}$)$_{\text{CSA}}$ (dx)$_{\text{aban}}$ l(p)$_{\text{many}}$ (ds)$_{\text{twin}}$ A1(7) C3+ (see Table 3), for example, was simplified to AC. Similarly, a full Berkeley classification of E2/Ut/D3 (see Table 3), was simplified to E2. Maternal AAI classifications were the independent variable for this study.

Brief Symptom Inventory

The BSI is a self-report measure designed to screen for psychological symptoms, with 53 questions which are answered on a 5-point Likert scale (Derogatis & Melisaratos, 1983). A high score on the BSI indicates a high level of psychological symptoms. The BSI includes nine symptom scales and three global indices of distress. Derogatis and Melisaratos (1983) reported findings of reliability and both construct and convergent validity for the BSI. BSI data were collected from mothers at child ages 19 and 30 months. The BSI Global Severity Index (GSI) was one of the dependent variables (a maternal outcome variable) in this study.

Center for Epidemiological Studies Depression Scale (CES-D) and Center for Epidemiological Studies Depression Scale Short-Form (CES-D-SF)

The CES-D is a 20-question, self-report scale used to measure symptoms of depression in the general population, which has been found to be consistent, reliable, and to have good construct and concurrent validity (Radloff, 1977). Questions on the CES-D are answered on a 4-point Likert scale. The total possible score ranges from 0 to 60, with a high score indicating a high level of depression. CES-D data were collected from mothers during pregnancy and at child age 14. The CES-D-SF is a twelve-question, self-report scale derived from the CES-D by Ross et al. (1983). The total possible score for the CES-D-SF ranges from 0 to 36, with a high score indicating a high level of depression. The CES-D-SF data was collected from mothers at child age 36 months. Scores on the CES-D and CES-D-SF were adjusted to be comparable in scale and then averaged. The adjustment was made by multiplying CES-D scores by three and CES-D-SF scores by five, so that both measures would have a possible score range of 0 to 180. Depression as measured by the CES-D and CES-D-SF was a dependent variable (a maternal outcome variable) in this study.

Parenting Stress Index Short Form (PSI-SF) Third Edition

The Parenting Stress Index (PSI) is a self-report screening tool used to assess the stress level in the parent-child system (Loyd & Abidin, 1985). The PSI-SF is a 36-question measure that was derived from the 101-question PSI to meet the need for a parenting stress screening tool that would take less time to fill out (Haskett et al., 2006). Questions on the PSI-SF are answered on a 5-point Likert scale, with high scores indicating high stress levels. Haskett et al. (2006) reported evidence of construct, convergent, discriminant, and predictive validity as well as test-retest reliability. PSI-SF data were collected from mothers at child ages 14, 24, and 36 months. Two dependent variables from the PSI were used for this study. The Parental Distress subscale was used as a maternal outcome variable and the Parent-Child Dysfunctional Interaction subscale was used as a dyadic outcome variable.

Parent Interview

Parent interview protocols were used in the original Early Head Start Research and Evaluation Project (EHSREP), 1996–2010. As part of the interview, parents were asked some questions about family routines. The establishment and maintenance of mother-child daily routines require certain capacities on the part of the mother. For example, the ability to regulate her own affect, sensitivity to her child's needs, and emotional availability. The required capacities are developed, along with other parenting behaviors, through the mother's own early relationship experiences.

Main's attachment theory suggests that parents with secure attachment tend to be appropriately responsive to their child, whereas parents with insecure attachment tend to be less appropriately responsive. Crittenden's DMM theory suggests that attachment patterns are strategies learned within attachment relationships to protect the self from danger. Differences between individual mothers in their response tendencies and/or attachment strategies are one way that a mother's attachment history could affect her ability to establish and maintain consistent routines with her child.

Participants in the original research were interviewed when their child was age 14 months, 24 months, and 36 months. Answers to two of the questions from the interviews were used as dyadic outcome variables for the current study. “Does (CHILD) have a regular bedtime during the week?” was used as the Regular Child Bedtime variable. “Some families have a routine of things they do when it is time to put a child to sleep. Do you (or FATHER/FATHER-FIGURE) have a regular routine of things you do with (CHILD) when you put (him/her) to sleep?” was used as the Regular Bedtime Routine variable. Response options for both questions were yes or no.

Procedure

Data for all measures were collected during the Early Head Start Research and Evaluation Project (EHSREP), 1996–2010 (see Figure 3). AAI transcripts that were previously classified using the Berkeley coding method were also classified using the DMM coding method for this study. Coding for both methods was done by coders trained to reliability in their respective method. The original Berkeley coding of transcripts was done by one coder, who had been trained by Mary Main and met a reliability standard (Spieker et al., 2011; Spieker et al., 2005). For the DMM coding, Patricia Crittenden (personal communication, 2019) advised that all “AAIs were classified by 2 coders, a reliable (Level I or II) coder and an almost reliable coder. When there was disagreement, I monitored a dialogue between the two coders (who were blind to the other’s identity to prevent hierarchical deference) until they reached consensus.”

Data Analysis Plan

The archival data and the new data from the DMM coding of AAI transcripts were analyzed as described below (see also Figure 4). A professional statistician was consulted, who provided advice and assistance for the data analyses for this study. Data analyses were performed using SPSS Statistics Subscription Software (Build 1.0.0.1327). The data were examined for errors, and none were found. The SPSS Explore function was used to check continuous variables for means, skewness, kurtosis, normality, and outliers as recommended by Pallant (2020). Kolmogorov-Smirnov scores for two continuous dependent variables were significant, which violated the assumption of normality for parametric statistical techniques (Field, 2018; Pallant, 2020). The scores were $D(45) = .16$, $p = .01$ for Maternal Depression and $D(45) = .14$, $p = .03$) for Mother-Child Dysfunctional Interaction. Kolmogorov-Smirnov scores were not significant for the other two continuous dependent variables. The scores were $D(45) = .12$, $p = .09$ for Global Severity Index and $D(45) = .10$, $p = .20$) for Maternal Parenting Distress. For the purposes of this study, outliers were defined as scores that were three standard deviations above or below the mean. No outliers were found.

Research Question One

Hypothesis 1a: The relationship between the numbers of AAI transcripts placed into secure or insecure categories by Berkeley and DMM coding was assessed using the non-parametric chi-square test for independence (i.e., a crosstabulation table). Crosstabulation tables are used to test the relationship between two categorical variables, each having two or more categories, to evaluate whether the numbers observed in various categories differ significantly from those that would be expected if there was no relationship between the two variables (Pallant, 2020). The chi-square test for independence results in a Pearson Chi-Square value (Pallant, 2020).

The assumptions for crosstabulation tables are that the observations are independent and the expected frequency in all cells of the crosstabulation table should be five or higher (Gravetter & Wallnau, 2017; Pallant, 2020). For 2 x 2 crosstabulation tables, the expected frequency in all cells should be ten or higher (Pallant, 2020). All of the observations for the crosstabulation tables are independent and, therefore, not in violation of the first assumption for the chi-square test for independence. The other assumption, however, regarding the expected frequency in all cells was violated. Because a 2 x 2 crosstabulation table was used and there were less than ten for the expected frequency in at least one cell in the crosstabulation tables, results were reported using Fisher's Exact Test (2-sided) as recommended under such circumstances (Pallant, 2020).

Hypothesis 1b: The relationship between the numbers of AAI transcripts placed into U/Not U categories by Berkeley and DMM coding was assessed using the chi-square test for independence. The description of the chi-square test for independence is the same as for hypothesis 1a above.

Hypothesis 1c: The relationship between the numbers of AAI transcripts placed into AC/Not AC categories by Berkeley and DMM coding was assessed using the chi-square test for independence. The description of the chi-square test for independence is the same as for hypothesis 1a above.

Based on a power analysis (Cohen, 1992) of the 45-participant sample size, 2 x 2 crosstabulation tables were chosen for comparisons (e.g., S/I, U/Not U, and AC/Not AC). For the purposes of the U/Not U comparison, Berkeley classifications were considered unresolved if they listed U/D as the primary (i.e., first) classification, and DMM classifications were considered unresolved if they included unresolved trauma and/or unresolved loss in the classification. For AC/Not AC, Berkeley and DMM classifications were considered mixed if both dismissing (Ds for Berkeley or A for DMM) and preoccupied (E for Berkeley or C for DMM) elements were indicated by coders.

Figure 3

Data Collection Flow Chart

During pregnancy:
IV – Maternal Attachment Classification (AAI-Berkeley vs. AAI-DMM)
DV – Maternal Depression (Center for Epidemiological Studies – Depression Scale)

At child age 14 months:
DV – Maternal Depression (Center for Epidemiological Studies – Depression Scale)
DV – Mothers' Parenting Distress (Parenting Stress Index – Short Form)
DV – Mother-Child Dysfunctional Interaction (Parenting Stress Index – Short Form)
DV – Regular Child Bedtime (Parent Interview)
DV – Regular Bedtime Routine (Parent Interview)

At child age 19 months:
DV – Global Severity Index (Brief Symptom Inventory)

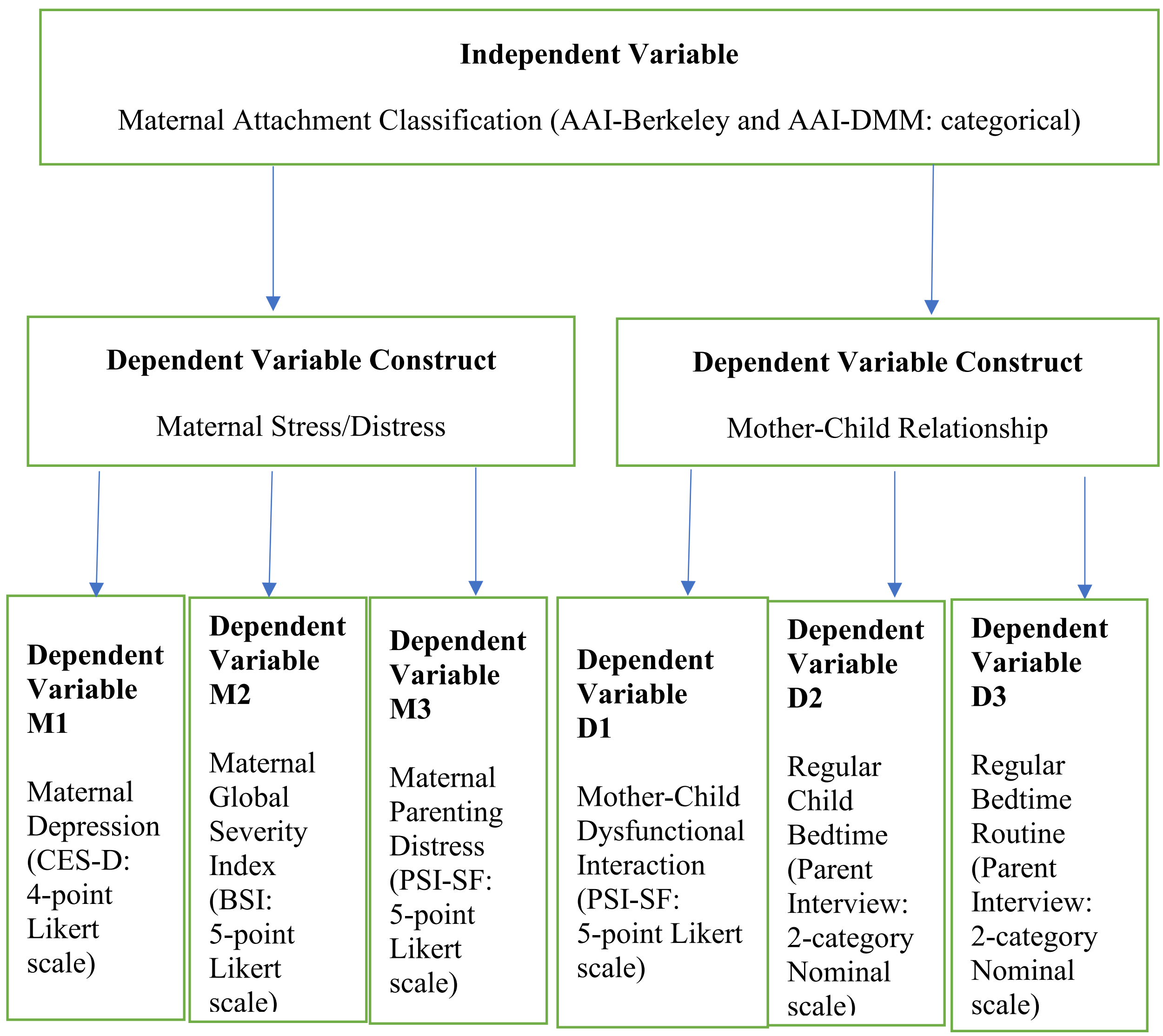
At child age 24 months:
DV – Mothers' Parenting Distress (Parenting Stress Index – Short Form)
DV – Mother-Child Dysfunctional Interaction (Parenting Stress Index – Short Form)
DV – Regular Child Bedtime (Parent Interview)
DV – Regular Bedtime Routine (Parent Interview)

At child age 30 months:
DV – Global Severity Index (Brief Symptom Inventory)

At child age 36 months:
DV – Maternal Depression (Center for Epidemiological Studies – Depression SF)
DV – Mothers' Parenting Distress (Parenting Stress Index – Short Form)
DV – Mother-Child Dysfunctional Interaction (Parenting Stress Index – Short Form)
DV – Regular Child Bedtime (Parent Interview)
DV – Regular Bedtime Routine (Parent Interview)

Figure 4

Data Analysis Flow Chart



Research Question Two

Hypothesis 2a: Possible differences on the Maternal Depression outcome variable between secure and insecure attachment groups as coded by the Berkeley and DMM systems were assessed using non-parametric Mann-Whitney *U* Tests. Mann-Whitney *U* tests are used to compare how two groups score on a continuous measure variable and result in a *U* statistic. Parametric *t*-tests would have been stronger and capable of better identifying differences between groups than a non-parametric test (Gravetter & Wallnau, 2017; Pallant, 2020). *T*-tests could not be used, however, because the assumption of normality for parametric techniques had been violated by the finding of a significant Kolmogorov-Smirnov score for the dependent variable. Mann-Whitney *U* tests rank order the scores and then use score medians to make the comparison, whereas *t*-tests use score means (Field, 2018; Gravetter & Wallnau, 2017; Pallant, 2020). The assumption for non-parametric techniques was met.

Hypothesis 2b: Possible differences on the Maternal Depression outcome variable between unresolved and not unresolved groups as coded by the Berkeley and DMM systems were assessed using non-parametric Mann-Whitney *U* Tests. The description of Mann-Whitney *U* tests is the same as for hypothesis 2a above.

Hypothesis 2c: Possible differences on the Maternal Depression outcome variable between mixed attachment classification and not mixed attachment classification groups as coded by the Berkeley and DMM systems were assessed using non-parametric Mann-Whitney *U* Tests. The description of Mann-Whitney *U* tests is the same as for hypothesis 2a above.

Hypothesis 2d: Possible differences on the Maternal Depression outcome variable between the four-category main attachment classification groups as coded by the Berkeley and DMM systems were assessed using non-parametric Kruskal-Wallis Tests. Kruskal-Wallis Tests are used to compare scores for three or more groups on a continuous measure variable and result in a chi-square test statistic. Parametric one-way analyses of variance (ANOVAs) would have been stronger and capable of better identifying differences between groups than a non-parametric test (Gravetter & Wallnau, 2017; Pallant, 2020). One-way ANOVAs could not be used, however, because the assumption of normality for parametric techniques had been violated by the finding of a significant Kolmogorov-Smirnov score for the dependent variable. Kruskal-Wallis Tests rank order scores first before comparing them (Field, 2018; Gravetter & Wallnau, 2017; Pallant, 2020). The assumption for non-parametric techniques was met.

Hypothesis 2e: Possible differences on the Maternal Depression outcome variable between the three-category “forced” attachment classification groups as coded by the Berkeley and DMM systems were assessed using non-parametric Kruskal-Wallis Tests. The description of Kruskal-Wallis Tests is the same as for hypothesis 2d above.

Hypothesis 2f: Possible differences on the Global Severity Index outcome variable between secure and insecure attachment groups as coded by the Berkeley and DMM systems were assessed using independent-samples *t*-tests. An independent-samples *t*-test is a parametric statistical technique used to compare the means on scores on a continuous variable between two independent groups (Field, 2018; Gravetter & Wallnau, 2017; Pallant, 2020). Results are provided as a *t* score (Pallant, 2020). The assumptions for independent samples *t*-tests include a continuous measure dependent variable, independent observations within samples, normal distributions, and homogeneity of variances (Gravetter & Wallnau, 2017; Pallant, 2020). None of the assumptions were violated.

Hypothesis 2g: Possible differences on the Global Severity Index outcome variable between unresolved and not unresolved groups as coded by the Berkeley and DMM systems were assessed using independent-samples *t*-tests. The description of independent samples *t*-tests is the same as for hypothesis 2f above. None of the assumptions were violated.

Hypothesis 2h: Possible differences on the Global Severity Index outcome variable between mixed attachment classification and not mixed attachment classification groups as coded by the Berkeley and DMM systems were assessed using Mann-Whitney *U* Tests. The description of Mann-Whitney *U* tests is the same as for Hypothesis 2a above. *T*-tests could not be used for Hypothesis 2h because the assumption of homogeneity of variances was violated by the finding of a significant Levene's statistic for the Berkeley AC/Not AC ($D(45) = 4.06$, $p = .05$) groups. Levene's statistic for homogeneity of variances was not significant for the DMM mixed attachment classification and not mixed attachment classification groups ($D(45) = 1.61$, $p = .21$). For the purpose of comparing Berkeley and DMM results, however, Mann-Whitney *U* tests were performed for both coding systems for hypothesis 2h. The assumption for non-parametric techniques was met.

Hypothesis 2i: Possible differences in the Global Severity Index outcome variable between the four-category main attachment classification groups as coded by the Berkeley and DMM systems were assessed using parametric one-way between-groups ANOVAs. One-way ANOVAs are used to compare mean differences in situations where there is a categorical independent variable with at least two groups and a continuous dependent variable (Gravetter & Wallnau, 2017; Pallant, 2020). Results are provided as an *F*-ratio statistic. The assumptions for one-way ANOVAs include a continuous dependent variable, independent observations within samples, normal distributions, and homogeneity of variances (Gravetter & Wallnau, 2017; Pallant, 2020). None of the assumptions were violated.

Hypothesis 2j: Possible differences in the Global Severity Index outcome variable between the three-category "forced" attachment classification groups as coded by the Berkeley and DMM systems were assessed using parametric one-way between-groups ANOVAs. The description of one-way ANOVAs is the same as for hypothesis 2i. None of the assumptions were violated.

Hypothesis 2k: Possible differences on the Maternal Parenting Distress outcome variable between secure and insecure attachment groups as coded by the Berkeley and DMM systems were assessed using independent-samples *t*-tests. The description of independent samples *t*-tests is the same as for hypothesis 2f above. None of the assumptions were violated.

Hypothesis 2l: Possible differences on the Maternal Parenting Distress outcome variable between unresolved and not unresolved groups as coded by the Berkeley and DMM systems were assessed using independent-samples *t*-tests. The description of independent samples *t*-tests is the same as for hypothesis 2f above. None of the assumptions were violated.

Hypothesis 2m: Possible differences on the Maternal Parenting Distress outcome variable between mixed attachment classification and not mixed attachment classification groups as coded by the Berkeley and DMM systems were assessed using Mann-Whitney *U* Tests. The description of Mann-Whitney *U* tests is the same as for hypothesis 2a above. *T*-tests could not be used for hypothesis 2m because the assumption of homogeneity of variances was violated by the finding of a significant Levene's statistic for the Berkeley mixed attachment classification and not mixed attachment classification (4.06, $p = .05$) groups. Levene's statistic for homogeneity of variances was not significant for the DMM mixed attachment classification and not mixed attachment classification groups (1.61, $p = .21$). For the purpose of comparing Berkeley and

DMM results, however, Mann-Whitney *U* tests were performed for both coding systems for hypothesis 2m. The assumption for non-parametric techniques was met.

Hypothesis 2n: Possible differences on the Maternal Parenting Distress outcome variable between the four-category main attachment classification groups as coded by the Berkeley and DMM systems were assessed using Kruskal-Wallis Tests. The description of Kruskal-Wallis Tests is the same as for hypothesis 2d above. The assumption of homogeneity of variances was violated for the Berkeley four-category main attachment classification groups by a Levene's test of 2.92 ($p = 0.05$). The Levene's test for homogeneity of variances for the DMM four-category main attachment classification groups was not significant at 1.60 ($p = .21$). For the purpose comparing Berkeley and DMM results, however, Kruskal-Wallis Tests were performed for both coding systems.

Hypothesis 2o: Possible differences on the Maternal Parenting Distress outcome variable between the three-category "forced" attachment classification groups as coded by the Berkeley and DMM systems were assessed using one-way ANOVAs. The description of one-way ANOVAs is the same as for hypothesis 2i. None of the assumptions were violated.

Hypothesis 2p: Possible differences on the Mother-Child Dysfunctional Interaction outcome variable between secure attachment and insecure attachment groups as coded by the Berkeley and DMM systems were assessed using Mann-Whitney *U* Tests. The description of Mann-Whitney *U* tests and meeting of assumptions are the same as for hypothesis 2a above.

Hypothesis 2q: Possible differences on the Mother-Child Dysfunctional Interaction outcome variable between unresolved and not unresolved groups as coded by the Berkeley and DMM systems were assessed using Mann-Whitney *U* Tests. The description of Mann-Whitney *U* tests and meeting of assumptions are the same as for hypothesis 2a above.

Hypothesis 2r: Possible differences on the Mother-Child Dysfunctional Interaction outcome variable between mixed attachment classification and not mixed attachment classification groups as coded by the Berkeley and DMM systems were assessed using Mann-Whitney *U* Tests. The description of Mann-Whitney *U* tests and meeting of assumptions are the same as for hypothesis 2a above.

Hypothesis 2s: Possible differences on the Mother-Child Dysfunctional Interaction outcome variable between the four-category main attachment classification groups as coded by the Berkeley and DMM systems were assessed using Kruskal-Wallis Tests. The description of Kruskal-Wallis Tests and meeting of assumptions are the same as for hypothesis 2d above.

Hypothesis 2t: Possible differences on the Mother-Child Dysfunctional Interaction outcome variable between the three-category "forced" attachment classification groups as coded by the Berkeley and DMM systems were assessed using Kruskal-Wallis Tests. The description of Kruskal-Wallis Tests and meeting of assumptions are the same as for hypothesis 2d above.

Hypothesis 2u: Possible differences on the Regular Child Bedtime outcome variable between secure and insecure attachment groups as coded by the Berkeley and DMM systems were assessed using crosstabulation tables. The description of crosstabulation tables is the same as for hypothesis 1a above.

Hypothesis 2v: Possible differences on the Regular Child Bedtime outcome variable between unresolved and not unresolved groups as coded by the Berkeley and DMM systems were assessed using crosstabulation tables. The description of crosstabulation tables is the same as for hypothesis 1a above.

Hypothesis 2w: Possible differences on the Regular Child Bedtime outcome variable between mixed attachment classification and not mixed attachment classification groups as coded by the Berkeley and DMM systems were assessed using crosstabulation tables. The description of crosstabulation tables is the same as for hypothesis 1a above.

Hypothesis 2x: Possible differences on the Regular Bedtime Routine outcome variable between secure attachment and insecure attachment classification groups as coded by the Berkeley and DMM systems were assessed using crosstabulation tables. The description of crosstabulation tables is the same as for hypothesis 1a above.

Hypothesis 2y: Possible differences on the Regular Bedtime Routine outcome variable between unresolved and not unresolved groups as coded by the Berkeley and DMM systems were assessed using crosstabulation tables. The description of crosstabulation tables is the same as for hypothesis 1a above.

Hypothesis 2z: Possible differences on the Regular Bedtime Routine outcome variable mixed attachment classification and not mixed attachment classification groups as coded by the Berkeley and DMM systems were assessed using crosstabulation tables. The description of crosstabulation tables is the same as for hypothesis 1a above.

CHAPTER IV: RESULTS

Descriptive Statistics

The participants in this study were a subset of 47 women from the national Early Head Start Research and Evaluation Project (EHSREP), 1996–2010. Two participants were excluded from the study after DMM coding but before data analysis because DMM coding indicated that those two AAI transcripts were unable to be coded due to insufficient information (e.g., the AAI transcript was too short). Data from the remaining 45 participants were included in the data analysis. At the time the AAI was administered, the participants ranged in age from 15 to 40 years, with a mean age of 22 and standard deviation of 5.65. Children born to the participant mothers, who were pregnant during the AAI administration, included 23 males and 22 females. AAI classifications (independent variable) for the participants are shown in Table 3. Descriptive statistics for dependent variables are summarized in Table 4.

Research Question One

Is there a statistically significant relationship between the attachment classification distributions obtained from coding AAI transcripts with the Berkeley and DMM systems?

Hypothesis 1a: There is no statistically significant relationship between the secure and insecure attachment classification distributions obtained from coding AAI transcripts in this study with the Berkeley and DMM systems.

The chi-square test for independence was used to evaluate the association between the number of AAI transcripts classified as secure or insecure by the Berkeley and DMM coding systems (see Table 5). The result (reported with Fisher's Exact Test) was a significant relationship (X^2 (1, N = 45) = 5.83, p = .04, phi = .36) between the Berkeley and DMM secure or insecure attachment distributions. This means that the numbers found are unlikely to be due to chance, and the null hypothesis (hypothesis 1a) was rejected. Also, the correlation coefficient (*phi* = .36) indicates a medium effect size for the relationship, based on Cohen's standard of .1 for small, .3 for medium and .5 for large (Pallant, 2020). Berkeley and DMM coding both resulted in insecure classification in 64.4% of cases. DMM coding found attachment insecurity in 28.9% of cases where Berkeley coding found security. Only 6.7% of cases were classified as secure by both systems, and no cases were classified insecure by Berkeley coding and secure by DMM coding.

Hypothesis 1b: There is no statistically significant relationship between the U/Not U distributions obtained from coding AAI transcripts in this study with the Berkeley and DMM systems.

The chi-square test for independence was used to evaluate the association between the number of AAI transcripts classified as U or Not U by the Berkeley and DMM coding systems (see Table 6). The result (reported with Fisher's Exact Test) was no significant relationship (X^2 (1, N = 45) = .74, p = .47, *phi* = .13) between the Berkeley and DMM U and Not U distributions. This means that the numbers found were not different than those that could be expected due to chance, and the null hypothesis (hypothesis 1b) was accepted. In addition, the correlation coefficient (*phi* = .13) indicates a small effect size for the relationship, using Cohen's standard as described in hypothesis 1a.

Hypothesis 1c: There is no statistically significant relationship between the AC/Not AC attachment classification distributions obtained from coding AAI transcripts in this study with the Berkeley and DMM systems.

Table 3

AAI Classifications (Independent Variable)

Participant ID Number	Berkeley	DMM[a]
01	E2/Ut/D3	Utr(p)$_{\text{PAN}}$ (ds$_{\text{Bro}}$,dx, b$_{\text{F}}$)$_{\text{CSA}}$ (dx)$_{\text{aban}}$ l(p)$_{\text{many}}$ (ds)$_{\text{twin}}$ A1(7) C3+
02	D1	Dp Ul(dp)$_{\text{GM}}$ A(1? 4?)
03	CC/E1/D2	Utr(p)$_{\text{aban}}$ tr(p)$_{\text{PA bro}}$ (?)$_{\text{CSA}}$ C5-6Δ
04	F4	R (Ul(dp)$_{\text{M}}$ A6—>A2)
05	D1/Ul/E1	Utr(b?)$_{\text{CSA}}$ tr(dp)$_{\text{aban, PN}}$ l(p)$_{\text{F, GP}}$ l(a)$_{\text{M}}$ A7
06	Ul/F4	Utr(dx)$_{\text{vio}}$ (p,dpl)$_{\text{CSA-U}}$ l(p,ds)$_{\text{F}}$ (i,v)$_{\text{bro}}$ A+ (3,5)
07	Utr/D3/E2/CC	R (C5-6 → B)
08	Ut/Ul/D3/F2	DO Ul(dx)$_{\text{F,SF,MGM}}$ tr(p,dpl)$_{\text{PA,DV}}$ A3(7)C5Δ
09	D3	Utr(p)$_{\text{witness M's abuse}}$ A3/C5-6Δ
10	F2	C5
11	F1/F3	Utr(dp)$_{\text{sep}}$ A6
12	F4/Ul	Dp Utr(ds)CSA (dn)PEAN l(dx)cousin, termin, cats (v)MGF (a)baby A+(7) [ina]
13	Ut/D3	Utr(p, dpl)$_{\text{DV, PA}}$ A3(7)$_{\text{M}}$ C5$_{\text{F}}$ Δ
14	D2/D3	R [Utr&l(p&ds)$_{\text{M send to F, SM when F to jail \& dying}}$ A+ -> B]
15	F2/D3	Ul(p)$_{\text{GGM}}$ C4(3)
16	D3	Utr (p, ds)$_{\text{div,rej}}$ A6
17	Ul/CC/E2/D4	DO Utr(p)$_{\text{aban, DC}}$ l(dx,a)$_{\text{many}}$ A+ C+
18	F5/F4	Utr(p)$_{\text{PA}}$ tr(dx)$_{\text{aban}}$ A4-, 5, 7/C3
19	F3	B4-5
20	F3/F2	R(A1-2 →B)
21	F2/F4	(R) (C+ (3/4?) —> B)
22	D3/CC/E2	DO Utr(v)brother shooting off leg A+$_{\text{M}}$/C3$_{\text{F}}$
23	E2/D3	Utr(b)$_{\text{CSA}}$ (p)$_{\text{F aban}}$ (dx)$_{\text{div}}$ A1(3)$_{\text{M}}$ A5$_{\text{F}}$
24	F1/F3	Utr(h)$_{\text{CSA}}$ (p)$_{\text{Div}}$ C5-6
25	D1/Ul	Ul(p+ds+dpl = dx)$_{\text{F}}$ A+(4,7)
26	Ut/F4/D3	Ul(dpl)$_{\text{dog}}$ Utr(ds/p)$_{\text{PA M\&P, instit, abort}}$ A3$_{\text{F}}$/C3$_{\text{M}}$Δ
27	D1/D2	(Dp) Utr (p,ds)$_{\text{rej}}$ A6
28	Ul/D3	C5-6 Δ
29	Ut/D1/E3	Dp Utr(dx)$_{\text{CSA, PA by F}}$ (dp)$_{\text{PN}}$ A+
30	F1/F2	Ul(ds)$_{\text{MGM}}$ tr(ds)$_{\text{div}}$ A4-
31	F2	(Dp) Utr(ds)$_{\text{CSA}}$ (dn)$_{\text{PN}}$ l(dp)$_{\text{GM}}$ A1(7)
32	Ul/F4	Utr(p)par r'ship (p,i)M rej C4(6)Δ
33	F2/D3	B (A+) (C)
34	D3/Ut/F1	Utr(p)$_{\text{CSA}}$ tr(ds)$_{\text{neglect}}$ A3(5)
35	D3	(Dp) Utr(ds)$_{\text{N,CSA,DC}}$ A6
36	D1	Utr(p,ds)$_{\text{PAN, Div, vio}}$ [A]C5-6+
37	D3/F2	C2(4)
38	F2/D4	R (Ul(ds)$_{\text{M}}$ Utr(p/ds)$_{\text{abor}}$ A3$_{\text{F, siblings}}$/C3-4Δ$_{\text{M, F}}$ → B)
39	Ut/F4/D3	Utr (p,dpl)$_{\text{PA}}$ (p,ds)$_{\text{DV}}$ (ds)$_{\text{CSA}}$ C5-6(7)

Participant ID Number	Berkeley	DMM[a]
40	Ul/E2	Utr(p, a)$_{\text{DC, div, NEG, alco F, son ill}}$ l(p)$_{\text{F, U, murd girl}}$ C3-6 Δ
41	Ul/D3/F4	Dp Utr(dpa, ds)$_{\text{PA-F}}$ tr(dx)$_{\text{div}}$ tr(ds)$_{\text{dog, leg}}$ tr(p)$_{\text{CSA}}$ tr(dn)$_{\text{adop}}$ l(p)$_{\text{Daryl}}$ C3/A7
42	D1/E1	Utr(p,ds)$_{\text{rej by M}}$ A1$_{\text{GP's}}$ C3$_{\text{M}}$ Δ
43	F2	C3-4
44	Ul/CC/D3/E1	Utr(p)$_{\text{unwanted self}}$ C5-6
45	F5/E2	B5

[a] – Abbreviations used:

Classification Elements

A+ = mixture of compulsive strategies
C+ = mixture of coercive strategies
DO = disoriented strategy (modifier)
Dp = depressed strategy (modifier)
[ina] = intrusion of forbidden negative affect (modifier)
R = reorganizing strategy (modifier)
U = Unresolved
Ul = loss
Utr = trauma
(#) = partial strategy .e.g., A1(7)
Δ = triangulated

Kinds of Unresolved

a = anticipated
b = blocked
dn = denied
dp = depressed
dpa = denied physical abuse
dpl = displaced
ds = dismissing
dx = disorganized
h = hinted
i = imagined
p = preoccupied
v = vicarious

People

Bro/bro = brother
F = father
GGM = great grandmother
GM = grandmother
GP = grandparents
M = mother
M&P = mother and partner
MGF = maternal grandfather
MGM = maternal grandmother
SF = stepfather
SM = stepmother
U = uncle

Events

aban = abandonment
Abor; abort = abortion
adop = adoption
alco = alcoholic
CSA = child sexual abuse
DC = desire for comfort
Div; div = divorce
DV = domestic violence, spousal abuse
instit = institutionalized
murd = murder
N; NEG = neglect
PA = physical abuse
PAN = physical abuse and neglect
par r'ship = parent relationship
PEAN = physical/emotional abuse and neglect
PN = physical neglect
rej = rejection
sep = separation
termin = abortion
vio = violence

Table 4

Descriptive Statistics (Dependent Variables)

Variables	N	Min.	Max.	Mean	Std. Deviation
Maternal Depression	45	1	130.67	47.47244	28.21741
Global Severity Index	45	33.00	81.00	56.38889	9.774671
Maternal Parenting Distress	45	13.00	49.00	26.73889	8.61636
Mother-Child Dysfunctional Interaction	45	12.00	25.67	16.35756	3.559908
Regular Child Bedtime	45	0	1	.60	.495
Regular Bedtime Routine	45	0	1	.51	.506

Table 5

*Berkeley S/I * DMM S/I Crosstabulation*

		DMM		
		Insecure	Secure	Total
Berkeley				
Insecure	Observed	29	0	29
Secure	Observed	13	3	16
Total	Observed	42	3	45

Table 6

*Berkeley U/Not U * DMM U/Not U Crosstabulation*

		DMM		
		Not U	U	Total
Berkeley				
Not U	Observed	8	23	31
U	Observed	2	12	14
Total	Observed	10	35	45

The chi-square test for independence was used to evaluate the association between the number of AAI transcripts classified as having AC or Not AC attachment by the Berkeley and DMM coding systems (see Table 7). The result (reported with Fisher's Exact Test) was no significant relationship (X^2 (1, N = 45) = 1.68, *p* = .23, *phi* = .19) between the numbers of AAI transcripts that the Berkeley and DMM coding systems assigned to AC or Not AC attachment categories. This means that the numbers found were not different than those that could be expected due to chance, and the null hypothesis (hypothesis 1c) was accepted. In addition, the correlation coefficient (*phi* = .19) indicates a small effect size for the relationship, using Cohen's standard as described in hypothesis 1a.

Table 7

*Berkeley AC/Not AC * DMM AC/Not AC Crosstabulation*

		DMM		
		Not AC	AC	Total
Berkeley				
Not AC	Observed	28	7	35
AC	Observed	6	4	10
Total	Observed	34	11	45

Research Question Two

Is there a difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI attachment classification distributions are associated with mother and mother-child outcome variables?

Hypothesis 2a: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI S/I attachment distributions are associated with the Maternal Depression outcome variable.

Independent-samples Mann-Whitney *U* tests were used to investigate the relationship between the Maternal Depression scores of AAI transcripts assigned to secure and insecure attachment categories by the Berkeley and DMM coding systems. Maternal Depression scores were not significantly different between Berkeley secure (Md = 36.34, n = 16) and insecure (Md = 46.34, n = 29) attachment groups (U = 159, z = -1.73, p = .08, r = -.26). Also, Maternal Depression scores were not significantly different between DMM secure (Md = 15.67, n = 3) and insecure (Md = 40.00, n = 42) attachment groups (U = 21, z = -1.91, p = .06, r = -.28). These results mean that scores for Maternal Depression were not related to either Berkeley or DMM categories of secure or insecure attachment more than would have been expected by chance, and the null hypothesis (hypothesis 2a) was accepted. Effect sizes for both Berkeley (-.26) and DMM (-.28) were medium, using Cohen's standard as described in hypothesis 1a.

Hypothesis 2b: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI U/Not U distributions are associated with the Maternal Depression outcome variable.

Independent-samples Mann-Whitney *U* tests were used to investigate the relationship between the Maternal Depression scores of AAI transcripts assigned to U and Not U categories by the Berkeley and DMM coding systems. Maternal Depression scores were not significantly different between Berkeley U (Md = 52.17, n = 14) and Not U (Md = 38.34, n = 31) groups (U = 256.50, z = .97, p = .33, r = .14). Also, Maternal Depression scores were not significantly different between DMM U (Md = 39.89, n = 35) and Not U (Md = 40.67, n = 10) groups (U =

192.00, $z = .46$, $p = .66$, $r = .07$). These results mean that scores for Maternal Depression were not related to either Berkeley or DMM categories of U or Not U more than would have been expected by chance and the null hypothesis (hypothesis 2b) was accepted. Effect sizes for both Berkeley (.14) and DMM (.07) were small, using Cohen's standard as described in hypothesis 1a.

Hypothesis 2c: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI AC/Not AC attachment distributions are associated with the Maternal Depression outcome variable.

Independent-samples Mann-Whitney *U* tests were used to investigate the relationship between the Maternal Depression scores of AAI transcripts assigned to AC or Not AC categories by the Berkeley and DMM coding systems. Maternal Depression scores were not significantly different between Berkeley AC ($Md = 43.17$, $n = 10$) and Not AC ($Md = 38.34$, $n = 35$) groups ($U = 185.00$, $z = .27$, $p = .80$, $r = .04$). Also, Maternal Depression scores were not significantly different between DMM AC ($Md = 46.34$, $n = 11$) and not AC ($Md = 37.50$, $n = 34$) attachment groups ($U = 240.50$, $z = 1.41$, $p = .16$, $r = .21$). These results mean that scores for Maternal Depression were not related to either Berkeley or DMM categories of AC or Not AC attachment more than would have been expected by chance, and the null hypothesis (hypothesis 2c) was accepted. Effect sizes for both Berkeley (.04) and DMM (.21) were small, using Cohen's standard as described in hypothesis 1a.

Hypothesis 2d: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI four-category main attachment classification distributions are associated with the Maternal Depression outcome variable.

Independent-samples Kruskal-Wallis tests were used to investigate the relationship between the Maternal Depression scores of AAI transcripts assigned to the four main attachment classification categories by the Berkeley and DMM coding systems. Maternal Depression scores were not significantly different across the four Berkeley main attachment classification (Ds, F, E, U) groups (X^2 (3, n = 45) = 5.10, p = .17). Also, Maternal Depression scores were not significantly different across the four DMM main attachment classification (A, B, C, AC) groups (X^2 (3, n = 45) = 5.13, p = .16). These results mean that scores for Maternal Depression were not related to either the Berkeley or DMM four main attachment categories more than would have been expected by chance, and the null hypothesis (hypothesis 2d) was accepted.

Hypothesis 2e: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI three-category "forced" attachment classification distributions are associated with the Maternal Depression outcome variable.

Independent-samples Kruskal-Wallis tests were used to investigate the relationship between the Maternal Depression scores of AAI transcripts assigned to the three "forced" attachment classification categories by the Berkeley and DMM coding systems. Maternal Depression scores were found to be significantly different across the three Berkeley "forced" attachment classification groups (Group 1, n = 20: Ds; Group 2, n = 20: F: Group 3, n = 5: E), (X^2 (2, n = 45) = 6.65, p = .04). There was a significantly higher median score for the Ds (dismissing) group (*Md* = 59.84) compared to that of the F (free-autonomous) group (*Md* = 36.34).

However, Maternal Depression scores were not significantly different across the three DMM main attachment classification (A, B, C) groups (X^2 (2, n = 45) = 3.65, p = .16). These results mean that scores for Maternal Depression were related to Berkeley, but not DMM, three-category “forced” attachment classifications more than would have been expected by chance, and the null hypothesis (hypothesis 2e) was rejected.

Hypothesis 2f: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI S/I attachment distributions are associated with the Global Severity Index outcome variable.

Independent-samples *t*-tests were used to evaluate the relationship between the Global Severity Index scores of AAI transcripts assigned to secure or insecure attachment categories by the Berkeley and DMM coding systems. Global Severity Index scores were not significantly different between Berkeley secure (M = 55.28, SD = 9.82) and insecure (M = 57.00, SD = 9.87) attachment groups ($t(43)$ = .56, p = .58, two-tailed). The magnitude of the differences in the means (mean difference = 1.72, CI [-4.47, 7.91]) was very small (eta squared = .007). Also, Global Severity Index scores were not significantly different between DMM secure (M = 53.67, SD = 6.51) and insecure (M = 56.58, SD = 9.99) attachment groups ($t(43)$ = .50, p = .62, two-tailed). The magnitude of the differences in the means (mean difference = 2.92, CI [-8.97, 14.80]) was very small (eta squared = .006). These results mean that scores for Global Severity Index were not related to either Berkeley or DMM categories of secure or insecure attachment more than would have been expected by chance, and the null hypothesis (hypothesis 2f) was accepted. Effect size for both Berkeley and DMM were very small based on Cohen’s standard for eta squared of .01 for small, .06 for moderate, and .14 for large (Pallant, 2020).

Hypothesis 2g: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI U/Not U distributions are associated with the Global Severity Index outcome variable.

Independent-samples *t*-tests were used to evaluate the relationship between the Global Severity Index scores of AAI transcripts assigned to U or Not U categories by the Berkeley and DMM coding systems. Global Severity Index scores were not significantly different between Berkeley U (M = 56.43, SD = 12.70) and Not U (M = 56.37, SD = 8.38) groups ($t(43)$ = -.02, p = .99, two-tailed). The magnitude of the differences in the means (mean difference = -.06, CI [-6.48, 6.36]) was very small (eta squared = .000009). Also, Global Severity Index scores were not significantly different between DMM U (M = 56.21, SD = 10.35) and Not U (M = 57.00, SD = 7.85) groups ($t(43)$ = .22, p = .83, two-tailed). The magnitude of the differences in the means (mean difference = .79, CI [-6.36, 7.93]) was very small (eta squared = .001). These results mean that scores for Global Severity Index were not related to either Berkeley or DMM categories of U or Not U more than would have been expected by chance, and the null hypothesis (hypothesis 2g) was accepted. Effect size for Berkeley was very small and for DMM small based on Cohen's standard for eta squared as described in hypothesis 2f.

Hypothesis 2h: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI AC/Not AC attachment distributions are associated with the Global Severity Index outcome variable.

Independent-samples Mann-Whitney *U* tests were used to investigate the relationship between the Global Severity Index scores of AAI transcripts assigned to AC or Not AC attachment categories by the Berkeley and DMM coding systems. Global Severity Index scores were not significantly different between Berkeley AC (Md = 57.25, n = 10) and Not AC (Md = 57.50, n = 35) groups (U = 188.50, z = .37, p = .72, r = .06). Also, Global Severity Index scores were not significantly different between DMM AC (Md = 54.50, n = 11) and Not AC (Md = 58.25, n = 34) attachment groups (U = 179.50, z = -.20, p = .85, r = -.03). These results mean that scores for Global Severity Index were not related to either Berkeley or DMM categories of AC or Not AC attachment more than would have been expected by chance, and the null hypothesis (hypothesis 2h) was accepted. Effect sizes for both Berkeley (.06) and DMM (-.03) were very small, using Cohen's standard as described in hypothesis 1a.

Hypothesis 2i: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI four-category main attachment classification distributions are associated with the Global Severity Index outcome variable.

One-way between-groups ANOVAs were used to evaluate the impact of attachment classification category on Global Severity Index scores. For the Berkeley coding system, AAI transcripts were assigned to one of four main attachment categories (Group 1: Ds; Group 2: F; Group 3: E; and Group 4: U/CC). No statistically significant difference was found on Global Severity Index scores between the four groups (F (3, 41) = 1.13, p = .35). The effect size, calculated using eta squared, was .08.

For the DMM coding system, AAI transcripts were assigned to one of four main attachment categories (Group 1: A; Group 2: B; Group 3: C; and Group 4: AC-A/C). No statistically significant difference was found on Global Severity Index scores between the four groups (F (3, 41) = .35, p = .79). The effect size, calculated using eta squared, was .02. These results mean that scores for Global Severity Index were not related to either the Berkeley or DMM four main attachment classification categories more than would have been expected by chance, and the null hypothesis (hypothesis 2i) was accepted. Effect sizes were moderate for Berkeley and small for DMM, using Cohen's standard as described in hypothesis 2f.

Hypothesis 2j: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI three-category "forced" attachment classification distributions are associated with the Global Severity Index outcome variable.

One-way between-groups ANOVAs were used to evaluate the impact of attachment classification category on Global Severity Index scores. For the Berkeley coding system, AAI transcripts were assigned to one of three "forced" attachment categories (Group 1: Ds; Group 2: F; and Group 3: E). No statistically significant difference was found on Global Severity Index scores between the three groups (F (2, 42) = .84, p = .44). The effect size, calculated using eta squared, was .04.

For the DMM coding system, AAI transcripts were assigned to one of three "forced" attachment categories (Group 1: A; Group 2: B; and Group 3: C). No statistically significant difference was found on Global Severity Index scores between the three groups (F (2, 42) = .21, p = .82). The effect size, calculated using eta squared, was .01. These results mean that scores for Global Severity Index were not related to either the Berkeley or DMM three-category "forced" attachment classifications more than would have been expected by chance, and the null hypothesis (hypothesis 2j) was accepted. Effect sizes were small for both Berkeley and DMM, using Cohen's standard as described in hypothesis 2f.

Hypothesis 2k: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI S/I attachment distributions are associated with the Maternal Parenting Distress outcome variable.

Independent-samples t-tests were used to evaluate the significance of the associations between Maternal Parenting Distress scores and the numbers of AAI transcripts assigned to secure or insecure attachment categories by the Berkeley and DMM coding systems. Maternal

Parenting Distress scores were not significantly different between Berkeley secure (*M* = 25.11, *SD* = 8.27) and insecure (*M* = 27.64, *SD* = 8.81) attachment groups ($t(43) = .94$, $p = .35$, two-tailed). The magnitude of the differences in the means (mean difference = 2.53, CI [-2.89, 7.95]) was small (eta squared = .02). Also, Maternal Parenting Distress scores were not significantly different between DMM secure (*M* = 21.89, *SD* = 5.74) and insecure (*M* = 27.09, *SD* = 8.73) attachment groups ($t(43) = 1.01$, $p = .32$, two-tailed). The magnitude of the differences in the means (mean difference = 5.19, CI [-5.19, 15.57]) was small (eta squared = .02). These results mean that scores for Maternal Depression were not related to either Berkeley or DMM categories of secure or insecure attachment more than would have been expected by chance, and the null hypothesis (hypothesis 2k) was accepted. Effect sizes were small for both Berkeley and DMM, using Cohen's standard as described in hypothesis 2f.

Hypothesis 2l: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI U/Not U distributions are associated with the Maternal Parenting Distress outcome variable.

Independent-samples t-tests were used to evaluate the relationship between the Maternal Parenting Distress scores of AAI transcripts assigned to U or Not U categories by the Berkeley and DMM coding systems. Maternal Parenting Distress scores were not significantly different between Berkeley U (*M* = 27.11, *SD* = 10.68) and Not U (*M* = 26.57, *SD* = 7.71) groups ($t(43) = -.19$, $p = .85$, two-tailed). The magnitude of the differences in the means (mean difference = -.54, CI [-6.19, 5.12]) was very small (eta squared = .0008). Also, Maternal Parenting Distress scores were not significantly different between DMM U (*M* = 27.15, *SD* = 8.72) and Not U (*M* = 25.30, *SD* = 8.52) attachment groups ($t(43) = -.59$, $p = .56$, two-tailed). The magnitude of the differences in the means (mean difference = -1.85, CI [-8.12, 4.43]) was very small (eta squared

= .008). These results mean that scores for Maternal Parenting Distress were not related to either Berkeley or DMM categories of U or Not U more than would have been expected by chance, and the null hypothesis (hypothesis 2l) was accepted. Effect sizes were very small for both Berkeley and DMM, using Cohen's standard as described in hypothesis 2f.

Hypothesis 2m: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI AC/Not AC attachment distributions are associated with the Maternal Parenting Distress outcome variable.

Independent-samples Mann-Whitney U tests were used to investigate the relationship between the Maternal Parenting Distress scores of AAI transcripts assigned to AC or Not AC attachment categories by the Berkeley and DMM coding systems. Maternal Parenting Distress scores were not significantly different between Berkeley AC (Md = 28.51, n = 10) and Not AC (Md = 25.67, n = 35) groups (U = 184.50, z = .26, p = .80, r = .04). Also, Maternal Parenting Distress scores were not significantly different between DMM AC (Md = 30.52, n = 11) and Not AC (Md = 26.51, n = 34) attachment groups (U = 216.50, z = .78, p = .44, r = .12). These results mean that scores for Maternal Parenting Distress were not related to either Berkeley or DMM categories of AC or Not AC attachment more than would have been expected by chance, and the null hypothesis (hypothesis 2m) was accepted. Effect sizes for both Berkeley and DMM were small, using Cohen's standard as described in hypothesis 1a.

Hypothesis 2n: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI four-category main attachment classification distributions are associated with the Maternal Parenting Distress outcome variable.

Independent-samples Kruskal-Wallis tests were used to investigate the relationship between the Maternal Parenting Distress scores of AAI transcripts assigned to the four main attachment classification categories by the Berkeley and DMM coding systems. Maternal Parenting Distress scores were significantly different across the four Berkeley main attachment classification (Ds, F, E, U) groups (X^2 (3, n = 45) = 8.33, p = .04). There were significantly higher median scores for the Ds (dismissing) group (*Md* = 29.50) compared to that of the E (preoccupied) group (*Md* = 15.64) and the Ds (dismissing) group (*Md* = 29.50) compared to that of the F (free-autonomous) group (*Md* = 23.67).

However, Maternal Parenting Distress scores were not significantly different across the four DMM main attachment classification (A, B, C, AC) groups (X^2 (3, n = 45) = 1.81, p = .61). These results mean that scores for Maternal Parenting Distress were related to the Berkeley, but not DMM, four main attachment categories more than would have been expected by chance, and the null hypothesis (hypothesis 2n) was rejected.

Hypothesis 2o: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI three-category "forced" attachment classification distributions are associated with the Maternal Parenting Distress Depression outcome variable.

One-way between-groups ANOVAs were used to evaluate the impact of attachment classification category on Maternal Parenting Distress scores. For the Berkeley coding system, AAI transcripts were assigned to one of three "forced" attachment categories (Group 1: Ds; Group 2: F; and Group 3: E). No statistically significant difference was found on Maternal Parenting Distress scores between the three groups (F (2, 42) = 2.33, p = .11). However, the effect size, calculated using eta squared, was medium to large at .10.

For the DMM coding system, AAI transcripts were assigned to one of three "forced" attachment categories (Group 1: A; Group 2: B; and Group 3: C). No statistically significant difference was found on Maternal Parenting Distress scores between the three groups (F (2, 42)

= .51, p = .61). The effect size, calculated using eta squared, was small at .02. These results mean that scores for Maternal Parenting Distress were not related to either the Berkeley or DMM three-category "forced" attachment classifications more than would have been expected by chance, and the null hypothesis (hypothesis 2o) was accepted. Effect sizes were medium to large for Berkeley (.10) and small for DMM (.02), using Cohen's standard as described in hypothesis 2f.

Hypothesis 2p: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI S/I attachment distributions are associated with the Mother-Child Dysfunctional Interaction outcome variable.

Independent-samples Mann-Whitney U tests were used to investigate the relationship between the Mother-Child Dysfunctional Interaction scores of AAI transcripts assigned to secure and insecure attachment categories by the Berkeley and DMM coding systems. Mother-Child Dysfunctional Interaction scores were not significantly different between Berkeley secure (Md = 15.00, n = 16) and insecure (Md = 16.00, n = 29) attachment groups (U = 209.50, z = -5.34, p = .59, r = -.80). Also, Mother-Child Dysfunctional Interaction scores were not significantly different between DMM secure (Md = 15.00, n = 3) and insecure (Md = 15.51, n = 42) attachment groups (U = 58.50, z = -.21, p = .85, r = -.03). These results mean that scores for Mother-Child Dysfunctional Interaction were not related to either Berkeley or DMM categories of secure or insecure attachment more than would have been expected by chance, and the null hypothesis (hypothesis 2p) was accepted. The effect size for Berkeley (-.80) was large and for DMM (-.03) very small.

Hypothesis 2q: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI U/Not U distributions are associated with the Mother-Child Dysfunctional Interaction outcome variable.

Independent-samples Mann-Whitney *U* tests were used to investigate the relationship between the Mother-Child Dysfunctional Interaction scores of AAI transcripts assigned to U and Not U categories by the Berkeley and DMM coding systems. Mother-Child Dysfunctional Interaction scores were not significantly different between Berkeley U (Md = 14.00, n = 14) and Not U (Md = 15.67, n = 31) groups (U = 171.00, z = -1.13, p = .26, r = -.17). Also, Mother-Child Dysfunctional Interaction scores were not significantly different between DMM U (Md = 15.00, n = 35) and Not U (Md = 16.17, n = 10) groups (U = 137.00, z = -1.04, p = .31, r = -.15). These results mean that scores for Mother-Child Dysfunctional Interaction were not related to either Berkeley or DMM categories of U or Not U more than would have been expected by chance, and the null hypothesis (hypothesis 2q) was accepted. The effect size for Berkeley (-.17) and DMM (-.15) were both small.

Hypothesis 2r: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI AC/Not AC attachment distributions are associated with the Mother-Child Dysfunctional Interaction outcome variable.

Independent-samples Mann-Whitney U tests were used to investigate the relationship between the Mother-Child Dysfunctional Interaction scores of AAI transcripts assigned to AC or Not AC attachment categories by the Berkeley and DMM coding systems. Mother-Child Dysfunctional Interaction scores were not significantly different between Berkeley AC (Md = 15.17, n = 10) and Not AC (Md = 15.67, n = 35) groups (U = 161.50, z = -.37, p = .71, r = -.06). Also, Mother-Child Dysfunctional Interaction scores were not significantly different between

DMM AC (*Md* = 16.00, n = 11) and Not AC (*Md* = 15.00, n = 34) attachment groups (U = 186.50, z = -.01, p = .99, r = -.001). These results mean that scores for Maternal Parenting Distress were not related to either Berkeley or DMM categories of AC or Not AC attachment more than would have been expected by chance, and the null hypothesis (hypothesis 2r) was accepted. Effect size for Berkeley (-.06) was small and for DMM (-.001) very small, using Cohen's standard as described in hypothesis 1a.

Hypothesis 2s: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI four-category main attachment classification distributions are associated with the Mother-Child Dysfunctional Interaction outcome variable.

Independent-samples Kruskal-Wallis tests were used to investigate the relationship between the Mother-Child Dysfunctional Interaction scores of AAI transcripts assigned to the four main attachment classification categories by the Berkeley and DMM coding systems. Mother-Child Dysfunctional Interaction scores were not significantly different across the four Berkeley main attachment classification (Ds, F, E, U) groups (X^2 (3, n = 45) = 5.44, p = .14). Also, Mother-Child Dysfunctional Interaction scores were not significantly different across the four DMM main attachment classification (A, B, C, AC) groups (X^2 (3, n = 45) = .10, p = .99). These results mean that scores for Mother-Child Dysfunctional Interaction were not related to the Berkeley or DMM four main attachment categories more than would have been expected by chance, and the null hypothesis (hypothesis 2s) was accepted.

Hypothesis 2t: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI three-category "forced" attachment classification distributions are associated with the Mother-Child Dysfunctional Interaction outcome variable.

Independent-samples Kruskal-Wallis tests were used to investigate the relationship between the Mother-Child Dysfunctional Interaction scores of AAI transcripts assigned to the three “forced” attachment classification categories by the Berkeley and DMM coding systems. Mother-Child Dysfunctional Interaction scores were not significantly different across the three Berkeley “forced” attachment classification (Ds, F, E) groups (X^2 (2, n = 45) = 4.30, p = .12). Also, Mother-Child Dysfunctional Interaction scores were not significantly different across the three DMM “forced” attachment classification (A, B, C) groups (X^2 (2, n = 45) = .10, p = .95). These results mean that scores for Mother-Child Dysfunctional Interaction were not related to the Berkeley or DMM three-category “forced” attachment classifications more than would have been expected by chance, and the null hypothesis (hypothesis 2t) was accepted.

Hypothesis 2u: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI S/I attachment distributions are associated with the Regular Child Bedtime outcome variable.

The chi-square test for independence was used to evaluate the associations between Regular Child Bedtime and AAI transcripts classified as secure or insecure by the Berkeley and DMM coding systems. Results are reported with Fisher’s Exact Test. For the Berkeley system, the result was no significant association (X^2 (1, N = 45) = 4.67, p = .06, *phi* = .32) (see Table 8). Similarly, for the DMM system, the result was no significant association (X^2 (1, N = 45) = 2.14, p = .26, *phi* = .22) (see Table 9). These results mean that Regular Child Bedtime was not associated with either Berkeley or DMM categories of secure or insecure attachment more than would have been expected by chance, and the null hypothesis (hypothesis 2u) was accepted. The correlation coefficient for the associations between Regular Child Bedtime and Berkeley S/I (*phi* = .32) was medium size, and the correlation coefficient for the associations between Regular

Child Bedtime and DMM S/I (*phi* = .22) was small to medium, using Cohen's standard as described in hypothesis 1a.

Hypothesis 2v: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI U/Not U distributions are associated with the Regular Child Bedtime outcome variable.

Table 8

*Regular Child Bedtime * Berkeley S/I Crosstabulation*

		Berkeley		
		Insecure	Secure	Total
Regular Child Bedtime				
No	Observed	15	3	18
Yes	Observed	14	13	27
Total	Observed	29	16	45

Table 9

*Regular Child Bedtime * DMM S/I Crosstabulation*

		DMM		
		Insecure	Secure	Total
Regular Child Bedtime				
No	Observed	18	0	18
Yes	Observed	24	3	27
Total	Observed	42	3	45

The chi-square test for independence was used to evaluate the associations between Regular Child Bedtime and AAI transcripts classified as U or Not U by the Berkeley and DMM coding systems. Results are reported with Fisher's Exact Test. For the Berkeley system, the result was no significant association (X^2 (1, N = 45) = .85, *p* = .51, *phi* = -.14) (see Table 10). Similarly, for the DMM system, the result was no significant association (X^2 (1, N = 45) = .54, *p* = .72, *phi* = -.11) (see Table 11). These results mean that Regular Child Bedtime was not associated with either Berkeley or DMM categories of U or Not U more than would have been expected by chance, and the null hypothesis (hypothesis 2v) was accepted. The correlation coefficient for the associations between Regular Child Bedtime and Berkeley U or Not U (*phi* = -.14) was small, as was the correlation coefficient for the associations between Regular Child Bedtime and DMM U or Not U (*phi* = -.11), using Cohen's standard as described in hypothesis 1a.

Hypothesis 2w: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI AC or Not AC attachment distributions are associated with the Regular Child Bedtime outcome variable.

Table 10

*Regular Child Bedtime * Berkeley U/Not U Crosstabulation*

		Berkeley		
		Not U	U	Total
Regular Child Bedtime				
No	Observed	11	7	18
Yes	Observed	20	7	27
Total	Observed	31	14	45

Table 11

*Regular Child Bedtime * DMM U/Not U Crosstabulation*

		DMM		
		Not U	U	Total
Regular Child Bedtime				
No	Observed	3	15	18
Yes	Observed	7	20	27
Total	Observed	10	35	45

The chi-square test for independence was used to evaluate the associations between Regular Child Bedtime and AAI transcripts classified as AC or Not AC attachment by the Berkeley and DMM coding systems. Results are reported with Fisher's Exact Test. For the Berkeley system, the result was no significant association (X^2 (1, N = 45) = 4.82, p = .06, *phi* = -.33) (see Table 12). Similarly, for the DMM system, the result was no significant association (X^2 (1, N = 45) = .18, p = .73, *phi* = -.06) (see Table 13). These results mean that Regular Child Bedtime was not associated with either Berkeley or DMM categories of AC or Not AC attachment more than would have been expected by chance, and the null hypothesis (hypothesis 2w) was accepted. The correlation coefficient for the association between Regular Child Bedtime and Berkeley AC or Not AC (*phi* = -.33) was medium, and the correlation coefficient for the association between Regular Child Bedtime and DMM AC or Not AC (*phi* = -.06) was small, using Cohen's standard as described in hypothesis 1a.

Hypothesis 2x: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI S/I attachment distributions are associated with the Regular Bedtime Routine outcome variable.

Table 12

*Regular Child Bedtime * Berkeley AC/Not AC Crosstabulation*

		Berkeley		
		Not AC	AC	Total
Regular Child Bedtime				
No	Observed	11	7	18
Yes	Observed	24	3	27
Total	Observed	35	10	45

Table 13

*Regular Child Bedtime * DMM AC/Not AC Crosstabulation*

		DMM		
		Not AC	AC	Total
Regular Child Bedtime				
No	Observed	13	5	18
Yes	Observed	21	6	27
Total	Observed	34	11	45

The chi-square test for independence was used to evaluate the associations between Regular Bedtime Routine and AAI transcripts classified as secure or insecure by the Berkeley and DMM coding systems. Results are reported with Fisher's Exact Test. For the Berkeley system, the result was no significant association (X^2 (1, N = 45) = .26, p = .76, *phi* = .08) (see Table 14). Similarly, for the DMM system, the result was no significant association (X^2 (1, N = 45) = .41, p = .61, *phi* = -.10) (see Table 15). These results mean that Regular Bedtime Routine was not associated with either Berkeley or DMM categories of secure or insecure attachment more than would have been expected by chance, and the null hypothesis (hypothesis 2x) was accepted. The correlation coefficient for the associations between Regular Bedtime Routine and Berkeley secure or insecure (*phi* = .08) was small, as was the correlation coefficient for the associations between Regular Bedtime Routine and DMM secure or insecure (*phi* = -.10), using Cohen's standard as described in hypothesis 1a.

Table 14

*Regular Bedtime Routine * Berkeley S/I Crosstabulation*

		Berkeley		
		Insecure	Secure	Total
Regular Bedtime Routine				
No	Observed	15	7	22
Yes	Observed	14	9	23
Total	Observed	29	16	45

Table 15

*Regular Bedtime Routine * DMM S/I Crosstabulation*

		DMM		
		Insecure	Secure	Total
Regular Bedtime Routine				
No	Observed	20	2	22
Yes	Observed	22	1	23
Total	Observed	42	3	45

Hypothesis 2y: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI U or Not U distributions are associated with the Regular Bedtime Routine outcome variable.

The chi-square test for independence was used to evaluate the associations between Regular Child Bedtime and AAI transcripts classified as U or Not U by the Berkeley and DMM coding systems. Results are reported with Fisher's Exact Test. For the Berkeley system, the result was no significant association (X^2 (1, N = 45) = .01, p = 1.00, *phi* = -.02) (see Table 16). Similarly, for the DMM system, the result was no significant association (X^2 (1, N = 45) = .64, p = .49, *phi* = .12) (see Table 17). These results mean that Regular Child Bedtime was not associated with either Berkeley or DMM categories of U or Not U more than would have been expected by chance, and the null hypothesis (hypothesis 2y) was accepted. The correlation coefficient for the associations between Regular Child Bedtime and Berkeley U or Not U (*phi* = -.02) was very small, and the correlation coefficient for the associations between Regular Child Bedtime and DMM U or Not U (*phi* = .12) was small, using Cohen's standard as described in hypothesis 1a.

Table 16

*Regular Bedtime Routine * Berkeley U/Not U Crosstabulation*

		Berkeley		
		Not U	U	Total
Regular Bedtime Routine				
No	Observed	15	7	22
Yes	Observed	16	7	23
Total	Observed	31	14	45

Table 17

*Regular Bedtime Routine * DMM U/Not U Crosstabulation*

		DMM		
		Not U	U	Total
Regular Bedtime Routine				
No	Observed	6	16	22
Yes	Observed	4	19	23
Total	Observed	10	35	45

Hypothesis 2z: There is no difference between the Berkeley and DMM coding systems in terms of the significance with which their AAI AC/Not AC attachment distributions are associated with the Regular Bedtime Routine outcome variable.

The chi-square test for independence was used to evaluate the associations between Regular Bedtime Routine and AAI transcripts classified as AC or Not AC attachment by the Berkeley and DMM coding systems. Results are reported with Fisher's Exact Test. For the Berkeley system, the result was a significant association (X^2 (1, N = 45) = 4.98, p = .04, *phi* = -.33) (see Table 18). However, for the DMM system, the result was no significant association (X^2 (1, N = 45) = 1.27, p = .31, *phi* = -.17) (see Table 19). These results mean that Regular Bedtime Routine was associated with Berkeley, but not DMM, categories of AC or Not AC attachment more than would have been expected by chance, and the null hypothesis (hypothesis 2z) was rejected. The correlation coefficient for the association between Regular Bedtime Routine and Berkeley AC or Not AC (*phi* = -.33) was medium, and the correlation coefficient for the association between Regular Bedtime Routine and DMM AC or Not AC (*phi* = -.17) was small to medium, using Cohen's standard as described in hypothesis 1a.

Table 18

*Regular Bedtime Routine * Berkeley AC/Not AC Crosstabulation*

		Berkeley		
		Not AC	AC	Total
Regular Bedtime Routine				
No	Observed	14	8	22
Yes	Observed	21	2	23
Total	Observed	35	10	45

Table 19

*Regular Bedtime Routine * DMM AC/Not AC Crosstabulation*

		DMM		
		Not AC	AC	Total
Regular Bedtime Routine				
No	Observed	15	7	22
Yes	Observed	19	4	23
Total	Observed	34	11	45

CHAPTER V: DISCUSSION

There are similarities and differences between the attachment theory of Mary Main and colleagues and that of Patricia Crittenden and colleagues. There are also similarities and differences between the attachment classification coding systems for the AAI that are associated with those two theories. To date there has been more research into the Berkeley coding system than that of the DMM. In addition, there has been little research comparing the two systems. The study presented here was meant to contribute to dialogue about the two theories and to respond to the call by Baldoni et al. (2018) for more research comparing the Berkeley and DMM coding systems for the AAI, with validation variables included. The intention was to make an objective comparison of the two coding systems, not to promote one or the other.

The present study had two purposes. The first purpose was to compare the Berkeley and DMM systems of coding AAI transcripts to determine whether they assign transcripts into similar attachment classification categories in similar numbers. The second purpose was to compare the distribution of transcripts to various attachment categories by each system with outcome measures to determine whether the two system’s distributions were equally well associated with outcomes variables. The goal of the study was to contribute to research in attachment theory as well as to offer some evidence regarding the similarity or difference between the Berkeley and DMM coding systems for the AAI.

Research Question One

Attachment Classification Distributions

Three aspects of attachment classifications were compared for this study in terms of numbers distributed into categories. Security/insecurity was the one aspect that was found to be significantly associated between the Berkeley and DMM AAI distributions. The other two aspects, U/Not U and AC/Not AC were not significantly associated. Beyond security/insecurity, AAI transcripts were classified by the Berkeley and DMM coding systems into various attachment categories in numbers different enough to support questions about whether they are measuring the same understanding of the concept of attachment (Baldoni et al., 2018).

Classification of Individual Transcripts

The Berkeley and DMM coding systems often coded an individual transcript differently on specific parts of the attachment classification assigned. In terms of lack of resolution, for example, twenty-three transcripts were identified as unresolved by the DMM system but not by the Berkeley system. Two transcripts were identified as unresolved by the Berkeley system but not the DMM. The difference in the identification of unresolved trauma and/or loss in AAI transcripts by the two coding systems that was in found in this study agrees with the similar finding by Baldoni et al. (2018) and supports their suggestion that the Berkeley and DMM attachment theories view resolution of trauma and/or loss differently.

In addition, the two coding systems sometimes coded AC/Not AC and S/I differently. Six transcripts were coded as AC by the Berkeley system but not the DMM, and seven transcripts were coded AC by the DMM but not the Berkeley system. Thirteen transcripts were classified as secure by the Berkeley system and insecure by the DMM system. No transcripts were classified as insecure in Berkeley coding and secure in DMM coding. These numbers support the observation that has previously been made that the DMM tends to classify more participants as insecure compared to the Berkeley/ABC+D systems (Baldoni et al., 2018; Shah et al., 2010; Spieker & Crittenden, 2018).

Level of Risk

Differences were found in the level of risk identified in AAI transcripts in this study by the two coding systems. The Berkeley system classified fewer transcripts (14) as having unresolved trauma and/or loss than did the DMM system (35). Also, the Berkeley system coded a higher number of transcripts as secure (16) than did the DMM (3). In the “forced” three-category attachment classifications, the DMM identified a higher number of transcripts in the two insecure categories. For preoccupied, the DMM system identified 15 transcripts compared to five for the Berkeley system. For dismissing, the DMM identified 27 transcripts compared to 20 for Berkeley. These results fit with the idea that the DMM identifies more risk in AAI transcripts than does the Berkeley system, which is possibly related to differences in the populations with which Main and Crittenden were working while they developed their theories.

A key difference in the two theories underlying the Berkeley/ABC+D and DMM coding systems that might help explain the findings with regard to distributions of attachment classifications from the present study is in their understanding of the purpose of attachment behavior. ABC+D theory views attachment behavior as oriented toward seeking felt security, and DMM theory views attachment behavior as strategies developed to cope with danger. Seeking felt security seems the more categorical of the two, in that felt security might be acquired or not, whereas coping with danger can be seen as a more dimensional, ongoing process. It might be that these basic views on attachment behavior, seeing it as seeking felt security or coping with danger, informs the coding process for the two systems in ways that result in different attachment classifications for the same AAI transcript.

Research Question Two

Significant results were found for three of the 26 hypotheses for research question two. First, the Berkeley distribution of three-category "forced" attachment classifications was significantly associated with Maternal Depression. There was a significantly higher median score for the dismissing group (59.84) compared to the free-autonomous group (36.34), indicating that dismissing attachment, as coded by the Berkeley system, is connected to the outcome of maternal depression in this sample. Second, the Berkeley distribution of four-category main attachment classifications was found to be significantly associated with Maternal Parenting Distress. There was a significantly higher median score for the dismissing group (29.50) compared to both the preoccupied (15.64) and free-autonomous (23.67) groups. Dismissing attachment, as identified by the Berkeley AAI coding system, is again connected to an outcome in this sample, this time parenting distress. Third, the Berkeley distribution of AC/Not AC was significantly associated with Regular Bedtime Routine. This suggests that mothers in this sample who were identified by the Berkeley system as having a combination of dismissing and preoccupied attachment found it more difficult to maintain a regular bedtime routine than mothers identified by the Berkeley system as having only either dismissing or preoccupied attachment. All other associations between Berkeley distributions and outcome variables were not significant, as were all associations between DMM distributions and outcome variables.

It is possible that with a larger sample size, other significant results might have been found. The results included effect sizes for a number of sub-hypotheses that were medium or large. Those results would be most likely to become significant with increasing sample numbers. For example, the effect size was large (r = -.80) for the relationship between the Berkeley secure or insecure attachment distribution and the Mother-Child Dysfunctional Interaction outcome variable. A second example is the relationship between secure or insecure attachment distributions and the Regular Child Bedtime outcome variable, where the effect size was medium (*phi* = .32) for Berkeley coding and small to medium (*phi* = .22) for DMM coding.

Conclusion

The goal of this study was to contribute to research in attachment theory, compare results from the Berkeley and DMM AAI coding systems, and offer some evidence about which classification system would be most useful for the coding of AAI transcripts for different purposes. As noted previously, there are similarities and differences between the Berkeley and DMM attachment classification coding systems for the AAI. This study was possibly the first to investigate the relative predictive validity of Berkeley and DMM AAI classifications with outcome variables. Results from this study add to the limited amount of research available comparing the two and provide some evidence regarding predictive validity.

There are, however, some limitations to this study. One limitation involves the sample. The final number of participants was relatively low at 45, which limited power for the data analysis. The participants were all mothers from low-income families who had applied to be involved in the Early Head Start program in King County, Washington. The number of participants, their self-selection to apply for the Early Head Start program and agreement to randomization to the program or a comparison condition, and the commonality of their low-income status potentially limit the generalizability of any conclusions drawn from the results. A second limitation is that of missing data. Information from a number of participants was missing for many variables, which limited the choice of outcome variables for this study.

A third limitation is that the data being used in this study was collected about twenty years ago. Some AAI interview and coding techniques have changed since the interviews from which the AAI transcripts used here were conducted. There is now a DMM-AAI protocol, for example, which differs somewhat from the George et al. (1984–1996) interview protocol (Sahhar, 2014). Some participants in the original study were quite young, and the DMM would now use its Transition to Adulthood Attachment Interview (TAAI; Crittenden, 2005) for adolescents and participants in their early twenties. It is not clear whether the results of this study would be the same if a different interview protocol had been used.

Future research comparing the percent of attachment classifications obtained using the Berkeley and DMM coding systems that fall into various categories (secure/insecure or unresolved/not unresolved) is needed to verify these findings, given the relatively few studies on the subject to date. More research is also needed to explore the relative predictive validity of the two coding systems by comparing the relationship between distributions of classifications obtained from each of the coding systems and outcome variables. Research with larger and more varied samples would be useful in terms of generalizing results. Research using both Berkeley and DMM interview protocols would provide results that more accurately compare the two systems. Observations of mother-child interaction and attachment assessments beyond infancy are also warranted.

In conclusion, this study provides evidence that attachment classifications obtained from coding with the Berkeley and DMM systems for the AAI are different enough to make comparisons between the two difficult. This study also supports the idea that the concept of attachment being measured by the Berkeley and DMM AAI coding systems might be different, and care should be taken in choosing a coding system to obtain attachment classifications from AAI transcripts for specific research and/or clinical purposes. Finally, this study also provides some evidence of the predictive validity of the Berkeley AAI coding system related to outcome variables of maternal depression, maternal parenting distress, and regular bedtime routine.

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Appendix

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Subject: Re: permission to use your circle diagram?

Hello Dr. Crittenden,

I am following up on our previous email (below) regarding permission to use your circle diagram in my dissertation. My dissertation is in the finalization process now and will be available to the public at the following websites:

- ProQuest Dissertations and Theses Database, a print on demand publisher, http://www.proquest.com/products-services/pqdt.html
- OhioLINK Electronic Theses and Dissertations center, an open access archive, https://etd.ohiolink.edu
- AURA: Antioch University Repository and Archive, an open access archive, http://aura.antioch.edu

I want to check: Is it still okay to use your figures, given that they will be posted publicly?

Also, I would like to use the DMM vs ABCD figure that you sent me as well as one of the circle diagrams. I'm attaching them both below so you'll know which ones I mean. Do I have your permission to use both? If so, could you please give me the copyright date for the DMM vs ABCD figure?

Thank you,
Pat Hastings

Patricia M Hastings, MA, LMHC
PsyD in Clinical Psychology Student
Antioch University Seattle
phastings1@antioch.edu

On Tue, Sep 29, 2020 at 3:26 PM Patricia Hastings <phastings1@antioch.edu> wrote:

Thank you so much, Dr. Crittenden!

I like the DMM vs ABCD figure that you sent and think it would be very useful in my dissertation. I think I would like to use that as well as one of the circle diagrams, if it is okay with you that I use both. I will be sure to note your copyright and permission.

Thanks again,
Pat

On Tue, Sep 29, 2020 at 4:42 AM Patricia Crittenden <pmcrittenden@gmail.com> wrote:
Hello, Patricia,
Yes, you may use a circle figure. I am attaching figures that you might want to use. Just note my copyright and permission.
Kind regards,
Pat

From: Patricia Hastings <phastings1@antioch.edu>
Sent: Sunday, September 27, 2020 11:44 PM
To: Patricia Crittenden <pmcrittenden@gmail.com>
Subject: permission to use your circle diagram?

Hello Dr. Crittenden,

My name is Pat Hastings and I'm writing my dissertation on the AAI, comparing the DMM to the ABC+D (or Berkeley) coding systems. As you might remember, Susan Spieker has allowed me to use some of her archival data.

I'm writing today to ask for your permission to use your circle diagram of adult attachment strategies in my dissertation. I was thinking of using the version that is shown in figure 5.1 on page 72 of the second edition of your book Raising Parents. I would very much appreciate being able to include the diagram in my dissertation.

Thank you for your time and for considering my request.
Pat Hastings
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