A Meta-Analysis on the Rate of Attachment Classifications of Infants in the Strange Situation Paradigm: Distribution Across Cultures and Demographic Variables

by

Kylee E. Clayton

A Thesis submitted to the Faculty of Graduate Studies of

The University of Manitoba

in partial fulfillment of the requirement of the degree of

DOCTOR OF PHILOSOPHY

Department of Psychology

University of Manitoba

Winnipeg

Copyright © 2019 by Kylee Clayton

Abstract

The Strange Situation Paradigm (SSP) is the gold standard measurement of attachment in infants. It provides four categorical attachment classifications: secure, insecure-ambivalent, insecure-avoidant, and disorganized (Ainsworth et al., 1978; Main & Solomon, 1990). Since this measure was designed with a middle-class North-American sample, there are concerns that the SSP may be biased with other cultural groups (e.g., Quinn & Mageo, 2013). A series of meta-analyses using the random-effects model were conducted to discern the overall rate of attachment classifications and whether the distribution varies across cultures and demographic variables (Study 1) and to assess the rates of underlying classification of infants with a disorganized attachment into the traditional three-category classification system (secure, insecure-ambivalent, and insecure-avoidant; Study 2). The following databases were searched: PsycINFO, Medline, ERIC, Scopus, Proquest Dissertations & Theses, Persée, FRANCIS, Érudit, CAIRN, and Google Scholar. Studies were included in Study 1 if they contained rates of all four attachment classifications from the SSP and followed the procedure and coding that was outlined by Ainsworth et al. (1978) and the disorganized attachment classification coding by Main and Solomon (1990). In Study 1, the overall weighted mean rate of secure attachment ranged from 44% to 60% across the types of samples. There was minimal variability across the types of samples for the avoidant (14% to 15%) and ambivalent classifications (8% to 11%). For the disorganized attachment classification, the weighted mean rate ranged from 15% in community samples to 28% and 30% in at-risk samples. There was no evidence of cultural biases across the analyses. The results of Study 2 indicated that approximately a third of infants classified as disorganized have an underlying classification of secure, which is incongruent with the conceptualization of disorganized attachment as the most problematic attachment classification.

The results of the studies support the use of the 4-category classification system over the 3-category classification system. Moreover, the findings draw awareness to important issues within the SSP literature and provided recommendations for how researchers can proceed to rectify these issues.

Keywords: attachment, strange situation, infants, meta-analysis

Acknowledgements

I am incredibly grateful for all the support I have received throughout my graduate training. First, I would like to thank my advisor, Dr. Jennifer Theule, for your mentorship and valuable insights. Your consistency, collaborative approach, and dedication to your students contributed greatly to my overwhelmingly positive experience of graduate school. Secondly, I would like to thank my advisory committee, Drs. Diane Hiebert-Murphy, Edward Johnson, and Sayma Malik, for your guidance and thoughtful feedback. I would also like to thank Brenna Henrikson and Sara Clement who provided valuable assistance at various stages of my research. I would like to acknowledge the financial support I received towards the completion of my Ph.D. from the Social Sciences and Humanities Research Council, Faculty of Arts J. G. Fletcher Award, and the Department of Psychology.

A special thank you to my family and friends who have supported me throughout this journey. To my parents, Lisa and Doug, for always believing in me, for instilling in me the value of education, and for supporting me with finding a career path I am passionate about. To my husband, Kevin, for your love, support, and always being there to help me keep balance and humor in my life throughout all the demands of graduate school.

Table of Contents

Abstract ii

Acknowledgements iv

List of Tables vii

List of Figures viii

Chapter I: Introduction 1

Overview 1
Attachment Theory 2
Measurement of Attachment 7
Rates of Attachment Classifications 19
Precursors of Secure Attachment 21
Risk and Attachment in Infancy 24
Attachment and Culture 27
Meta-Analysis 31
Study 1 Research Questions 34

Chapter II: Study 1 Method 37

Search Strategy 37
Eligibility Criteria 37
Data Extraction 40
Reliability 41
Data Analysis 42

Chapter III: Study 1 Results 53

Overview 53
Main Analyses 55
Moderator Analyses 57

Chapter IV: Study 1 Discussion 72

Summary 72
Comparison with Previous Findings 75
Implications 76
Future Directions for Research 79

Conclusions 80

Chapter V: Study 2 82

Research Questions 83

Chapter VI: Study 2 Method 86

Procedure 86
Data Extraction 86
Data Analysis 86

Chapter VII: Study 2 Results 88

Overview 88
Main Analyses 88
Moderator Analyses 90

Chapter VIII: Study 2 Discussion 95

Summary 95
Implications 95
Future Directions for Research 97
Conclusions 97

Chapter IX: Overall Discussion 99

Strengths 99
Limitations 100
Conclusions 105

References 107

Appendix A 153

Appendix B 161

Appendix C 163

Appendix D 200

Appendix E 206

Appendix F 207

Appendix G 219

List of Tables

Table 1. Overall Mean Weighted Rates of Attachment Classifications Across Types of Samples 57
Table 2. Unweighted Rates of Attachment Classifications Across Types of Samples 57
Table 3. Moderator Analyses with All Studies on the Secure Attachment Classification 59
Table 4. Moderator Analyses with All Studies on the Avoidant Attachment Classification 61
Table 5. Moderator Analyses with All Studies on the Ambivalent Attachment Classification 62
Table 6. Moderator Analyses with All Studies on the Disorganized Attachment Classification . 64
Table 7. Moderator Analyses with Community Samples on the Secure Attachment Classification 66
Table 8. Moderator Analyses with Community Samples on the Disorganized Attachment Classification 67
Table 9. Moderator Analyses with Samples with Parents At-Risk on the Secure Attachment Classification 67
Table 10. Moderator Analyses with Samples with Parents At-Risk on the Disorganized Attachment Classification 69
Table 11. Moderator Analyses with Samples with Children At-Risk on the Secure Attachment Classification 70
Table 12. Moderator Analyses with Samples with Children At-Risk on the Disorganized Attachment Classification 71
Table 13. Rates of Underlying Attachment Classifications Across Types of Samples 90
Table 14. Moderator Analyses on the Underlying Secure Attachment Classification 91
Table 15. Moderator Analyses on the Underlying Avoidant Attachment Classification 92
Table 16. Moderator Analyses on the Underlying Ambivalent Attachment Classification 93
Table 17. Characteristics of Studies Included in Study 1 – Part 1 163
Table 18. Characteristics of Studies Included in Study 1 – Part 2 182
Table 19. Correlation Matrix for Secure Attachment Multiple Meta-Regression Model 206
Table 20. Correlation Matrix for Disorganized Attachment Multiple Meta-Regression Model 206
Table 21. Characteristics of Studies Included in Study 2 – Part 1 207
Table 22. Characteristics of Studies Included in Study 2 – Part 2 213

List of Figures

Figure 1. PRISMA flow diagram 54

Figure 2. Forest plot of studies included in secure attachment analysis with community samples 200

Figure 3. Forest plot of studies included in disorganized attachment analysis with community samples 201

Figure 4. Forest plot of studies included in secure attachment analysis with samples of parents at-risk 202

Figure 5. Forest plot of studies included in disorganized attachment analysis with samples of parents at-risk 203

Figure 6. Forest plot of studies included in secure attachment analysis with samples of children at-risk 204

Figure 7. Forest plot of studies included in disorganized attachment analysis with samples of children at-risk 205

Figure 8. Forest plot of studies included in underlying secure attachment analysis 219

Figure 9. Forest plot of studies included in underlying avoidant attachment analysis 220

Figure 10. Forest plot of studies included in underlying ambivalent attachment analysis 221

Chapter I

A Meta-Analysis on the Rate of Attachment Classifications in Infants in the Strange Situation Paradigm: Distribution Across Cultures and Demographic Variables

Overview

Attachment is considered to be universal; that is, despite the considerable variability across cultures around the globe, all humans form attachments. Attachment refers to a specific emotional bond between two people (Bowlby, 1969, 1973). This research focuses on the attachment that forms between a child and their parent or primary caregiver. There have been many measures developed to assess the quality of the attachment relationship between children and their primary caregiver. The most well-validated and widely used measure is the Strange Situation Paradigm (SSP; Ainsworth, Blehar, Waters, & Wall, 1978). The SSP is used to derive four categorical attachment classifications: secure, insecure-ambivalent, insecure-avoidant, and disorganized (Ainsworth et al., 1978; Main & Solomon, 1990).

Previous research has found that rates of these categorical attachment classifications vary with sample characteristics, such as maternal depression, adolescent motherhood, and experiences of maltreatment (van Ijzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). As well, there have been concerns that the SSP may be biased against non-Western cultures, leading to variations in the distribution of attachment classifications using the SSP (Quinn & Mageo, 2013).

The research on the SSP is quite extensive, and it is essential to understand and summarize the overall rates of classifications from the SSP and how the rates vary across sample characteristics (e.g., culture and risk factors) and methodological characteristics (e.g., training of the assessor, reliability). The current research contributes to our knowledge of potential biases

that may impact this widely used measure and advances our understanding of how attachment classifications vary across demographic and methodological characteristics. Study 1 addresses this research gap by conducting a meta-analysis to provide an overall weighted mean rate of the four attachment classifications from the SSP and to assess, using meta-regression, how demographic and study characteristics impact these rates. Further, Study 2 quantitatively summarizes the underlying classifications of children now classified as disorganized, into secure, insecure-ambivalent, and insecure-avoidant classifications, as there has been insufficient data to do so in previous studies (van Ijzendoorn et al., 1999).

Attachment Theory

John Bowlby, the founder of attachment theory, held that attachment is an evolutionary adaptation. That is, infants are evolutionarily predisposed to engage in behaviours, such as crying and clinging, that help them to maintain proximity to their primary caregiver[1] (Bowlby, 1958). These behaviours help to ensure the protection and care of the infant, which increase the likelihood that the infant will survive into adulthood and procreate (Bowlby, 1969, 1973). These instinctual infant behaviours activate behaviours in the primary caregiver (Bowlby, 1958). The development of this reciprocal dynamic between the infant and the primary caregiver promote the attachment of the infant to their caregiver and of the caregiver to the infant (Bowlby, 1958).

[1] It should be noted that although Bowlby often referred to the child's primary caregiver as their biological mother, he did believe that any other person who was primarily responsible for the care of child and who sensitively responded to the child's needs could become the primary attachment figure (Bowlby, 1969, 1973). The term caregiver was used throughout this dissertation, except when the research cited only included mothers.

By one year of age, infants typically develop a clear attachment style to their primary caregiver (Bowlby, 1969, 1973).

Early in his career, Bowlby began to observe the impact of children's early environment on their development. In particular, he noticed the impact that separation from one's primary caregiver in the early years of life has on the caregiver-child relationship (e.g., Bowlby, 1940) and hypothesized that prolonged separations in the first three years of life have a detrimental impact on child development and development across the lifespan (Bowlby, 1940).

One of the main hypotheses of attachment theory is that attachment impacts individuals' socioemotional development and the ability to develop future strong, secure relationships. Central to this proposition is the idea of internal working models, or the expectations people carry with them and their understanding of others, the world, and themselves (Bowlby, 1973). Through repeated experiences with their primary caregivers, children develop these expectations and adaptive or maladaptive patterns of relating to others that are likely to persist into adulthood. Children's expectations about themselves and others are complementary (Bowlby, 1973). For example, a child who grows up experiencing rejection from their parents will likely develop an internal working model that they are unloved by their parents and that they are unlovable or that no one will ever love them. Throughout their life, people can develop multiple internal working models. However, in most circumstances, it is the one that developed during the early years of life that has the most impact and tends to outweigh other internal working models (Bowlby, 1973).

When children are not cared for in a sensitive and responsive manner in their early years of life, their internal working models reflect these experiences. Deprivation of parental love and care has a resounding impact on an individual's ability to develop relationships (Bowlby, 1965).

Not surprisingly, children who grow up in these circumstances form an internal working model that their primary attachment figure is not available or dependable and that the world is unpredictable and unsafe. Attachment theory predicts that children that do not form a secure attachment to their primary caregiver will be more inhibited and less likely to develop secure relationships with others (Ainsworth, 1967; Bowlby, 1969).

Secure attachment has been posited to be linked with increased independence and self-reliance. During Bowlby's career, there were many proponents of the "theory of spoiling" (Bowlby, 1956). That is, some believed giving a child too much attention resulted in spoiling the child and the child becoming dependent on receiving attention. This led to the belief that to foster independence and self-reliance a child should be given minimal attention. Attachment theory adamantly opposed this viewpoint (Bowlby, 1956). Bowlby found that when he investigated these supposed cases of "spoiled" children, the majority of these children had experienced hardship during their development, such as separation, rejection, and harsh discipline (Bowlby, 1956). He felt that these experiences better explained the current dependence exhibited by these "spoiled" children than excessive attention.

Bowlby (1956) viewed self-reliance as a naturally maturing function, which he compared to how a child begins to walk and talk once they have physically matured enough to have this capability. He predicted that if a child develops a strong attachment to their primary caregiver, the child's independence will start to naturally increase, without any training (Bowlby, 1956, 1973, 1979). When a parent provides their child with a secure base, the child can feel confident in exploring their environment. In other words, when the parent provides appropriate and consistent support for their child and at the same time encourages and respects their child's autonomy, self-reliance and independence are fostered (Ainsworth, 1967; Bowlby, 1973, 1979).

The child's reliance on their parents may lessen as they grow into an adolescent and adult, but it is never gone (Ainsworth, 1967; Bowlby, 1973, 1979).

In attachment theory, reliance and self-reliance are not viewed as mutually exclusive and are actually thought to complement one another (Bowlby, 1973, 1979). Those adults who can act independently and take initiative also show a balance; they demonstrate the capacity to seek and accept help when needed (Bowlby, 1973, 1979). Adults who experienced a secure attachment to their parents develop internal working models that are able to discriminate and select others to form trusting, mutually-rewarding relationships with. As they mature, these individuals are able to build a stable social network. This trust and support or reliance on others allows them to act independently, knowing that they can trust others and access support when needed (Bowlby, 1973, 1979).

On the contrary, when children experience non-secure attachment relationships, "dependence" can result, which Bowlby describes as an overdependence, that is not reciprocal and does not encompass a strong relationship (Bowlby, 1956, 1973, 1979). On the other extreme, "defiant independence", which Bowlby thought of as an inability to trust and rely on others when needed, can also result from a non-secure attachment relationship (Bowlby, 1973, 1979). Defiant independence and overdependence are linked with heightened fear and anxiety (Bowlby, 1973, 1979) and can result when children are over-disciplined, leading children to believe that their parents' affection is contingent on "good" behaviour (Bowlby, 1956). Both can also result from primary caregivers who had feelings of ambivalence about their child; that is, these primary caregivers experience feelings of both affection and resentment towards their child. Additionally, dependence and defiant independence can occur when children have experienced prolonged

separation from their parents, or when parents use threats of separation and loss to encourage good behaviour (Bowlby, 1956, 1973, 1979).

More recent research has begun to integrate both psychological and biological models of development (Schore & Schore, 2008). For instance, the development of emotional regulation is now viewed as an interactive process (Schore & Schore, 2008). That is, for an infant to develop a secure attachment relationship to their primary caregiver in the first year of life, their primary caregiver must be psycho-biologically attuned to the infant's shift in internal states of arousal of the autonomic and central nervous system (Schore & Schore, 2008). Caregivers that are sensitive and responsive to their infants' nonverbal, affective expressions and are able to regulate both the positive and negative affective expressions of their infants help to foster emotional regulation abilities in their child. An infant's central and autonomic nervous systems are still in the process of developing; through the attachment relationship, the infant's caregiver is able to co-regulate these systems (Schore & Schore, 2008).

Caregivers who are sensitive and responsive to their infant's cues engage in synchronized interactions with their infant (Schore & Schore, 2008). For example, when an infant is playing, the infant will independently explore at times and at times approach their caregiver to engage with them. When the caregiver responds sensitively to these cues, the caregiver-infant dyad becomes affectively synchronized, which creates an intensifying of their affect and results in a positive experience (Schore & Schore, 2008). When a caregiver misinterprets one of their infant's cues (which occurs even with sensitive and responsive caregivers), the caregiver can regulate their infant's negative emotions by then accurately and promptly responding to the cue. Schore and Schore (2008) view this affective synchrony, which creates positive emotional experiences and regulates negative emotional experiences, as the foundation of the attachment

relationship and central to the development of emotional regulation. Namely, although their caregiver at first regulates the infant's emotions, this supports the infant's neurobiological development and provides the infant with the capacity to increasingly self-regulate their emotional experiences (Schore & Schore, 2008).

Early attachment relationships play a significant role in the organization of the right brain, which is viewed as playing a central role in human unconscious processes and emotions (Schore, 2003a). The "hard-wiring" of the infant's limbic circuits in their right brain is affected by the emotional exchanges that are part of the infant's attachment relationship with their primary caregiver (Schore & Schore, 2008). The development of mental health is viewed as being intertwined with the development of the right brain and emotional regulation abilities (Schore, 2001). During subsequent phases of development, securely attached individuals develop a greater capacity to deal with interpersonal and internal stressors. They have the ability to regulate when they experience periods of stress and uncertainty, which permits further experience-dependent development of the right brain. This dynamic developmental process is imperative for ideal development (Schore, 2001).

When children have experienced traumatic attachment relationships, this leads to enduring deviations in the development of the right brain (Schore, 2002). Cumulative traumatic experiences and the defense mechanisms (e.g., hyperarousal and disassociation) employed against these experiences become imprinted into the developing structure of the brain, which then turn into lasting personality traits (Schore, 2002). This dysregulation can lead to mental health issues when extremely stressful life events are encountered (Schore, 2002). In summary, attachment is an integral component of development.

Measurement of Attachment

Mary Ainsworth was a notable researcher in the field of attachment who worked for a period of time as a part of John Bowlby's research team (Inge, 1992). After leaving Bowlby's research team, she conducted observational research on the development of attachment relationships in Uganda (Inge, 1992). Based on this research, she and her colleagues developed the first measurement tool to address the quality of the attachment relationship between an infant and their primary caregiver. This measure was called the Strange Situation Paradigm (SSP), and is used to derive categorical attachment classifications for infants 12 to 20 months of age (Ainsworth et al., 1978).

The Strange Situation Paradigm (SSP). The SSP involves eight episodes that are designed to gradually invoke more stress as the infant moves through the paradigm. The room set up includes two chairs and a variety of toys. In Episode 1 the experimenter brings the caregiver and infant to a room with toys and the caregiver is given directions. Episode 1 lasts approximately 30 seconds and the remainder of the episodes last approximately 3 minutes each.

In Episode 2, the caregiver and infant are left alone in the room, and the caregiver puts their infant down, facing the toys in the room and then proceeds to sit down in a chair and read or pretend to read. Typically, infants will explore the room and toys. The caregiver is not to initiate interaction, but if their infant initiates interaction, the caregiver is instructed to respond in the manner that they see fitting. If the infant does not engage with the toys in the first two minutes, the caregiver is prompted by a knock on the wall to engage the infant with the toys. For this episode, the infant's exploration and orientation towards their caregiver are assessed.

In Episode 3, a stranger enters the room, greets the infant and the caregiver and then sits down. After a minute, the stranger begins a conversation with the caregiver, then at the end of the second minute the stranger begins interacting with the infant. At the end of the third minute,

the caregiver leaves the room. In Episode 3, the attention the infant pays to the stranger relative to the attention they pay their caregiver and how the infant reacts to the stranger's interactions with them is assessed.

For Episode 4, the caregiver leaves the infant and stranger alone in the room. After the caregiver leaves the room, the stranger reduces their interaction with the infant so that the infant has the opportunity to notice that their caregiver has left the room. If the infant returns to exploring the room, the stranger resumes sitting in their chair and only interacts with the infant if the infant initiates interaction. If the infant begins to cry during this episode, the stranger will try to calm the infant. If the stranger is able to soothe the infant, they will then try to reengage the infant in exploring the toys. If the infant continues to be distressed and is not responding to the stranger's efforts to calm them, the episode may be terminated early. In this episode, the coder is interested in how much the infant explores the room relative to when they were alone with their caregiver, the infant's response to their caregiver's departure, and their response to the stranger.

In Episode 5, the caregiver returns to the room and the stranger leaves. The caregiver is instructed to make their infant comfortable and when their infant is settled to reengage them with the toys. After three minutes, or when the infant has settled enough to participate in Episode 6, the caregiver tells their infant goodbye and leaves the room. In this episode, the coder is concerned with the infant's response to, and interaction with, their caregiver after they return.

Episode 6 begins after the caregiver leaves the room. The infant is left to explore the room for three minutes on their own. If the infant becomes overly distressed, the episode is shortened. In this episode, the coder is concerned with observing the infant's exploration while on their own and any reactions to their caregiver's absence (e.g., crying, searching, etc.).

In Episode 7, the stranger approaches the door and speaks loudly enough so that the infant can hear their voice, and then they pause for a moment before entering the room. If the infant is crying the stranger will attempt to soothe the infant and when the infant has settled they will try to reengage the infant with the toys and will eventually return to sit in their chair. If the infant is not distressed when the stranger enters the room, the stranger will invite the infant to approach them, if the infant does not approach the stranger, the stranger will approach the infant and will attempt to engage the infant in play. If the infant begins to play with the toys on their own, the stranger will sit in their chair and only interact with the infant if the infant initiates interaction. For this episode, the coder is interested in the infant's responses to the stranger (if they are easily soothed, if they accept contact with the stranger, and if they interact with the stranger in play), and how their response to the stranger compares to their response with their reunion with their caregiver. As well, whether or not the infant becomes engaged with the toys and the stranger is able to return to their chair is assessed.

In Episode 8 the caregiver returns to the room. The caregiver gives their infant an opportunity to react to their return before greeting them. The stranger leaves the room.

The coding of the SSP involves recording the frequency of six behaviours: exploratory locomotion (body movement with the purpose of exploring toys or the environment), exploratory manipulation (hand movements that are exploring toys or the environment), visual exploration (visual exploration of toys or the environment), visual orientation (proportion of time spent looking at caregiver, stranger, and physical environment), crying, smiling, and vocalizations.

Ainsworth and colleagues (1978) also developed six, 7-point scales for scoring interactive behaviour. The *Proximity and Contact Seeking* scale assesses the degree to which the infant seeks physical contact and proximity to another person and ranges from no effort to very

active effort, and initiative to achieve physical contact. The *Contact Maintaining* scale evaluates the infant's effort to maintain physical contact and proximity with a person once initial contact is achieved. On this scale, an infant who scores high will resist and attempt to cling to their caregiver when the caregiver tries to put them down or will signal they want to be picked-up immediately after being put down. The *Resistance* scale measures the extent that the infant demonstrates resistant behaviours, which include pushing an adult away, squirming to get away from an adult, rejecting toys which an adult uses as a medium to interact with the infant, and an angry emotional tone with an adult. On this scale, the infants who score higher have an outwardly angry emotional tone, whereas lower scores indicate an overt neutral tone. It should also be noted that resistance is not incompatible with proximity seeking or contact maintaining but is indicative of ambivalence. On the *Avoidance* scale, infants who score high persistently ignore their caregiver, including in situations where infants would typically seek contact, such as when reuniting with their primary caregiver after the separation episode. If infants greet their caregiver but intermingle the greeting behaviour with avoidance behaviour (e.g., looking away or turning away), they would score lower on the scale. The *Search* scale assesses the extent to which the infant searches for their caregiver when separated from them, as search behaviour and crying are two classes of attachment behaviour that may be activated during separation from a primary attachment figure. Infants who score high on this scale will actively search for their caregiver by going to the door; infants who score lower on this scale may look at the door or look at or approach the chair that their caregiver was sitting in. Finally, the *Distance Interaction* scale assesses the extent to which the infant tries to interact with their caregiver from a distance. These behaviours include smiling at their caregiver, talking or babbling to their caregiver, showing their caregiver a toy, or offering a toy to their caregiver.

Based on infants' patterns of behaviour, Ainsworth et al. (1978) created three different attachment classifications: secure, insecure-avoidant, and insecure-ambivalent (or insecure-resistant). Infants with a *secure* (type B) attachment classification seek interaction, proximity, and to maintain contact with their caregiver, especially after being reunited with their caregiver. When the infant and caregiver are reunited, the infant's greeting is more than just a casual greeting; it will include smiling, crying, or approaching their caregiver. Infants classified as secure have minimal or no resistance to contact or interaction with their caregiver. These infants may show distress when separated from their caregiver; however, this distress is related to the absence of the caregiver and not merely being left alone. Securely attached infants may be comforted to some extent by the stranger, but still show a preference for their caregiver.

Infants with an *insecure-avoidant* (type A) attachment classification tend to ignore their caregiver when they return, and if they do greet them, it tends to be mixed with avoidant behaviours (e.g., avoiding eye contact, turning away, or moving past). These infants rarely seek proximity or contact with their caregiver but will not actively resist their caregiver picking them up and do not cling or resist when their caregiver releases them. These infants tend to show minimal to no distress when they are separated from their caregiver and interact with the stranger similar to how they interact with their caregiver, with perhaps less avoidance. When infants with an insecure-avoidant attachment classification do exhibit distress, this is typically due to being left alone and not the absence of their caregiver.

Infants with an *insecure-ambivalent* (type C) pattern of attachment tend to demonstrate either more passivity or more anger than infants that have a secure or insecure-avoidant attachment classification. When separated from their caregiver they tend to become extremely distressed and when their caregiver returns they will approach their caregiver but resist contact.

Infants with an insecure-ambivalent pattern of attachment have the tendency to exhibit more maladaptive behaviours during the SSP; that is, they may show excessive anger in a given situation.

After approximately a decade of research on the SSP, Main and Solomon (1990) reviewed the body of literature and reached several conclusions. First, they noticed that there were infants who were unclassifiable within the traditional *A, B, and C* categories in both low-risk and high-risk samples. Second, when these unclassifiable infants were forced into the *A, B, and C* categories, many were classified as secure (B), despite observations of their behaviour in the SSP, observations of their behaviour in other situations, and/or knowledge of the infants' parenting experiences indicating that the infant was insecurely attached. Thus, the forced classification of unclassifiable infants likely affected the clarity of results, even when considering low-risk samples. Finally, they identified the need to have a standardized procedure for classifying these infants who had previously been termed "unclassifiable" into one or more categories.

In response to these concerns, Main and Solomon developed a fourth category of attachment classification, the *disorganized* (type D) pattern of attachment (1986). They observed that infants that did not fit into the traditional *A, B, and C* categories did not resemble each other in a clear and organized way, like the other categories. These infants, instead displayed behaviours that seemed devoid of an observable goal. Thus, the term disorganized was selected to describe this classification of infants.

Infants with disorganized attachment behave inconsistently and often appear disoriented, confused, or fearful upon reunification with their primary caregiver (Main & Solomon, 1986). Main and Solomon (1990) delineated categories of behaviour that are indicators of disorganized

attachment: different ordering of behaviours temporally than what is typically expected in infants, displaying contradictory behaviours, incomplete or undirected movements or expressions, a direct indication of confusion or apprehension, and behavioural stilling (appearing dazed; still body, unfocused stare, and limp mouth). Within each class of behaviour, they outlined "very strong" indicators of disorganization, where if one of these behaviours are displayed the infant should be immediately considered for the disorganized attachment classification. Examples of "very strong" indicators include: infant crying when the stranger leaves the room and attempts to follow them; the infant appearing calm during both separations from their caregiver, but when their caregiver returns they are focused on their caregiver and appear very distressed or angry; while the infant seems to be in a good mood, they strike, push, or pull against their caregiver's face; and the infant freezing for 20 seconds or more with a dazed expression.

If the infant displays a less strong indicator of disorganization, then the coder needs to consider the extent and severity of the behaviour (Main & Solomon, 1990). Less strong indicators include: while the infant appears angry or distressed they suddenly become emotionless; while being held by their caregiver, the infant shows avoidance of their caregiver (e.g., sits comfortably on lap while looking away for an extended period of time); failure of the infant to move towards their caregiver when clearly frightened and are not prevented by any obstacles; and offering objects to their caregiver in a tense manner at an unusual distance. To aid in the classification of the disorganized infants, Main and Solomon (1990) developed a 9-point scale, similar to the scales developed by Ainsworth et al. (1978). If the infant is scored above a 5, this indicates that they qualify for the disorganized attachment classification. When reporting the disorganized classification, researchers sometimes combine the unclassifiable infants with the

infants with the disorganized classification (e.g., Huth-Bocks, Theran, Levendosky, & Bogat, 2011; Lionetti, 2014; McMahon, Barnett, Kowalenko, & Tennant, 2006).

Attachment classifications are often discussed in terms of whether they are organized or disorganized, with organized encompassing the secure, avoidant, and ambivalent patterns of attachment. Within the organized categories, the infants' behavior resembles each other, and their behavior is organized in a way that is coherent (Main & Solomon, 1986). For secure infants, their attachment behavior is organized around using their caregiver as a secure base. Whereas with avoidant infants, they are focused more on exploration than their caregiver and ambivalent infants' strategy is extreme dependence upon their caregiver (Main & Solomon, 1986). Disorganized infants do not demonstrate this consistent overarching pattern of behavior with their caregiver.

Coder training and reliability. There is official training available in the SSP coding and procedures through the Institute of Child Development at the University of Minnesota. The first week of training focuses on the ABC categories and the second week of training focuses on the disorganized classification from the SSP (Strange Situation Training, 2018). After completion of the training, participants in the training are able to pursue certification through the Institute of Child Development. Training in all four attachment classifications costs $1,200USD. It may also require travel if the training is not being held locally, which adds further expense and time. Although training is likely important for learning to code the SSP, there is currently large variability with the level of training coders have received. For example, some studies used coders trained by other researchers experienced in coding (e.g., Ahnert, Lamb, & Seltenheim, 2000; Vondra, Shaw, Swearingen, Cohen, & Owens, 2001), some studies included only a portion of coders who received the official training (e.g., McFarland-Piazza, Hazen, Jacobvitz, & Boyd-

Soisson, 2012; Ward, Lee, & Lipper, 2000), and in some studies researchers coded the SSP with consultation from experienced coders (e.g., Edwards, das Eiden, & Leonard, 2004). Further, there is currently no empirical justification for the necessity of this intensity of training that is offered by the official training to be able to classify infants in the SSP accurately.

There are notable differences across studies in terms of coding reliability coefficients, even when the coders have received the official training or are experienced experts in the field. Studies report Cohen's Kappa coefficient for 4-way classification reliability as low as .49 (percent agreement = 68%; Higley & Dozier, 2009), while others obtain much higher agreement (e.g., Cohen's Kappa = .93; Jin, Jacobvitz, Hazen, & Jung, 2012). To date, there has been no empirical investigation into the impact of interrater reliability on the rates of attachment classifications in the SSP.

Validity of the SSP. With regard to the validity of the SSP, multiple discriminant function analysis had been used to predict the classification of infants and was able to correctly predict the classifications of 92% of the infants with variables from the Strange Situation (Ainsworth et al., 1978). This demonstrates that the infants were classified consistent with the criteria outlined. The dyadic behaviours the infants and their primary caregiver exhibited at home differentiated between classifications in the SSP (Ainsworth et al., 1978). Moreover, in terms of convergent validity, the SSP classification of secure attachment was found to be related to maternal sensitivity (r = .24), consistent with expectations as maternal sensitive responsiveness is a theorized antecedent of attachment security (de Wolff & van Ijzendoorn, 1997). That said, this relationship is weaker than would conceptually be anticipated. Fearon and Belsky (2016) hypothesized that this might be due to a measurement gap; that is, the quality of the measurement of maternal sensitivity, as well as measurement error may play a role.

Other measures of attachment. Since the development of the SSP, there have been numerous other measures of attachment that have been developed for use across the lifespan. The original SSP was designed to be used with children 12 to 20 months of age. Other measures have been developed for older age groups that use a modified SSP. For example, Cassidy, Marvin, and the MacArthur Attachment Working Group (1992) developed a preschool classification system for children 2½ to 4½-years-old, Main and Cassidy (1988) developed a classification system for children in kindergarten, and Crittenden (1992) developed the Preschool Assessment of Attachment.

The classifications from these modified SSP procedures produce classifications that are to a varying extent similar to the SSP classifications developed by Ainsworth and her colleagues (1978). Both Cassidy and colleagues' (1992) preschool system and Main and Cassidy's kindergarten classification system have categories for secure, avoidant, and ambivalent attachment. Cassidy et al. (1992) also have a controlling/disorganized category and an insecure/other category, and Main and Cassidy's (1988) classification system has a controlling category, which corresponds to the disorganized category, as well as an unclassifiable category. Crittenden's (1992) Preschool Assessment of Attachment has six categories: secure/balances, defended (most closely corresponds to the avoidant category), coercive (most closely corresponds to the ambivalent category), defended/coercive (child exhibits both types of behaviour), anxious/depressed, and insecure/other.

The Attachment Q-Sort (AQS; Waters, 1995) is a continuous measure of attachment security that is used for infants and preschoolers. It is composed of 90 statements that describe the child-caregiver relationship. The statements are sorted based on how well they describe the child-caregiver dyad. A caregiver or an observer can complete the AQS. The security score of

the observer AQS has good convergent validity with the SSP (r = .31) and disorganized attachment classification from the SSP is associated with extremely low AQS scores (r = .35) (van Ijzendoorn, Vereijken, Bakermans-Kranenburg, & Riksen-Walraven, 2004).

A standard measure of attachment that is used in adults and adolescents is the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985; Main & Goldwyn, 1984; Main, Kaplan, & Cassidy, 1985). The AAI is a semi-structured interview and is well-validated and widely used in research (Hesse, 2016). The AAI measures attachment representations by inquiring about an adult's childhood attachment relationships and their current relationships with their parents. The coding of the AAI is based on the content and quality of the discourse, with particular attention paid to coherence.

Like the SSP, the AAI also has four attachment classifications, which correspond to the attachment classifications from the SSP. The *secure* classification from the SSP corresponds to the *autonomous* classification from the AAI. Adults with an autonomous classification tend to value their relationships with their attachment figures, are able to coherently describe attachment experiences, and view their experiences as important to their current identity. The *insecure-avoidant* classification from the SSP corresponds to the *dismissing* classification from the AAI. Adults with this classification minimize negative aspects of their attachment relationships and often idealize childhood experiences or provide positive descriptions that are contradictory. The *insecure-ambivalent* classification in the SSP corresponds to the *preoccupied* classification from the AAI. These adults tend to be preoccupied with their past attachment experiences and tend to have incoherent discourse about these experiences. The *disorganized attachment* classification corresponds to the *unresolved* classification in the AAI, which is used when there are indications

of unresolved trauma. The SSP and the AAI are the two most well-validated measures of attachment (O'Connor & Byrne, 2007).

When measured across time, attachment is typically relatively stable over timespans of a few years (Pinquart, Feussner, & Ahnert, 2013). There are factors that impact the likelihood of stability; for example, insecurely attached children who are also at-risk are more likely to remain insecurely attached across time (Pinquart et al., 2013).

Rates of Attachment Classifications

When considering the typical rates of attachment classifications, Ainsworth et al. (1978) found that distribution of attachment classifications in a standard American sample was 70% secure (B), 20% insecure-avoidant (A), and 10% insecure-ambivalent (C). The SSP and other measures of attachment have been widely studied since this time. This has led researchers to summarize the findings of numerous studies in order to gain a greater understanding of overall prevalence rates and the variation of prevalence rates across risk factors, cultures, and other demographic variables. One of the earliest examples of this summarization was completed by van Ijzendoorn and Kroonenberg (1988). They conducted a meta-analysis on 32 samples of the A, B, and C attachment classifications from the SSP. They found that 65% of the infants had a secure attachment classification (B), 21% had an insecure-avoidant pattern of attachment (A), and 14% had an insecure-ambivalent pattern of attachment. They also found significant cross-cultural and intracultural differences, such as a greater rate of avoidant attachment in Western European countries compared to Israel and Japan.

Another meta-analysis was conducted by van Ijzendoorn et al. (1999) to investigate the prevalence of disorganized attachment in infants and young children assessed by a variety of measures including: Main and Solomon's (1990) procedures, Crittenden's (1992) procedures for

the A/C attachment classification from the Preschool Assessment of Attachment, and the controlling attachment classification (Cassidy et al., 1992; Main & Cassidy; 1988, Main et al., 1985). They found that middle class, nonclinical groups in North America had the following distribution of classifications: 62% secure (B), 15% avoidant (A), 9% ambivalent (C), and 15% disorganized (D). For other cultural groups, they found similar rates of disorganized attachment, higher rates of avoidant attachment, and lower rates of secure attachment in non-Western samples. The meta-analysis also examined whether several other variables affected the distribution of attachment classifications including: child age, socioeconomic status, child risk factors (prematurity, physical problems, neurological problems), and maternal risk factors (maltreatment, adolescent mothers, drug/alcohol abuse, depression). All of these factors, except child physical problems, were found to significantly affect the distribution. The authors also noted that there was too little data to assess the underlying classifications of children with a disorganized attachment classification.

More recent meta-analyses on the SSP have primarily focused on specific populations, developmental outcomes, or intervention effects (e.g., Cyr, Euser, Bakermans-Kranenburg, & Van Ijzendoorn, 2010; Groh, Fearon, van Ijzendoorn, Bakermans-Kranenburg, & Roisman, 2017). There has yet to be a study that has summarized the more recent literature on the overall rates of attachment classifications using the SSP.

A recent review was conducted on AAI classifications. The overall distribution was found to be: 50% autonomous, 24% dismissing, 9% preoccupied, and 16% unresolved (Bakermans-Kranenburg & van Ijzendoorn, 2009). Bakermans-Kranenburg and van Ijzendoorn (2009) found that clinical populations have a larger proportion of insecure and unresolved classifications than North American non-clinical samples. They did not find a significant

difference when non-English speaking countries (e.g., Dutch, Italian, and German) and the samples from Israel/Japan were compared to the North American normative sample; however, these analyses were limited by the small sample size.

Precursors of Secure Attachment

The precursors of secure attachment have been studied in depth over the past few decades. Caregiver sensitive responsiveness is one of the most well studied variables and is one of the central hypotheses of attachment theory. Sensitive responsiveness is the ability of caregivers to detect their child's attachment cues, accurately interpret these cues, and provide a timely and appropriate response (Ainsworth, Bell, & Stayton, 1974). Research has consistently found a link between various facets of maternal sensitive responsiveness (e.g., responding to distress, appropriate stimulation, warmth, involvement, and supporting developmentally appropriate autonomy) and mother-infant attachment across middle class and at-risk samples (e.g., Bernier, Matte-Gagne, Belanger, & Whipple, 2014; Kochanska, Aksan, & Carlson, 2005; NICHD, 1997). Conversely, the avoidant pattern of attachment is associated with intrusive, over stimulating, and controlling caregiver behaviours and the ambivalent pattern of attachment is associated with low responsiveness and uninvolved caregiving (e.g., Belsky et al., 1984; Harel & Scher, 2003; Lewis & Fiering, 1989; Vondra, Shaw, & Kevinides, 1995). When considering the literature on the relationship between caregiver sensitivity and infant-caregiver attachment, the size of the effect is typically modest, and smaller than what experts in the field hypothesized (Fearon & Belsky, 2016).

Another hypothesis that is central to attachment theory is the impact of early attachment experiences on later socioemotional functioning, including parenting (Main et al., 1985). The caregiver's own attachment (their mental representations of their childhood attachment

experiences) impacts the child-caregiver attachment relationship (van Ijzendoorn & Bakermans-Kranenburg, 2019). Caregivers' mental representations are most typically assessed through the Adult Attachment Interview (George et al., 1985; Main & Goldwyn, 1984; Main et al., 1985). The focus within this tool is the coherence of the caregivers' narrative of their attachment experiences, as opposed to the actual events (Main et al., 1985).

The intergenerational transmission of attachment model was derived through combining these two central hypotheses (van Ijzendoorn & Bakermans-Kranenburg, 2019). The coherence of a caregiver's narrative of their attachment experiences is predictive of their child's attachment behaviours; 75% of infants' attachment classification using the SSP corresponds to their caregivers' attachment classification using the AAI (van Ijzendoorn, 1995). Caregivers with a coherent narrative tend to have an infant that balances exploration and proximity. Caregivers that dismiss the impact of negative attachment experiences have children that tend to reduce their use of attachment behaviours, and caregivers with a preoccupied or resentful narrative of their attachment experiences tend to have children that overemphasize proximity-seeking attachment behaviours at the expense of exploration (van Ijzendoorn & Bakermans-Kranenburg, 2019).

Caregiver sensitive responsiveness is posited to mediate the relationship between caregivers' attachment representation and their attachment relationship with their child. There tend to be distinct patterns of caregiving that are associated with caregiver attachment; preoccupied caregivers tend to display low sensitivity to more subtle cues from their child, but will display high sensitivity to more intense cues from their child (van Ijzendoorn & Bakermans-Kranenburg, 2019). Dismissing caregivers tend to respond sensitively in low stress conditions, whereas when their child displays signs of distress they tend to disengage and display low sensitivity.

The transmission gap refers to the gap between what can and cannot be explained in the transmission of attachment from caregiver to child and has been studied for almost three decades (Belsky, 2002; van Ijzendoorn, 1995; van Ijzendoorn & Bakermans-Kranenburg, 2019). There is a large body of evidence confirming the high rates of concordance between caregiver and child attachment, and the effect of caregiver sensitive responsiveness on child attachment (Bakermans-Kranenburg & van Ijzendoorn, 2003; van Ijzendoorn, 1995). Despite these robust findings, the relationship between parent and child attachment is only partially mediated by caregiver sensitive responsiveness. The most recent meta-analytic data found that approximately 50% of the association between parent and child attachment remains unexplained by caregiver sensitive responsiveness (Verhage et al., 2016).

There are circumstances under which the relationship between the caregivers' attachment and children's attachment is stronger and those where it is weaker. For instance, with adolescent mothers, the association between maternal attachment and child attachment is negligible. It appears that other factors, such as involved grandparents, may be more impactful than the intergenerational transmission model in this situation (Benoit & Parker, 1994). van Ijzendoorn and Bakermans-Kranenburg (2019) have suggested areas of research that may help to further reduce the transmission gap; these areas include examining caregiver representations that are more proximal to their caregiving (e.g., their mental representations of their child's feelings), expanding to attachment relevant parenting behaviours beyond sensitive responsiveness (e.g., autonomy support, limit-setting, and repair of mismatches), and using several samples over time of child attachment (van Ijzendoorn & Bakermans-Kranenburg, 2019).

Another factor that likely plays a role in the transmission gap is the differential susceptibility hypothesis. That is, there are some children who are more susceptible to

environmental factors (including parenting), regardless of whether the impact is negative or positive. This differential susceptibility may be due to either temperamental or genetic factors (Belsky, 2013). Negative emotionality has been frequently studied as a risk factor, but newer research has also found that children that score high in this trait also benefit more from supportive and sensitive parenting (e.g., Bakermans-Kranenbrug & van Ijzendoorn, 2011). The body of literature on the genetics of attachment has highlighted the interaction between the DRD4 7-repeat polymorphism and both favourable and unfavourable environmental factors in the development of disorganized attachment (Bakermans-Kranenburg & van Ijzendoorn, 2007). The findings from this body of research are consistent with both the differential susceptibility and genetic vulnerability hypothesis (Bakermans-Kranenburg & van Ijzendoorn, 2007).

Risk and Attachment in Infancy

There are a variety of factors that have been found to put children at risk of developing an insecure or disorganized pattern of attachment. When caregivers have mental health issues, such as depression or alcohol abuse, their child is more likely to develop an insecure or disorganized pattern of attachment (Edwards et al., 2004; das Eiden, Edwards, & Leonard, 2002; Toth, Rogosch, Sturge-Apple, & Cicchetti, 2009). Moreover, poor quality caregiving, such as insensitive caregiving (Belsky & Fearon, 2002), and especially child maltreatment have been linked to insecure and disorganized patterns of attachment (Cyr et al., 2010). As well, separation from their caregiver, for example, due to maternal incarceration, has been linked to insecure and disorganized attachment (Poehlmann, 2005). Child risk factors, such as premature birth and other high-risk perinatal medical problems have also been found to impact attachment security (Udry-Jorgensen et al., 2011). A variety of demographic variables have been found to be associated

with insecure and disorganized patterns of attachment, including: low income, young maternal age, ethnic minority, low education, and single motherhood (Cyr et al., 2010).

When considering the risk of developing an insecure or disorganized pattern of attachment in infancy, two primary theoretical models have been put forth. First, there is the sensitive period hypothesis, which postulates greater susceptibility to environmental and contextual factors at certain times throughout child development (Fraley & Heffernan, 2013). With respect to attachment, the first year is considered a critical period (Hazen, Allen, Christopher, Umemura, & Jacobvitz, 2015). There have been mixed findings in this area. This theoretical model has been applied to early experiences of extensive non-maternal care (father, other relative, in home nonrelative, child care home, and child care centre). The findings from one of the largest longitudinal studies on attachment, the NICHD study of Early Child Care and Youth Development, found no direct effect of non-maternal care on attachment, but there was a significant interaction between greater hours of non-maternal care and low maternal sensitivity that was predictive of higher rates of infant-mother attachment insecurity (NICHD Early Child Care Research Network, 1997). More recent findings suggested a sensitive period of 6 to 8 months of age where extensive non-maternal care (over 60 hours per week) predicted attachment disorganization (Hazen et al., 2015). In studies on parental divorce, divorce occurring earlier in a child's life (first few years) was a much stronger predictor of insecure relationships with parents in adulthood than divorce occurring later in development (Fraley & Heffernan, 2013). Longitudinally, there is growing evidence that changes in quality of caregiving, maternal sensitivity, in particular, can shift patterns of attachment over time (Booth-LaForce et al., 2014; Moss, Cyr, Bureau, Tarabulsy, & Dubois-Comtois, 2005).

The second model that has examined the risk for insecure or disorganized attachment is the cumulative risk theoretical model, which postulates that the more risk factors that are present, the greater the likelihood of adverse developmental outcomes. This is a well-validated model across a variety of outcomes and includes the early research of the Adverse Childhood Experiences (ACE) Study on the cumulative impact of experiences of abuse and family dysfunction in childhood on health outcomes in adulthood (Feletti et al., 1998). Research has established the need to consider both risk and protective factors (Fearon & Belsky, 2016). As risk factors accumulate, and there is a lack of protective factors to counteract the risk factors, the likelihood of adverse developmental outcomes, including insecure and disorganized attachment, increases. Attachment research has provided substantial evidence to support this model. For instance, meta-analytic findings have demonstrated that children with five socioeconomic risk factors have comparable rates of disorganized attachment to maltreated samples (Cyr et al., 2010). Quality of caregiving appears to be an important mediator of cumulative experiences of adversity, in particular, maternal sensitivity (Fearon & Belsky, 2016; Calendria, Teti, & Black, 2011). Moreover, early attachment is frequently used to predict developmental outcomes in conjunction with cumulative risk (e.g., Belsky & Fearon, 2002; Fearon & Belsky, 2011).

The sequelae of insecure and disorganized attachment have been well studied. Avoidant and disorganized patterns of attachment have been found to be significantly associated with the development of externalizing behaviour problems; avoidant attachment has been found to predict externalizing behaviour problems independently from environmental risk, and disorganized attachment has been found to interact with environmental risk in predicting externalizing behaviour problems (Fearon & Belsky, 2011). Attachment has also been found to be significantly associated with social-emotional competence (e.g., peer relationships), and to a

lesser extent, internalizing behaviour problems (Groh et al., 2017). The consensus by experts in the field of early childhood attachment is that disorganized attachment is best thought of as a risk factor for later negative developmental outcomes and is one of many contributing factors to children's developmental trajectories (Granqvist et al., 2017).

Attachment and Culture

Another area that has been hypothesized to impact attachment classifications is culture (Quinn & Mageo, 2013). The universality hypothesis posits that the tenets of attachment theory are universal and applicable to all cultures (Mesman, van Ijzendoorn, & Sagi-Schwartz, 2016). The cross-cultural research on attachment remains sparse, however, and there are many countries that have yet to be touched by attachment research. The overall findings in this area suggest that attachment is universal, secure attachment is the norm, quality of caregiving is linked to attachment security, and attachment security is linked to greater competency.

Defining and measuring attachment constructs is an area where there has been debate about the presence of cultural biases. Bowlby's work has been criticized for neglecting the social environment of the infant beyond their mother (Otto & Keller, 2014). Research that demonstrates variability in attachment and the development of attachment across varying childrearing environments has not been well incorporated into attachment theory (Otto & Keller, 2014). Bowlby's theory emphasized the importance of autonomy, yet this may not be a value that other cultures share and foster in children to the same extent. Other cultural differences include the degree to which children display emotions and the acceptability of children displaying emotions to adults (Otto & Keller, 2014). This is of particular concern as infant signaling to caregivers through their emotional distress is a key part of Bowlby's theory and later conceptualizations of attachment. In sum, although attachment may be a universal phenomenon, attachment may not

appear the same or have the same developmental trajectory in different cultures. Attachment may be best thought of as a biological process that is shaped by the cultural context (Otto & Keller, 2014).

When considering the cultural validity of the SSP specifically, concerns have been raised that the SSP is based primarily on research conducted in Western and Western-influenced societies with the middle-class (Quinn & Mageo, 2013). There may be patterns of child-caring specific to certain cultures that affect the frequency infants are separated from their primary caregiver and the duration of these separations, which would then likely influence the infants' response to separation and reunion and thus the outcome of the SSP (LeVine & Miller, 1990). If a child rarely experiences separation from their primary caregiver, it would be expected that they would show more than mild distress in reaction to the separation episodes in the SSP. Additionally, attachment research has focused on mother-child dyads, but outside of middle-class Western culture patterns of caregiving differ; shared caregiving and multiple attachment relationships are more frequent (Howes & Spieker, 2008; van Ijzendoorn & Sagi-Schwartz, 2008). These caregiving differences are not accounted for in the SSP, although a "network" approach has been advocated for (van Ijzendoorn & Sagi-Schwartz, 2008). This may in part be due to difficulty with determining the key members of a child's social network and the extent of their interactions with non-maternal caregivers (Meehan & Hawks, 2013). For example, there are cultures where caregiving is a shared responsibility of the community. The Hadza are a hunting and gathering culture in Tanzania, where infants are primarily cared for by their mother until around the age of 2 years when they are weaned. At this age, they are too heavy to be carried by their mother all day and too young to walk to participate in gathering activities, so they are left in camp, typically under the supervision of either a grandparent or an older juvenile caregiver

(Crittenden & Marlowe, 2013). In these communities, as the mother begins weaning her child and leaving them to be cared for by others in the community, the amount of time mothers spend holding their infant decreases and the amount of time the other caregivers in the community spend holding the child increases (Crittenden & Marlowe, 2013). This permits the mother to be free to perform other duties.

Meehan and Hawks (2013) attempted to implement the SSP with the Aka, foragers in the Central African Republic. However, the children in this community are often cared for by non-maternal caregivers, and while trying to implement the SSP, there were usually a range of other caregivers nearby. When their mother left, the children tended not to display strong reactions to being separated from their mother; instead, they would often move towards or signal to another caregiver. Meehan and Hawks' (2013) findings indicated that children with sensitive non-maternal caregivers showed the least distress when separated from their mother. In this population, they found that children displayed attachment behaviours to an average of six caregivers and that the caregivers almost always responded to the children's cues. Moreover, both maternal and non-maternal caregivers were successful at soothing children when they were distressed.

Another example of cultural differences in attachment behaviours comes from Korea. Korean mothers have been found to have a greater tendency to urge their infant to remain close to them, and after the separation from their infant, they will quickly approach their infant to soothe them and stay close for a while after their infant is calm (Jin et al., 2012). Korean infants are less likely to seek proximity when distressed compared to North American infants, which may be due to their mothers' quick responding. The Korean infants may have developed the expectation that their mother will come to them to soothe them (Jin et al., 2012). These

differences in behaviours may impact the proximity and contact seeking scale developed by Ainsworth et al. (1978), which is then used to obtain the categorical attachment classifications from the SSP.

Although secure attachment is the norm across cultures, cross-cultural research on the SSP has found differences in the distribution of insecure attachment classifications. For example, in a sample of 87 Korean infant-mother dyads, only one infant was classified as having an insecure-avoidant pattern of attachment (Jin et al., 2012). In a Chinese sample of infant-mother dyads, there were significantly more infants classified as insecure-ambivalent than in a North American sample (Archer et al., 2015). Developing countries also face more adversity, such as poverty, that may impact the rate of attachment security. For example, in Indonesia, the rate of secure attachment has been found to be 52.2% (Zevalkini, Risken-Walraven, & van Lieshout, 1999), which is lower than the 62% secure found by van Ijzendoorn et al. (1999). However, this pattern is not consistent across developing countries. In a sample of Black South African mother-infant dyads who were living in poverty, the rate of secure attachment was found to be 61.9% for the four-way ABCD attachment classification (Tomlinson, Cooper, & Murray, 2005), which is consistent with the meta-analytic findings of van Ijzendoorn et al. (1999).

If the SSP is considered the gold-standard measurement for infant attachment, it is essential to understand the cultural biases that may be inherent in the measurement of attachment. Biases have the potential to lead to pathologizing variations in attachment patterns if they do not conform to Western norms (Levine & Norman, 2001). Thus, it is important to understand how attachment classifications vary across cultures as differences may be a result of biases in measurement. If differences are identified, there may be a need for investigating how

the cultural context contributes to the development of attachment and refining our measurement of attachment with culturally diverse populations.

Another variable linked to culture that needs to be considered is the state of the economy of a country. There are disparities in the developmental trajectories of disadvantaged children growing up in developing countries due to multiple risks (Grantham-McGregor et al., 2007). A few of these risks are also risk factors for insecure and disorganized attachment, including deficient social-emotional stimulation and maternal depression (Cyr et al., 2010; Toth et al., 2009; Walker et al., 2007). Further, people in developing countries have less access to social services to help mediate that impact of these adverse life experiences (Peters et al., 2008). Given this, a country's economy may moderate the rate of attachment classifications in the SSP.

Meta-Analysis

Meta-analysis is a useful method to quantitatively summarize a body of research and was used here to assess the cross-cultural and demographic variability of the distribution of attachment classifications. The systematic process of meta-analysis helps to reduce the effect of author bias on the results, which can be more difficult to control in narrative reviews (Borenstein, Hedges, Higgins, & Rothstein, 2009). It should be noted, however, that researchers' decisions can bias systematic reviews (e.g., how the inclusion criteria are set); however, with clear inclusion and exclusion criteria, search strategies, and coding, these biases are more transparent than in narrative reviews. Meta-analysis also enables analyses to be conducted that assess which variables impact the effect size. When there is a large body of literature, it is difficult to draw overall conclusions without systematically and quantitatively summarizing the data. This becomes particularly important when there are discrepancies or variations in findings in a given body of literature. A recent advancement in meta-analysis statistics, meta-regression

analyses, permit continuous variables to be analyzed continuously instead of being transformed into arbitrary categories to assess whether they affect the effect size (Borenstein et al., 2009).

When considering the previous meta-analyses on the SSP and attachment classifications, there are several gaps that still exist. Given the length of time since the previous meta-analyses on the rate of child attachment patterns (van Ijzendoorn & Kroonenberg, 1988; van Ijzendoorn et al., 1999), there has been considerable development not only in meta-analytic methodology but also in the body of literature on the SSP, which has grown exponentially. Thus, the purpose of the present study was to conduct a series of meta-analyses on the rates of attachment classifications from the infant SSP. This was also the first meta-analysis to focus exclusively on the infant version of the SSP (Ainsworth et al., 1978; Main & Solomon, 1990) with all four attachment classifications. Focusing on only one measure of attachment is important as there may be biases more inherent in certain measures than others. Isolating one assessment procedure and coding system allows for clearer results. Given that the body of research on the SSP has grown considerably, there is now more data to conduct more expansive cross-cultural analyses.

Another purpose of the present research was to evaluate if the results across other related meta-analyses are consistent with the findings from this study. Previous meta-analyses have analyzed a variety of moderator variables including: socioeconomic status, premature birth, age, geographical location, physical problems, neurological abnormalities, maltreatment, adolescent mothers, and parental psychopathology (Bakermans-Kranenburg & van Ijzendoorn, 2009; van Ijzendoorn et al., 1999). The present meta-analysis also included moderator analyses in these areas to determine if there are any discrepancies with previous results. This meta-analysis focused more on overall risk status for the parents and children in the sample and types of samples (clinical, targeted, and community). Targeted samples were defined as samples that

were recruited with a specific characteristic(s) and were not necessarily at risk (e.g., first-time mothers and mothers above the age of 30 years), and clinical populations were defined as samples that recruited a population with a mental disorder. There have been several meta-analyses that have been conducted within specific at-risk groups; thus, it would not have been useful to duplicate analyses or perform similar analyses to those already completed in these more thorough meta-analyses within these populations (e.g., Baer & Martinez, 2006; Cyr et al., 2010).

Beyond updating the previous meta-analyses, the present study also made several unique contributions. Conducting an updated meta-analysis provided the opportunity to explore overarching relationships within the body of literature; namely, differences across time, the language of publication, and type of publication. These variables were not addressed in the previous meta-analyses (van Ijzendoorn & Kroonenberg, 1988; van Ijzendoorn et al., 1999), and can provide useful information about sources of biases within the body of research. Another issue that was addressed in the present study was the quality of the primary studies, which could potentially bias the rates of attachment classifications from the SSP. This was a novel contribution, as the quality of the primary studies included in the meta-analysis has not been addressed in previous meta-analyses. Quality factors include training of SSP coders and interrater reliability. Given the large body of research on the SSP, this present study was also able to simultaneously consider the relationship between Western and non-Western cultures and the attachment classifications from the SSP while considering other important variables, specifically, risk factors and the economic state of the countries.

A second study was also completed to determine the overall rates of underlying classifications into the ABC model of infants with a disorganized pattern of attachment. It is particularly critical to help understand where infants classified as disorganized fall within the 3-

way distribution to facilitate comparison between studies that use the 3-way and 4-way classification systems. In van Ijzendoorn et al.'s (1999) meta-analysis there was insufficient data to meta-analyze the underlying classifications of infants classified as disorganized in the SSP. There are now a greater number of studies that report the number of infants with a disorganized attachment and their underlying classifications, which made these analyses possible.

Study 1

Research Questions

Study 1 addressed the following research questions:

Main Analyses

1. What is the rate of the secure (B) attachment classification from the Strange Situation paradigm?
2. What is the rate of the avoidant (A) attachment classification from the Strange Situation paradigm?
3. What is the rate of the ambivalent (C) attachment classification from the Strange Situation paradigm?
4. What is the rate of the disorganized (D) attachment classifications from the Strange Situation paradigm?

Moderator Analyses

1. Does the type of sample (community, targeted, or clinical) affect the rate of attachment classifications?
2. Does child risk status affect the rate of attachment classifications?
3. Does parent risk status affect the rate of attachment classifications?

4. Does the language the study was published in affect the rate of attachment classifications?
5. Does the type of publication affect the rate of attachment classifications?
6. Does the year of publication of the study affect the rate of attachment classifications?
7. Does the state of the economy of the country the study was conducted in affect the rate of attachment classifications?
8. Does the dominant culture (Western versus non-Western culture) of the country the study was conducted in affect the rate of attachment classifications?
9. Does the percentage of female children in the sample affect the rate of attachment classifications?
10. Does the children's mean age at the time the Strange Situation paradigm was administered affect the rate of attachment classifications?
11. Does the parent/caregiver mean age at the time the Strange Situation paradigm was administered affect the rate of attachment classifications?
12. In the U.S. samples, does the percentage of the sample that are White, Black, and Hispanic affect the rate of attachment classifications?
13. Does family form affect the rate of attachment classifications?
14. Does the socioeconomic status (mean years of education, percentage that did not complete high school, mean income, and percentage low income) in the Canadian and U.S. samples affect the rate of attachment classifications?
15. Does the percent of premature infants in the sample affect the rate of attachment classifications?

16. Does the percent of adolescent parents in the sample affect the rate of attachment classifications?
17. Does the percent of parents/caregivers with psychopathology affect the rate of attachment classifications?
18. Does the study reporting that the coders received the official training in SSP classifications affect the rate of attachment classifications?
19. Does the study reporting that the coders completed the reliability certification in the SSP affect the rate of attachment classifications?
20. Does the percent of studies that were second coded affect the rate of attachment classifications?
21. Does the intercoder reliability coefficient (Cohen's Kappa and percent agreement) affect the rate of attachment classifications?
22. Does combining the unclassifiable infants with the disorganized infants affect the rate of disorganized attachment?

Chapter II

Method

A random-effects meta-analysis was conducted with rate of attachment classifications as the main outcome variable. Unweighted rates were also provided in order to compare the findings with the previous meta-analysis by van Ijzendoorn et al. (1999).

Search Strategy

The first phase of the study was a systematic search of the literature to retrieve all relevant studies. The following databases were searched: PsycINFO, Medline, ERIC, Scopus, Proquest Dissertations & Theses, Persée, FRANCIS, Érudit, CAIRN, and Google Scholar. The searches in Scopus and Proquest Dissertations & Theses were limited to searching the title and abstract, due to the thousands of studies that were retrieved when the full-text of documents were searched. For Google Scholar, the top 1,000 citations were reviewed as this is the maximum number of citations that are provided by the search engine. Databases were searched using the key term "strange situation" and for French databases (Persée, FRANCIS, Érudit, CAIRN) the French translation "situation étrange" was also used. In order to ensure that all eligible studies were retrieved, the reference lists of included studies were reviewed and studies that cited a study included in the meta-analysis were reviewed. Finally, the two previous meta-analyses in this area (van Ijzendoorn & Kroonenberg, 1988; van Ijzendoorn et al., 1999), and the curriculum vitae and Research Gate profiles of prominent attachment researchers were also searched for relevant studies.

All studies were first screened based on title and abstract. The studies that were retained were then read in full to determine eligibility. Studies were included in the meta-analysis if they were published on or before December 30, 2017.

Eligibility Criteria

Studies were included in the meta-analysis if they contained all four attachment classifications from the SSP (insecure-avoidant, insecure-ambivalent, disorganized, and secure). As well, they had to contain rates and total sample size or number of participants with each attachment classification, as well as total sample size. The SSP procedure and coding must have followed the SSP procedure and coding for the A, B, and C classifications as outlined by Ainsworth et al. (1978) and the disorganized attachment classification coding by Main and Solomon (1990). Studies with any modifications to the coding or procedure were excluded as this would introduce further variability into the analyses. The only exception to this was one study, which shortened the first episode of the SSP from three minutes to one minute (Tharner et al., 2011), which was deemed to be a very minor modification. Other studies that made more substantial modifications to the procedure, such as only including one separation episode (e.g., Rogers, Ozonoff, & Maslin-Cole, 1993) were excluded. Studies that included infants with a neurological or neurodevelopmental disorder, but that took into consideration behaviours that may have been related to the neurological disorder in their coding[2] were included in the meta-analysis. Not taking the neurological disorder into consideration may have biased analyses by inflating the rate of disorganized attachment (e.g., Haltigan, Ekas, Seifer, & Messinger, 2011; Naber et al., 2007). For clinically treated populations that were included, pre-treatment SSP classifications were used over post-treatment SSP classifications when available. Case studies and single-subject design studies were excluded from the meta-analysis. Finally, to be included in the meta-analysis, studies must have had an independent sample from other studies in the

[2]For example, in autism spectrum disorder, the stereotyped and repetitive movements that are often exhibited by this population are also behavioural markers of disorganized attachment.

meta-analysis as meta-analyses rely on the assumption that the data form each study is independent.

Overlapping and duplicate samples. With a large data set and an extensive search strategy, there is the possibility that studies that are retrieved will be a duplicate of or have an overlapping sample with one or more other studies that are retrieved. This is a concern given the assumption in meta-analyses is that all studies are independent (Borenstein et al., 2009). Thus, including duplicate samples would be violating the assumption of independence of the statistics being used. Including duplicate data could potentially misrepresent the true state of the research, as studies included more than once would have a disproportionate weighting relative to their sample size; that is, the sum of the weights of the duplicates would be greater than if only the primary study of the dataset was included. This was a particular concern with the SSP literature as several longitudinal studies have multiple publications. For example, a large data set was collected by the National Institute of Child Health and Human Development called the Study of Early Child Care and Youth Development, which included over 1000 families and has since been used in hundreds of publications (NICHD SECCYD Series, 2018).

Duplicates and overlapping samples may occur for several reasons and may take different forms. They may be an exact duplicate in sample and methods due to studies being published in more than one journal or a thesis or dissertation then being published in a journal. Typically, these duplicates are relatively simple to recognize; however, poor reporting can present a challenge for discerning some duplicates. Covert duplicates occur when a set of data is published, and then subsequent studies are published based on this data without referencing the original study (von Elm, Poglia, Walder, & Tramèr, 2004). This can arise for many reasons, such

as multiple measurement periods for longitudinal studies, analyzing a subset of data, and aggregating data.

Given the large number of studies that were potentially eligible for the present meta-analysis, Wood's (2008) systematic procedure for identifying duplicates was used. First, studies were screened to determine which shared one or more authors with another included in the meta-analysis. Studies that did not meet this criterion were coded as not being a duplicate. For those studies that did share one or more authors a content analysis of the methodology was done; if the studies that shared one or more authors were sufficiently different, they were coded as not being a duplicate and those that were not sufficiently different were then compared based on sample characteristics (e.g., *N*, *n*, demographic variables). Again, those studies that were sufficiently different were coded as not being duplicates and the remaining studies were compared based on their measures and construct definitions. The final screening phase for those studies not deemed sufficiently different were compared by the reported effects. Studies that were not sufficiently different were coded as duplicate.

When studies were found to be duplicates, the most comprehensive data set was the one that was retained. Consideration was also given to publication status, with published studies being prioritized and studies that provided the attachment classifications separated into relevant groups (e.g., a control group versus a clinical group) prioritized. In cases where one comprehensive data set was not apparent or if more than one study provided relevant data (e.g., attachment classifications to the mother and father were reported in separate publications), then the results of the studies were aggregated for the meta-analysis.

Data Extraction

A coding manual was used to extract all relevant information. The coding manual provided instructions for extracting the data and operational definitions to ensure that the coding was completed consistently. The coding manual was used to extract the data necessary to calculate the effect size for each study as well as the data on the moderator variables (e.g., year of publication, age, gender, socioeconomic status, family form, training of SSP coders, etc.). See Appendix A for a copy of the coding manual.

The data that was collected in the coding manual was entered into Comprehensive Meta-Analysis Version 3.0 (CMA; Borenstein, Hedges, Higgins, & Rothstein, 2015a) for analysis. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA; Moher, Liberati, Tetzlaff, & Altman, 2009) standards were followed.

Reliability

Inter-coder reliability was obtained for 50 (25%) of the studies that were eligible for the meta-analysis. As not every study reported all variables, the number of data points second coded for each variable was as low as six, but for many variables it was the entire set of 50 studies (or close to). Even in circumstance where there were few data points second coded, there were always at least 25% of the data points for a given variable that were second coded. The second coder was a Master's level graduate student with previous training and experience in meta-analysis who was trained in using the coding manual. The second coder was given the opportunity to practice using the coding manual on a set of ten sample studies. This initial practice set of studies was sufficient for the primary coder to reach the minimum inter-coder reliability criteria of .9. The studies that were used as sample studies for the second coder to practice coding were not included in the reliability calculations; only studies that were coded

after the coder reached the mastery criterion of .9 or greater agreement were used. Inter-coder agreement was 100%.

The primary factors that likely contributed to the perfect agreement between coders was the level of experience of the coders and their familiarity with infant attachment research; both coders had previously completed coding for several other meta-analyses and had research experience in early childhood development and attachment. Moreover, the variables in the present study were straight-forward, objective, and well-defined (as opposed to variables that can be more difficult to code, such as distinguishing the focus of a body of research, or the theoretical orientation employed). When coding criteria are straightforward and coders are well-trained, even undergraduate level coders have typically been able to achieve perfect agreement with graduate level coders in our research laboratory (e.g. Theule, Cheung, & Aberdeen, 2018; Wilkie, Germain, & Theule, 2016).

Data Analysis

Effect size. The present study used rate as the effect size metric; that is, the percentage of caregiver-infant dyads with a given attachment classification. First, the rates of the individual studies were calculated in CMA by entering the sample size and number of caregiver-infant dyads with a given attachment classification. This was used to then calculate the overall weighted mean rate and 95% confidence intervals for the main analyses. Weights were assigned to each study based on the inverse of the study's variance. For the random-effects model, the variance includes both the within- and between-studies variance (Borenstein et al., 2009). In the overall mean effect size calculation, studies were weighted to ensure that the estimation of the mean was as accurate as possible; that is, to minimize the variance. Each attachment classification was analyzed separately. For the main analyses, *p*-values were not displayed. For

rate meta-analyses, the *p*-value refers to a null hypothesis test that the true effect size is .50 (i.e., chance). It should be noted that within the main analyses the classifications do not always total to precisely 100% as each classification was analyzed independently.

The utility in meta-analyzing the classifications instead of just providing the unweighted classifications, is that larger samples are likely a more accurate representation of the true distribution; thus, they are given more weight (Borenstein et al., 2009). As well, meta-analyzing the data provides us with confidence intervals, which can be used in future studies for comparison purposes. This data analysis strategy also permitted more than one data point for non-independent samples within the meta-analysis to be used by combining the data points from non-independent samples to ensure the most complete representation of the data (e.g., attachment classifications to mothers and fathers or attachment classifications of siblings) to provide the most comprehensive reflection of the literature.

Random-effects model. The random-effects model was used in the present study as opposed to the fixed-effect model. The fixed-effect model assumes that all studies are estimating one true effect size and differences in the observed effect sizes between studies are the result of sampling error (Borenstein et al., 2009). In other words, the fixed-effect model assumes that there is not statistically significant heterogeneity between studies. In the fixed-effect model, studies with smaller sample sizes are given small weights and are largely ignored; this is because the large studies are assumed to provide better estimates of the same true effect. The fixed-effect model would be relevant in cases where all included studies are essentially replications, or if the goal is to compute the effect size for a given population and not to generalize to other populations (Borenstein et al., 2009).

In meta-analyses, it is often reasonable to combine studies that have elements in common (e.g., a population with a certain diagnosis or the measurement tool used); however, we cannot assume that these studies necessarily have the exact same underlying true effect size (Borenstein et al., 2009). With the random-effects model it is assumed that there may be different effect sizes underlying the studies in the meta-analysis; this may occur for a variety of reasons, such as differences in samples, measurement, and/or study quality across the studies included in a meta-analysis. As a result, the random-effects model is trying to estimate the mean of a distribution of true effects. This is reflected in the weights of the studies – since each study in the random-effects model is estimating a different effect size, small studies should not be ignored; therefore studies are given more even (balanced) weights (Borenstein et al., 2009). Studies with smaller samples may provide more imprecise estimates of the effect, but they are still contributing important information about an effect that is not estimated by any other studies. Conversely, for studies with large sample sizes, their weights would be lower than in the fixed-effect model because each study is contributing to the estimate of the mean of the distribution of effects and no one study should overly influence this estimate.

When considering the research literature on the SSP, it was reasonable to assume that there would be variability across the studies in the meta-analysis. For instance, in the previous meta-analysis by van Ijzendoorn et al. (1999) the samples varied across a number of variables including: the age of the infants, maternal age, country the study was conducted in, maternal mental health problems, and child maltreatment history. As well, certain studies limit their samples based on risk factors, such as parents having mental health concerns, adolescent parents, or children with a neurodevelopmental disorder. Thus, the random-effects model was more appropriate for the present study.

Although there are published meta-analyses that base their decision to use the random-effects or fixed-effect model on the test for heterogeneity, it is generally recommended that this decision should instead be based on the researcher's understanding of the data and whether or not the data are seen to share a common effect size or are sampled from a distribution of effect sizes (Borenstein et al., 2009). Additionally, the test for heterogeneity has low power; therefore, when the between-studies variance does not reach statistical significance for heterogeneity this may be due to low power and not the studies being homogenous (Borenstein et al., 2009). Finally, if the studies truly are homogenous, then the fixed-effect and random-effects model will be equivalent; thus, there is no cost to using the random-effects model (Borenstein et al., 2009).

Heterogeneity. Heterogeneity refers to the dispersion between true effect sizes. The observed dispersion in a meta-analysis includes both true variance and random error. In order to be able to isolate the true variance, the observed variance between the studies in the meta-analysis is compared to the variance in the studies that were assumed to share one true effect. The portion of variance that remains is considered to be the true difference between the studies in the meta-analysis and is what is used to quantify heterogeneity. For the purpose of the present study, the *Q* statistic, I^2, and Tau^2 were used to measure heterogeneity.

Q is the weighted sum of squares on a standardized scale. As a standardized score, it can be compared to the expected weighted sum of squares, which is the value that follows the assumption that all studies share a common effect. As already briefly discussed, the *Q* statistic was not used in the decision of whether or not to use the random-effects model, it was simply one of the methods used to quantify heterogeneity. The reason for this decision is that the null hypothesis of the *Q* statistic is that all studies share a common effect size or are homogenous. When the *Q* statistic is significant, this does provide evidence that true effects vary. However, a

null finding does not demonstrate that studies are homogenous, this null finding may simply be due to a small number of studies and/or large within-study variance (small primary studies).

I^2 is the percentage of the observed heterogeneity that is real, not spurious. I^2 yields a value between 0% and 100%, with higher values indicating that a higher proportion of the variance is due to real differences in effect sizes (Borenstein et al., 2009). It is important to note that I^2 is not an index of how large the dispersion is between effect sizes. Namely, an I^2 value close to 100% would indicate only that the majority of the dispersion that was observed is real, not that effect sizes are widely dispersed. Unlike *Q*, I^2 is not directly impacted by the number of studies included in the meta-analysis.

The Cochrane Handbook (Higgins & Green, 2011) provides a rough guide for interpreting I^2, which was used in the interpretation of I^2 for the present study. For values in the range of 0% to 40%, it may not be important, values in the range of 30% to 60% suggest it may represent moderate heterogeneity, values from 50% to 90% may represent substantial heterogeneity, and values from 75% to 100% may represent considerable heterogeneity (Higgins & Green, 2011). It is recommended that I^2 be interpreted in the context of the effect size, the direction of the effect, and evidence of heterogeneity from other statistics (Higgins & Green, 2011).

Finally, Tau^2 was also used as it describes the distribution of effect sizes of the studies included in the meta-analysis (Borenstein et al., 2009). Tau^2 is an estimate of the variance of the true effects across studies. Additionally, with the root of Tau^2 (i.e., the standard deviation), a 95% range can be calculated that estimates the spread of the distribution of the true effects. That is, this is a range that 95% of the distribution of true effects of the random-effect model falls

within. This is done by multiplying Tau by 2 and adding and subtracting it to the overall pooled effect size to create the range.

Meta-regression analyses. Meta-regression was used to determine which characteristics of the studies were associated with a greater effect size. Meta-regression is analogous to regression in primary studies. In meta-regression, an outcome variable (effect size) is predicted by one or more explanatory variables (e.g., year study was published, child age, gender, whether reliability coding was obtained). The major difference in meta-regression is that the studies are weighted, thus larger studies will have more influence, just as in the meta-analysis (Higgins & Green, 2011).

Meta-regression can be used with both continuous and categorical variables. With continuous variables, it describes how the effect size (outcome variable) changes with a unit increase in the moderator variable (the explanatory variable). The significance test examines whether there is a linear relationship between these two variables. For categorical moderators, dummy variables are assigned to the subgroups and the regression coefficient estimates the difference between the nominated reference group and each subgroup. The significance test for this case indicates whether this difference is statistically significant.

The moderator analyses were run for all four of the main analyses. The criteria for significance for the moderator variables was $p < .05$. If any categorical moderator analyses were significant, the data was split based on the groups and the main analysis was rerun for each group. Visual analysis of all moderator variable graphs was also conducted to determine if a curvilinear relationship would be more appropriate, however, this was not deemed necessary for any of the variables. Further, if there was more than one significant moderator variable, the variables were analyzed together in one model where possible, based on sample size. For each

analysis there was a minimum requirement of 10 studies in order to run the meta-regression analysis; this is the threshold recommended in the Cochrane Handbook (Higgins & Green, 2011). Unfortunately, due to a variety of reasons, a number of planned analyses could not be conducted. See Appendix B for a list of analyses that were omitted and the rationale for these decisions. Given that not all meta-regression analyses contained the same number of samples, it was reasonable to assume that the power between these analyses would vary as some had as many as 266 samples and some as few as 11 samples. Power tests for meta-regression are only now being developed, and have not yet become commonly used in this area. For this reason, it should be noted that discussions of power in this study were based primarily on the number of samples included in the analyses (*k)*.

For the meta-regression analyses, an estimate of the proportion of between-study variance that is explained by the model was also obtained (R^2). Similar to primary studies, R^2 in meta-analysis is based on the two estimates of the variance, with and without covariates. In primary studies, these two estimates are based on the same data, whereas in meta-analysis, the two estimates are based on different analyses (Borenstein, Hedges, Higgins, & Rothstein, 2015b). Due to this difference, it is possible in meta-analysis for one estimate of the variance to be an overestimate and the other to be an underestimate. This results in a limitation of R^2 in meta-analysis, where both overestimates and underestimates of proportion of between-study variance can occur. It is even possible to obtain a negative value, but since the proportion of variance cannot be negative, a value of zero is assigned (Borenstein et al., 2015b).

When conducting multiple comparisons, there are concerns about increasing the probability of making a type I error. To control for type I error there are corrections that can be applied, such as the Bonferroni correction; however, these corrections tend to be conservative

and while these corrections do lower the risk for type I error, they increase the risk for type II error. Cummings (2013) argues that instead of relying on *p*-values, which do not provide much information, we should instead be relying on effect sizes and confidence intervals.

The present study chose to use meta-regression as the data analysis strategy over using the χ^2 goodness-of-fit test that had been used in the previous meta-analyses (van Ijzendoorn & Kroonenberg, 1988; van Ijzendoorn et al., 1999), because this allowed for continuous variables to be analyzed instead of arbitrarily dichotomizing variables. Null hypothesis testing was used for interpreting the meta-regression results in the present meta-analysis to be consistent with the previous meta-analyses. This data analysis strategy also permitted comparisons between more than two groups and to be able to analyze multiple variables simultaneously using multiple meta-regression (J. Li, personal communication, March 11, 2016). Moreover, van Ijzendoorn and colleagues (1999) used the North American nonclinical samples as the reference group for their comparisons, whereas the present study was not focused exclusively on this comparison.

Publication bias. Ideally, a meta-analysis would include all studies ever completed on a topic. However, even with a comprehensive search strategy, this is usually impossible. If the missing studies are a random subset then the overall effect size will not be affected, but if the studies that are missed systematically differ then this is problematic as the sample will be biased (Borenstein et al., 2009). Research has demonstrated that studies with statistically significant results are more likely to be published (Dickersin, Chan, Chamers, Sacks, & Smith, 1987; Franco, Malhorta, & Simonovits, 2014). If a subset of studies with null findings is missed from a meta-analysis, then this will systematically skew the results. Some meta-analysts argue that it is reasonable to exclude unpublished studies because studies that have been peer-reviewed are better quality. Yet, a high-quality dissertation may not be published if the individual does not

intend to pursue an academic career (Borenstein et al., 2009). Moreover, the peer review process is not perfect; there can be biases that affect which studies are accepted, it can be unreliable, and there is not a consistent standard of quality (Borenstein et al., 2009).

Both published and unpublished studies were included in the meta-analysis, to help reduce publication bias. A number of the databases were searched to retrieve studies that would be considered to be part of the grey literature (i.e., dissertations, theses, unpublished manuscripts, conference presentations). Proquest Dissertations & Theses was searched to retrieve Master's theses and Doctoral dissertations and PsycINFO also indexes dissertations and theses. ERIC indexes conference proceedings and Google Scholar also retrieves dissertations and theses, conference proceedings, final reports for grants, and other unpublished documents. A comprehensive search is the best method to counteract publication bias (Borenstein et al., 2009; Hopewell, Clarke, & Mallett, 2005).

Additionally, after the data was collected and before it was analyzed there were several steps involved in assessing for publication bias. First, forest plots were created to be used as a visual tool in the assessment for publication bias. They were created for the main analyses, except those on the full sample because there were too many studies to fit in the forest plot. A forest plot is a graphical display of the results of each study and the overall weighted effect size (Borenstein et al., 2009). The effect size of each study was marked by a box and the area of the box is proportional to the weight of the study and a horizontal bar through each box denotes the confidence interval. To assess for publication bias, the studies were sorted from highest to lowest weight and then visually examined to determine whether the lower weighted studies were evenly distributed around the overall mean effect size. Asymmetry in the forest plot is an indication that

bias may be present (Borenstein et al., 2009). Overall, there was no notable asymmetry in the forest plots.

Another visual tool that was used to help assess for publication bias was funnel plots. Funnel plots are scatter plots, with the effect size plotted on the X-axis and a measure of the study size plotted on the Y-axis. The results from smaller studies will be more dispersed and the range will narrow as the studies become larger. If bias is not present, the plot will look similar to an inverted funnel (Sterne, Becker, & Egger, 2005). If publication bias is present, the funnel plot will be asymmetrical; however, there are other potential causes for asymmetry, such as true heterogeneity, chance, and poor methodological quality of the smaller studies so it cannot be assumed the asymmetry is due to publication bias (Sterne et al., 2011). There was mild asymmetry observed in a few funnel plots. Given the limitations of funnel plot interpretation, the quantitative assessment of publication bias was more heavily relied upon.

Rosenthal's Failsafe *N* has also been widely used in meta-analyses to estimate the number of non-significant studies that would be needed to be added to increase the *p*-value to greater than .05. Although the Failsafe *N* was popular in meta-analyses, it is no longer recommended due to the lack of justifiable criterion for interpreting the Failsafe *N*, the size of the effect and variation is not considered, and continuous moderator variables cannot be incorporated into the calculations (Becker, 2005). With the development of other approaches for assessing publication bias, it has been recommended to forgo using the Failsafe *N* in preference of more informative approaches to assessing publication bias (Becker, 2005).

To quantitatively assess for publication bias, a moderator analysis using meta-regression was completed to assess whether or not a study was published or unpublished affected the effect size. This is a less subjective method than visual examination of the forest plot and funnel plot.

However, it is still limited in that it is an association and a significant result may be the result of an extraneous variable and not necessarily publication bias (Sterne & Egger, 2005).

Another source of bias that falls in the scope of publication bias, and that researchers need to be cognisant of when conducting a meta-analysis, is language bias (Borenstein et al., 2009). Namely, English databases are more likely to be searched and thus studies published in English are more likely to be included. To help counteract this bias all of the databases that were searched index non-English publications as well (PsycINFO, Pubmed, ERIC, Scopus, and Proquest Dissertations & Theses). Four French databases were also be searched: Persée, FRANCIS, Érudit, and CAIRN. All studies in French and Spanish were included. For other languages consultation was sought with psychology graduate students with fluency in the language to determine eligibility and to code eligible studies. No studies were excluded based on language, however, searches were not conducted in languages other than French and English. Given the focus on cross-cultural variability of the present study, it was particularly important to be as inclusive as possible with studies published in other languages. Many meta-analyses only include studies in English or only include studies in a select number of languages (e.g., Polanczyk, de Lima, Horta, Biederman, & Rohde, 2007; Polanczyk, Willcutt, Salum, Kieling, & Rohde, 2014) as it can be extremely resource intensive to include studies in other languages. Review articles or meta-analyses of studies from a specific country were also reviewed to find additional studies in languages other than English. There were two studies that reviewed or meta-analyzed studies on attachment in Italian samples (Cassibba, Sette, Bakermans-Kranenburg, & van Ijzendoorn, 2013; Simonelli, De Palo, Moretti, Baratter, & Porreca, 2014) and one with Chinese samples (Archer et al., 2015) that were used to locate further studies.

Chapter III

Results

Overview

Database searches retrieved 4,169 results, which resulted in 1,848 unique studies. There were 202 studies that were eligible for the meta-analysis. Many studies included more than one independent sample, thus the total number of independent samples (*k*) included in the meta-analysis was 266. Figure 1 provides a summary of the results of the systematic search strategy (PRISMA; Moher et al., 2009). See the reference list and Appendix C for a complete list of the studies that were included in the meta-analysis.

Publication dates of eligible studies ranged from 1987 to 2017. Eligible studies were conducted across six continents, in 27 different countries: England, Germany, Netherlands, Norway, Italy, France, Greece, Romania, Finland, Sweden, Denmark, Hungary, Switzerland, Australia, United States, Canada, Mexico, Puerto Rico, Chile, Israel, Iran, China, South Korea, Indonesia, Zambia, Mali, and South Africa. However, the eligible studies were primarily from Europe and North America. Appendix C contains tables with further details of the characteristics of the studies.

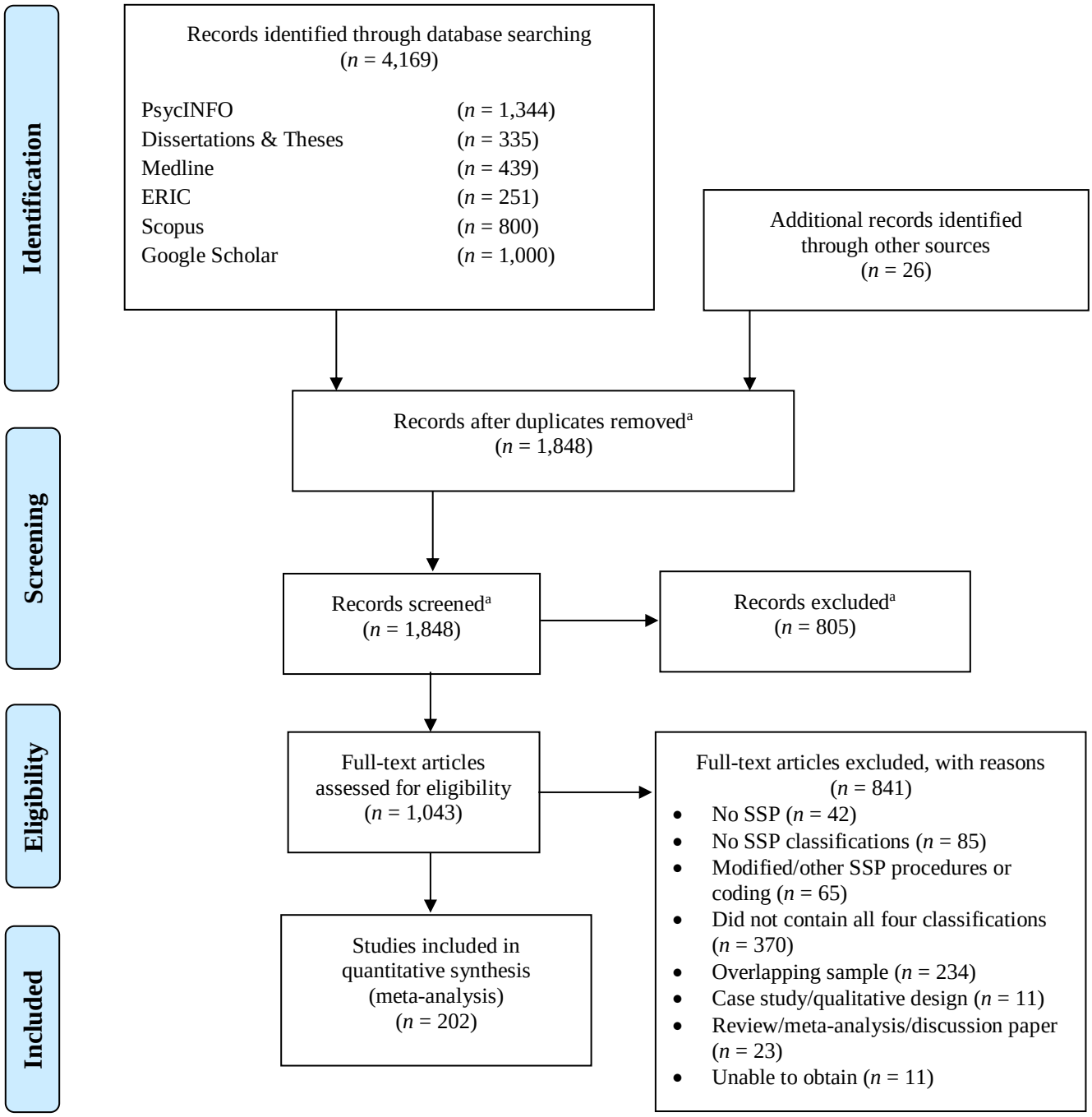


Figure 1. PRISMA flow diagram

[a]Studies retrieved from Google Scholar are not included in this count as Google Scholar does not allow the export of multiple citations at one time.

Main Analyses

All studies. The weighted mean rates of the four attachment classifications were first calculated with all eligible studies. The overall mean weighted rate of infants classified as secure in the SSP was 53.85%, 95% CI = [52.12, 55.56], $Q(265) = 1494.49$, $p < .001$, $I^2 = 82.27\%$, $\tau^2 = 0.23$. For the avoidant attachment classification, the weighted mean rate was 14.38%, 95% CI = [13.30, 15.53], $Q(265) = 1229.07$, $p < .001$, $I^2 = 78.43\%$, $\tau^2 = 0.37$.The weighted mean rate of the ambivalent classification was 9.97%, 95% CI = [9.23, 10.75], $Q(265) = 755.74$, $p < .001$, $I^2 = 64.93\%$, $\tau^2 = 0.24$. The weighted mean rate for the disorganized classification was 20.83%, 95% CI = [19.25, 22.49], $Q(265) = 1807.14$, $p < .001$, $I^2 = 85.89\%$, $\tau^2 = 0.48$. There was significant heterogeneity (*Q)* across all four analyses and the percentage of the heterogeneity that is real (I^2) fell within the substantial to considerable range. Based on the results of the moderator analyses, which will be discussed further in the next section, it was decided to split the analyses further by type of sample.

Community samples. There were 116 community samples included in the meta-analysis. The weighted mean rate of secure attachment classifications for community samples was 60.08%, 95% CI = [58.15, 61.97], $Q(115) = 405.23$, $p < .001$, $I^2 = 71.62\%$, $\tau^2 = 0.12$. For the avoidant classification, the weighted mean rate was 14.16%, 95% CI = [12.64, 15.82], $Q(115) = 520.65$, $p < .001$, $I^2 = 77.91\%$, $\tau^2 = 0.58$. The weighted mean rate for the ambivalent classification was 10.78%, 95% CI = [9.67, 12.01], $Q(115) = 351.94$, $p < .001$, $I^2 = 67.32\%$, $\tau^2 = 0.23$. The weighted mean rate for the disorganized classification was 14.60%, 95% CI = [13.09, 16.24], $Q(115) = 507.64$, $p < .001$, $I^2 = 77.35\%$, $\tau^2 = 0.31$. All four analyses had significant levels of heterogeneity; the percentage of the observed heterogeneity that is real (I^2) fell within the substantial range.

Samples with parents at-risk. There were 78 samples included in the meta-analysis where the parents were at-risk (e.g., parental psychopathology, drug or alcohol abuse, adolescent motherhood, and low socioeconomic status). The weighted mean rate of the secure attachment classification in samples with the parents at-risk was 46.57%, 95% CI = [43.21, 49.97], $Q(77) = 455.12$, $p < .001$, $I^2 = 83.08\%$, $\tau^2 = 0.26$. The weighted mean rate for the avoidant classification was 15.4%, 95% CI = [13.60, 17.39], $Q(77) = 265.09$, $p < .001$, $I^2 = 70.95\%$, $\tau^2 = 0.24$. For the ambivalent classifications, the weighted mean rate was 9.52%, 95% CI = [8.22, 11.01], $Q(77) = 211.65$, $p < .001$, $I^2 = 63.62\%$, $\tau^2 = 0.24$. For the disorganized classification, the weighted mean rate was 28.13%, 95% CI = [24.62, 31.94], $Q(77) = 604.46$, $p < .001$, $I^2 = 87.26\%$, $\tau^2 = 0.51$. There was significant heterogeneity across all four analyses; the percentage of the observed heterogeneity that is real (I^2) fell within the substantial to considerable range.

Samples with children at-risk. There were 58 studies where the children were deemed to be at-risk (e.g., neurological disorder, failure to thrive, and previous experiences of maltreatment or institutionalized care) that were included in the meta-analysis. The weighted mean rate for the secure classification in samples where the children were at-risk was 44.34%, 95% CI = [39.18, 49.64], $Q(57) = 451.56$, $p < .001$, $I^2 = 87.38\%$, $\tau^2 = 0.54$. The weighted mean rate for the avoidant classification was 14.57%, 95% CI = [11.68, 18.02], $Q(57) = 360.02$, $p < .001$, $I^2 = 84.17\%$, $\tau^2 = 0.72$. For the ambivalent classification, the weighted mean rate was, 7.93%, 95% CI = [6.48, 9.68], $Q(57) = 137.16$, $p < .001$, $I^2 = 58.44\%$, $\tau^2 = 0.33$. The overall weighted mean rate for the disorganized classification was 27.73%, 95% CI = [24.50, 35.54], $Q(57) = 527.71$, $p < .001$, $I^2 = 89.20\%$, $\tau^2 = 0.86$. For all four analyses, there was significant heterogeneity; the percentage of the observed heterogeneity that is real (I^2) fell within the substantial to considerable range. See Table 1 for a summary of the results from the main

analyses. Unweighted data of the main analyses, like provided by van Ijzendoorn et al. (1999), is available in Table 2 and are comparable to the meta-analyzed rates in Table 1. Forest plots for the main analyses with the community, parent at-risk, and child at-risk samples are available in Appendix D.

Table 1

Overall Mean Weighted Rates of Attachment Classifications Across Types of Samples

		Secure		Avoidant		Ambivalent		Disorganized	
	k	Rate	95% CI	Rate	95% CI	Rate	95% CI	Rate	95% CI
All Studies	266	53.85	[52.12, 55.56]	14.38	[13.30, 15.53]	9.97	[9.23, 10.75]	20.83	[19.25, 22.49]
Community	116	60.08	[58.15, 61.97]	14.16	[12.64, 15.82]	10.78	[9.67, 12.01]	14.60	[13.09, 16.24]
Parents at-Risk	78	46.57	[43.21, 49.97]	15.40	[13.60, 17.39]	9.52	[8.22, 11.01]	28.13	[24.62, 31.94]
Children at-Risk	58	44.34	[39.18, 49.64]	14.57	[11.68, 18.02]	7.93	[6.48, 9.68]	29.73	[24.50, 35.54]

Table 2

Unweighted Rates of Attachment Classifications Across Types of Samples

		Secure		Avoidant		Ambivalent		Disorganized	
	N	*n*	%	*n*	%	*n*	%	*n*	%
All Studies	20,479	10,356	50.57	2,959	14.45	2,142	10.46	4,154	20.28
Community	10,277	6,208	60.41	1,401	13.63	1,157	11.26	1,511	14.70
Parents at-Risk	5,736	2,842	49.55	891	15.53	564	9.83	1,438	25.07
Children at-Risk	3,770	1,823	48.36	622	16.50	318	8.44	1,007	26.71

Moderator Analyses

The moderator analyses were run on all four attachment classifications for all eligible studies and were performed on the secure and disorganized classifications within community samples, samples where the parents were at-risk, and samples where the children were at-risk.

This decision was made due to the significant associations between type of sample and risk status with the secure and disorganized classifications when the moderator analyses were performed with all studies (see Tables 3 and 6). It was also decided to only run the methodological moderator variables (coder training, certification, percent of studies that were second coded, percent agreement, and Cohen's Kappa) on the full sample for each attachment classification. The classification of countries into developing versus developed and Western versus non-Western cultures were colinear, thus analyses on the state of the economy also refer to the dominant culture of the country.

All studies.

Secure attachment moderator analyses. The results of the moderator analyses for the secure attachment classification with all eligible studies are displayed in Table 3. Of the 26 moderators that were run, five analyses were statistically significant. First, the moderator analysis for the type of sample was significant ($p < .001$); community samples were associated with higher rates of secure attachment than clinical and targeted samples. Likewise, samples where the parents were at-risk ($p < .001$) and the children were at-risk ($p < .001$) were associated with lower rates of secure attachment. These three variables were combined in a model given their statistical significance and that they all targeted risk status. The model was reliable, $k = 229$, $Q = 61.53$, $R^2 = 24\%$, $p < .001$. In this model, the type of sample continued to be a reliable predictor of the rate of secure attachment ($p = .025$). Parents at-risk was also a reliable predictor of the rate of secure attachment ($p = .019$), whereas children at-risk was no longer significant ($p = .105$). The correlation matrix for the model is available in Appendix E. The large correlations between variables indicates that covariation between the variables may be the reason why child

risk status was no longer a significant predictor of rate of secure attachment when analyzed with parent risk status.

The mean years of caregiver education variable was positively associated with the rate of secure attachment (p = .005). The percentage of parents with a mood disorder was significantly inversely related to the rate of secure attachment (p = .002). The moderator analyses for the percentage of adolescent parents (inversely related; p = .066), and for language of publication also approached significance (studies published in English were associated with a higher rate of secure attachment; p = .057). All other moderator variables were not significant.

Table 3

Moderator Analyses with All Studies on the Secure Attachment Classification

Moderator	*k*	*Q*	*p*-value	R^2
Type of Sample	248	77.42	< .001	31%
Parents at-Risk	239	33.73	< .001	14%
Children at-Risk	256	23.56	< .001	9%
Language of Publication	266	3.63	.057	1%
Type of Publication	264	3.45	.178	0%
Year of Publication	265	1.87	.171	1%
State of the Economy	266	1.65	.199	1%
% Female Children	198	0.47	.495	0%
Children Mean Age	235	1.76	.185	2%
Caregiver Mean Age	184	0.1	.747	0%
% White	90	2.11	.147	2%
% Black	74	1.63	.202	1%
% Hispanic	68	0.52	.469	2%
% Two-Parent Household	123	0.23	.629	1%
Mean Years Caregiver Education	28	7.81	.005	27%
% Caregivers did not Complete High School	13	1.17	.279	7%

% Caregivers Attended College/University	18	1.22	.269	8%
Mean Income	11	0.23	.634	6%
% Premature	40	0.01	.920	0%
% Adolescent Parent	25	3.37	.066	21%
% Mood Disorder	19	9.46	.002	44%
Coder Training	72	1.27	.259	2%
Coder Certification	86	0.62	.430	1%
% Studies Second Coded	125	0.75	.388	1%
Interrater Reliability - % Agreement	84	0.01	.926	0%
Interrater Reliability - Cohen's Kappa	75	0.13	.722	0%

Note. Q is the statistic used to test the significance of the meta-regression. R^2 is the proportion of variance explained by the moderator.

Avoidant attachment moderator analyses. The results of the moderator analyses with the avoidant classification are displayed in Table 4. There were several moderator analyses that were statistically significant. The type of sample was significantly related to the rate of avoidant attachment ($p = .015$), with clinical samples being associated with higher rates of avoidant attachment compared to community samples. Percentage of premature infants ($p = .004$) and the percentage of adolescent parents ($p = .037$) were significantly related to the rate of avoidant attachment. The percentage of two parent households was inversely related to the rate of avoidant attachment ($p = .017$).

Language of publication was significantly related to the rate of avoidant attachment ($p = .003$); studies published in English were associated with lower rates of avoidance compared to studies published in other languages. Year of publication was inversely related to the rate of avoidant attachment ($p < .001$). Coder certification ($p = .005$) and coder training ($p = .029$) were both associated with lower rates of avoidant attachment. The moderator analyses on the state of the economy (developed countries were associated with higher rates of avoidant attachment; $p =$

.056), and percent of parents with a mood disorder approached significance (positively related; *p* = .079). No other variables were significantly related to the rate of avoidant attachment.

Table 4

Moderator Analyses with All Studies on the Avoidant Attachment Classification

Moderator	*k*	*Q*	*p*-value	R^2
Type of Sample	248	8.39	.015	5%
Parents at-Risk	239	0.24	.623	0%
Children at-Risk	256	0.32	.571	0%
Language of Publication	266	8.72	.003	5%
Type of Publication	264	1.80	.407	1%
Year of Publication	265	12.73	< .001	7%
State of the Economy	266	3.65	.056	0%
% Female Children	198	0.08	.781	0%
Children Mean Age	235	1.71	.190	2%
Caregiver Mean Age	184	0.26	.610	0%
% White	90	0.04	.844	0%
% Black	74	0.36	.549	0%
% Hispanic	68	0.5	.480	0%
% Two-Parent Household	123	5.64	.018	5%
Mean Years Caregiver Education	28	2.53	.112	18%
% Caregivers did not Complete High School	13	0.04	.842	7%
% Caregivers Attended College/University	18	1.10	.295	13%
Mean Income	11	0.01	.934	2%
% Premature	40	8.11	.004	45%
% Adolescent Parent	25	4.35	.037	28%
% Mood Disorder	19	3.10	.079	30%
Coder Training	72	4.79	.029	11%
Coder Certification	86	7.85	.005	14%
% Studies Second Coded	125	0.11	.738	0%
Interrater Reliability - % Agreement	84	1.04	.308	2%

Interrater Reliability - Cohen's Kappa	75	0.72	.397	3%

Note. Q is the statistic used to test the significance of the meta-regression. R^2 is the proportion of variance explained by the moderator.

Ambivalent attachment moderator analyses. See Table 5 for the results of the moderator analyses for the ambivalent attachment classification with all eligible studies. Four of these moderator analyses were statistically significant. When the children were classified as at-risk, this was associated with lower rates of ambivalent attachment ($p = .017$). The state of the economy was significantly related to the rate of ambivalent attachment ($p < .001$), with developing countries being associated with higher rates of ambivalent attachment. It should be noted that the state of the economy variable was the same as non-Western versus Western culture. Thus, this finding is in line with previous research findings that there tend to be higher rates of ambivalent attachment in non-Western cultures (e.g., Archer et al., 2015; Jin et al., 2012). The percentage of the sample that was Black (only within studies conducted in the United States) was inversely related to the rate of ambivalent attachment ($p = .044$). When coders were trained, this was associated with higher rates of ambivalent attachment ($p = .019$). A few analyses approached significance: the percent of adolescent parents in the sample (inversely related; $p = .081$), the percent of studies that were second coded (positively related; $p = .055$), and Cohen's Kappa interrater reliability coefficient (positively related; $p = .097$). All other moderator analyses for the ambivalent attachment classification with all eligible studies were not statistically significant.

Table 5

Moderator Analyses with All Studies on the Ambivalent Attachment Classification

Moderator	*k*	*Q*	*p*-value	R^2
Type of Sample	248	2.58	.275	1%
Parents at-Risk	239	1.10	.294	1%
Children at-Risk	256	5.68	.017	3%
Language of Publication	266	1.60	.206	1%
Type of Publication	264	4.46	.107	5%
Year of Publication	265	0.90	.343	0%
State of the Economy	266	14.61	< .001	10%
% Female Children	198	0.07	.788	0%
Children Mean Age	235	1.91	.167	2%
Caregiver Mean Age	184	0.21	.646	0%
% White	90	0.01	.937	0%
% Black	74	4.06	.044	10%
% Hispanic	68	2.65	.104	7%
% Two-Parent Household	123	0.14	.711	0%
Mean Years Caregiver Education	28	0.15	.699	0%
% Caregivers did not Complete High School	13	1.53	.216	30%
% Caregivers Attended College/University	18	0.00	.106	0%
Mean Income	11	0.81	.369	12%
% Premature	40	0.96	.327	0%
% Adolescent Parent	25	3.04	.081	11%
% Mood Disorder	19	0.26	.612	0%
Coder Training	72	5.49	.019	13%
Coder Certification	86	1.45	.229	2%
% Studies Second Coded	125	3.67	.055	2%
Interrater Reliability - % Agreement	84	1.21	.271	4%
Interrater Reliability - Cohen's Kappa	75	2.76	.097	11%

Note. Q is the statistic used to test the significance of the meta-regression. R^2 is the proportion of variance explained by the moderator.

Disorganized attachment moderator analyses. See Table 6 for the results of the moderator analyses for disorganized attachment with all eligible studies. Similarly to the secure

analyses for the full sample, the type of sample, samples with parents at-risk, and samples with children at-risk were significantly associated with the rate of disorganized attachment, with at-risk and clinical or targeted samples being associated with greater rates of disorganized attachment. When these three variables were combined in a model, the model was statistically significant, $k = 229$, $Q = 70.12$, $R^2 = 31\%$, $p < .001$. In the model, parent risk status ($p < .001$) and child risk status ($p < .001$) variables continued to be significant predictors of the rate of disorganized attachment, whereas the type of sample was no longer significantly associated with the rate of disorganized attachment ($p = .919$). These variables were highly related (see Appendix E for correlation matrix), suggesting the covariance is likely the reason why the type of sample was no longer a significant predictor of the rate of disorganized attachment.

The moderator analysis for the state of the economy was statistically significant, $p = .007$. Countries classified as developing were associated with lower levels of disorganization. The percentage of the sample that was Black for studies conducted in the United States was associated with higher rates of disorganized attachment, $p = .035$. Mean years of caregiver education was significantly associated with lower rates of disorganized attachment, $p = .049$. Both coder training and certification were associated with higher rates of disorganized attachment classifications, $p = .037$ and $p = .024$, respectively. The moderator analyses for the percentage of the sample that was White in studies conducted in the United States (inversely related; $p = .099$) and the interrater reliability percent agreement (inversely related; $p = .071$) approached significance.

Table 6

Moderator Analyses with All Studies on the Disorganized Attachment Classification

Moderator	*k*	*Q*	*p*-value	R^2
Type of Sample	248	71.37	< .001	30%
Parents at-Risk	239	39.99	< .001	17%
Children at-Risk	256	31.37	< .001	16%
Unclassifiable Combined with D	262	0.73	.693	0%
Language of Publication	266	0.66	.417	0%
Type of Publication	264	0.03	.984	0%
Year of Publication	265	0.18	.667	0%
State of the Economy	266	7.25	.007	3%
% Female Children	198	1.01	.315	1%
Children Mean Age	236	0.89	.347	1%
Caregiver Mean Age	185	0.00	.945	0%
% White	91	2.72	.099	3%
% Black	74	4.45	.035	4%
% Hispanic	68	0.11	.739	0%
% Two-Parent Household	123	0.78	.376	0%
Mean Years Caregiver Education	28	3.86	.049	11%
% Caregivers did not Complete High School	13	2.29	.130	18%
% Caregivers Attended College/University	18	1.02	.312	5%
Mean Income	11	0.04	.847	0%
% Premature	40	0.65	.420	1%
% Adolescent Parent	25	1.76	.184	8%
% Mood Disorder	19	0.96	.328	13%
Coder Training	72	4.35	.037	6%
Coder Certification	86	5.10	.024	6%
% Studies Second Coded	125	1.11	.292	1%
Interrater Reliability - % Agreement	84	3.26	.071	4%
Interrater Reliability - Cohen's Kappa	75	0.01	.754	1%

Note. Q is the statistic used to test the significance of the meta-regression. R^2 is the proportion of variance explained by the moderator.

Community samples.

Secure attachment moderator analyses. For the results of all moderator analyses for the secure attachment classification with community samples see Table 7. Only one moderator variable was significant; developing countries were associated with higher rates of secure attachment, $p = .001$.

Table 7

Moderator Analyses with Community Samples on the Secure Attachment Classification

Moderator	*k*	*Q*	*p*-value	R^2
Language of Publication	116	0.39	.530	0%
Type of Publication	114	0.67	.717	1%
Year of Publication	115	1.74	.187	3%
State of the Economy	116	11.82	.001	20%
% Female Children	82	0.00	.999	0%
Children Mean Age	104	1.21	.271	1%
Caregiver Mean Age	73	1.91	.167	6%
% White	25	2.01	.157	23%
% Black	21	0.01	.913	0%
% Hispanic	19	0.08	.772	5%
% Two-Parent Household	54	1.13	.288	5%

Note. Q is the statistic used to test the significance of the meta-regression. R^2 is the proportion of variance explained by the moderator.

Disorganized attachment moderator analyses. For the results of the moderator analyses for disorganized attachment in community samples see Table 8. Similar to the secure attachment classification, the only significant moderator was the state of the economy; developing countries were associated with lower rates of disorganized attachment, $p = .001$.

Table 8

Moderator Analyses with Community Samples on the Disorganized Attachment Classification

Moderator	*k*	*Q*	*p*-value	R^2
Unclassifiable Combined with D	114	1.71	.425	1%
Type of Publication	114	2.77	.250	7%
Year of Publication	115	0.45	.503	1%
State of the Economy	116	10.19	.001	12%
% Female Children	82	0.97	.325	2%
Children Mean Age	104	0.37	.544	1%
Caregiver Mean Age	73	0.68	.410	1%
% White	25	0.00	.968	0%
% Black	21	0.19	.664	0%
% Hispanic	19	0.00	.980	0%
% Two-Parent Household	54	1.46	.227	9%

Note. Q is the statistic used to test the significance of the meta-regression. R^2 is the proportion of variance explained by the moderator.

Samples with parents at-risk.

Secure attachment moderator analyses. See Table 9 for the results of the moderator analyses for the secure attachment classification within samples where the parents were classified as at-risk. Only one of these moderator analyses was statistically significant; samples where the children were classified as at-risk were associated with lower rates of secure attachment, $p = .047$. The percentage of caregivers with a mood disorder approached significance (inversely related; $p = .077$).

Table 9

Moderator Analyses with Samples with Parents At-Risk on the Secure Attachment Classification

Moderator	*k*	*Q*	*p*-value	R^2
Type of Sample	76	1.97	.160	1%

Children at-Risk	74	3.94	.047	0%
Type of Publication	75	1.73	.421	2%
Year of Publication	75	0.26	.613	1%
State of the Economy	78	0.03	.853	0%
% Female Children	63	0.00	.987	0%
Children Mean Age	71	0.5	.480	0%
Caregiver Mean Age	63	2.14	.143	3%
% White	39	0.41	.520	2%
% Black	32	0.56	.456	4%
% Hispanic	31	0.06	.805	1%
% Two-Parent Household	38	0.51	.476	5%
Mean Years Caregiver Education	13	0.30	.585	2%
% Premature	10	0.34	.558	5%
% Adolescent Parent	16	0.02	.886	0%
% Mood Disorder	15	3.14	.077	26%

Note. Q is the statistic used to test the significance of the meta-regression. R^2 is the proportion of variance explained by the moderator.

Disorganized attachment moderator analyses. The results of the moderator analyses for the disorganized attachment classification with samples where the parents were classified as at-risk are presented in Table 10. There were three moderator analyses that were statistically significant. First, samples where the children were classified as at-risk were associated with higher rates of disorganized attachment, $p < .001$. Samples where it was unclear whether or not the disorganized classification was combined or not with children who could not be classified were associated with a greater rate of disorganized attachment, $p = .033$. The mean age of the children in the sample was inversely related to the rate of disorganized attachment, $p = .029$. Finally, the percentage of two parent households in the samples approached significance (positively related; $p = .052$), and mean years of caregiver education (positively related; $p = .099$) approached significance.

Table 10

Moderator Analyses with Samples with Parents At-Risk on the Disorganized Attachment Classification

Moderator	*k*	*Q*	*p*-value	R^2
Type of Sample	76	0.12	.727	0%
Children at-Risk	74	17.04	< .001	19%
Unclassifiable Combined with D	78	6.83	.033	12%
Type of Publication	78	0.41	.814	0%
Year of Publication	78	1.43	.023	1%
State of the Economy	78	0.21	.645	0%
% Female Children	63	0.15	.701	0%
Children Mean Age	71	4.74	.029	5%
Caregiver Mean Age	63	1.14	.285	2%
% White	39	0.19	.661	1%
% Black	32	0.01	.914	0%
% Hispanic	31	0.06	.814	0%
% Two-Parent Household	38	3.77	.052	7%
Mean Years Caregiver Education	13	2.72	.099	21%
% Premature	10	1.11	.292	14%
% Adolescent Parent	16	0.05	.832	0%
% Mood Disorder	15	0.09	.765	4%

Note. Q is the statistic used to test the significance of the meta-regression. R^2 is the proportion of variance explained by the moderator.

Samples with children at-risk.

Secure attachment moderator analyses. Table 11 contains the results of the moderator analyses for the secure attachment classification with samples where the children were classified as at-risk. Targeted samples (samples recruited based on specific characteristic(s)) were significantly associated with higher rates of secure attachment than clinical samples, $p = .026$. As well, samples where the parents were classified at-risk were associated with lower rates of secure

attachment, $p = .015$. Samples from developed countries were associated with high rates of secure attachment than samples from developing countries, $p = .014$. The moderator analysis on the percentage of premature infants approached significance (positively related; $p = .062$). No other moderator analyses were significant.

Table 11

Moderator Analyses with Samples with Children At-Risk on the Secure Attachment Classification

Moderator	*k*	*Q*	*p*-value	R^2
Type of Sample	57	4.96	.026	16%
Parents at-Risk	44	5.94	.015	0%
Type of Publication	57	1.56	.459	3%
Year of Publication	57	0.00	.984	0%
State of the Economy	58	6.08	.014	17%
% Female Children	44	1.35	.246	2%
Children Mean Age	52	0.00	.976	0%
Caregiver Mean Age	38	1.35	.245	0%
% White	18	1.36	.243	5%
% Black	13	0.00	.945	0%
% Hispanic	11	0.68	.409	11%
% Two-Parent Household	26	2.58	.108	10%
% Premature	15	3.50	.062	20%

Note. Q is the statistic used to test the significance of the meta-regression. R^2 is the proportion of variance explained by the moderator.

Disorganized attachment moderator analyses. For the results of the moderator analyses for the disorganized attachment classification with samples where the children were classified as at-risk see Table 12. Samples where the parents were classified at-risk were associated with higher rates of disorganized attachment, $p < .001$. As well, the percentage of premature infants in

the samples was significantly inversely related to the rate of disorganized attachment, $p = .015$.

No other moderator analyses were significant.

Table 12

Moderator Analyses with Samples with Children At-Risk on the Disorganized Attachment Classification

Moderator	*k*	*Q*	*p*-value	R^2
Type of Sample	57	1.07	.301	1%
Parents at-Risk	44	14.64	< .001	28%
Unclassifiable Combined with D	57	0.42	.811	1%
Type of Publication	58	2.43	.297	4%
Year of Publication	58	0.27	.600	0%
State of the Economy	58	0.01	.941	0%
% Female Children	44	1.48	.224	4%
Children Mean Age	53	0.18	.669	1%
Caregiver Mean Age	39	0.35	.555	2%
% White	19	0.58	.448	0%
% Black	13	0.02	.886	0%
% Hispanic	11	1.54	.214	15%
% Two-Parent Household	26	1.48	.223	6%
% Premature	15	5.91	.015	35%

Note. Q is the statistic used to test the significance of the meta-regression. R^2 is the proportion of variance explained by the moderator.

Chapter IV

Discussion

Summary

The overall weighted mean rate of secure attachment ranged from 44% to 60% across the types of samples. As anticipated, community samples had higher rates of secure attachment at 60%, whereas at-risk samples had lower overall mean rates of secure attachment, ranging from 44% to 47%. There was minimal variability across the types of samples for the avoidant and ambivalent classifications. The weighted mean rate of the avoidant classification ranged from 14% to 15% and the ambivalent classification ranged from 8% to 11%. For the disorganized attachment classification, the weighted mean rate ranged from 15% in community samples to 28% and 30% in samples where the parents and children were classified as at-risk, respectively. Overall, it appears that the rates of avoidant and ambivalent classifications are fairly consistent across the types of samples, whereas the rates of secure and disorganized classifications are much more influenced by the type of sample. This was corroborated by the moderator analyses.

Moderator analyses.

State of the economy and culture. Overall there appears to be a significant link between the state of the economy or culture and the rate of the attachment classifications derived from the SSP. As noted earlier, the classification system used for the state of the economy (which was not coded in the previous meta-analyses by van Ijzendoorn et al., 1999; United Nations, 2014, 2018) was equivalent to classifying countries into Western and non-Western cultures that the previous meta-analysis used (van Ijzendoorn et al., 1999). The state of the economy was significantly related to the rate of ambivalent attachment and approached significance with the avoidant attachment classification; developing countries had higher rates of ambivalent attachment and lower rates of avoidant attachment. This result was expected as non-Western cultures tend to

have higher rates of ambivalent attachment compared to Western cultures (Archer et al., 2015; van Ijzendoorn et al., 1999; van Ijzendoorn & Sagi-Schwartz, 2008). Within community samples, the only moderator variable that was significant for both the secure and disorganized attachment classifications was the state of the economy. Developing countries were associated with higher rates of secure attachment and lower rates of disorganized attachment. This finding suggests that although the SSP was developed within a Western culture, there is not a systematic bias of non-Western cultures being classified as having a lower quality of attachment.

In samples with children at-risk, samples from developing countries had lower rates of secure attachment. This finding may be related to the lower availability of social services and resources for children who are at risk for negatively affected developmental trajectories in developing countries (Peters et al., 2008). This association is not necessarily indicative of a systematic bias in the SSP attachment classifications. Overall, however, there is still limited research in developing countries, and further research is still needed to corroborate these findings.

Risk. There was a trend for variables that covered different aspects of risk to be significant predictors of the rate of secure and disorganized attachment, with some indication of cumulative risk. The statistically significant analyses for the secure and disorganized attachment classification were all at-risk characteristics: samples of parents and children that were classified as at-risk, clinical and targeted samples, socioeconomic status variables, and the percentage of caregivers with a mood disorder, were all significantly associated with the rates of secure and/or disorganized attachment. Within samples where the parents were classified as at-risk, the secure and disorganized attachment classifications were significantly related to if the children were also classified as at-risk. This highlights the importance of risk when considering attachment

classifications and indicates some degree of cumulative risk. That is, when multiple risk factors are present, there appears to be lower rates of secure attachment and higher rates of disorganized attachment. The moderator analyses within the samples where the children were classified as at-risk also supported the relationship between multiple risk factors and association between lower rates of secure attachment and higher rates of disorganized attachment.

Methodological quality of primary studies. Across the moderator analyses, there was no significant association with the interrater reliability coefficients of the primary studies (Cohen's Kappa and percent agreement). Although there was variability in interrater reliability between studies, lower interrater reliability does not appear to affect the rate of the four attachment classifications. However, there were some indications across the analyses that coder training and certification may potentially bias the distribution of the attachment classifications. Within the full sample of primary studies, lack of coder training and coder certification were associated with lower rates of disorganized attachment and higher rates of avoidant attachment. As well, a lack of coder training was associated with a higher rate of ambivalent attachment. This may mean untrained or uncertified coders are more likely to classify dyads as avoidant or ambivalent as opposed to disorganized. It should be noted, however, that there were several issues encountered with coding the methodological variables of the primary studies (please see Chapter IX for a discussion of these issues). Thus, these findings should only be viewed as preliminary and further investigation is necessary.

Publication bias. There was no indication of publication bias across moderator analyses. That is, there was no significant association between the type of publication and the rate of each attachment classification. The language of publication was significantly associated with a higher rate of avoidant attachment; studies published in English were associated with lower rates of

avoidant attachment compared to studies published in other languages. English is considered the language of science (Meneghini & Packer, 2007), thus scientific literature is published primarily in English. Language bias (i.e., limiting meta-analyses and systematic reviews to English only) is considered a form of publication bias, as higher quality studies and studies with significant findings tend to be published in English (Borenstein et al., 2009). The non-English studies that were included in the present meta-analysis were from a variety of countries (Chile, France, Switzerland, Italy, Canada, China, Korea). However, given the limited number of studies published in other languages, this finding could also be influenced by other variables, such as the lower rates of avoidant attachment in non-Western countries (Archer et al., 2015; van Ijzendoorn et al., 1999; van Ijzendoorn & Sagi-Schwartz, 2008), which approached significance (p = .056).

Comparison with Previous Findings

In the meta-analysis by van Ijzendoorn et al. (1999) the distribution of the four attachment classifications in a middle class, nonclinical sample of infants was 62% secure, 15% avoidant, 9% ambivalent, and 15% disorganized. This is consistent with the findings from the present study (60% secure, 14% avoidant, 11% ambivalent, 15% disorganized) and overlaps with the 95% confidence intervals in the present study. As well, the rate of disorganized attachment was higher in the majority of the clinical and at-risk samples included in the previous meta-analysis (e.g., depressed parents, children who experienced maltreatment, neurological disorders, low socioeconomic status, adolescent parents) than the middle class North American samples. (van Ijzendoorn et al., 1999). Although the present study used different statistical methodology to analyze the data, this trend was also observed. There were a number of significant moderator analyses related to risk, which linked higher rates of disorganized attachment and lower rates of secure attachment with various facets of risk.

When considering the rate of the attachment classifications in Western and non-Western cultures, the previous meta-analyses on the SSP found a higher rate of ambivalent attachment in non-Western samples (van Ijzendoorn & Kroonenberg, 1988; van Ijzendoorn et al., 1999), but comparable rates of disorganized attachment (van Ijzendoorn et al., 1999). The higher rate of ambivalent attachment is consistent with the significant moderator analysis in the present study, where samples from non-Western cultures had higher rates of the ambivalent attachment classification. The present study has a far larger sample of studies conducted in non-Western cultures, although still limited compared to the extent of the research in Western cultures. The previous meta-analysis included five samples from non-Western cultures (van Ijzendoorn et al., 1999) and the present meta-analysis included 27 samples from non-Western countries, 18 of which were community samples. It was within these analyses that certain differences were observed beyond the expected result of the higher rate of ambivalent attachment. Within community samples, higher rates of secure attachment and lower rates of disorganized attachment were associated with non-Western countries, and within samples of children at-risk, a lower rate of secure attachment was associated with non-Western countries. The meta-analysis on the AAI did not find significant deviations in the distributions of attachment classification in Western and non-Western countries (Bakermans-Kranenburg & van Ijzendoorn, 2008). Again, this previous meta-analysis contained fewer and a less diverse sample of non-Western countries than the current meta-analysis; the only non-Western countries represented were Israel and Japan. Overall, the findings from the present meta-analysis were fairly consistent with the previous meta-analyses with some notable differences in further analyses that were conducted with Western and non-Western cultures.

Implications

Implications for researchers.

The present study is important in that it provides context and comparison for research done with the SSP. Many studies continue to use the original Ainsworth and colleagues (1978) findings and previous meta-analyses (van Ijzendoorn & Kroonenberg, 1988; van Ijzendoorn et al., 1999) as comparisons to contextualize their research (e.g., Jin et al., 2012; Peltola, Frossman, Puura, van Ijzendoorn, & Leppanen, 2015; van den Dries, Juffer, van Ijzendoorn, Bakermans-Kranenburg, & Alikn, 2012). The main analyses of the present study provide a more current and comprehensive reflection of rates of attachment classifications in the SSP. Moreover, the 95% confidence intervals provide a range for which future research can contextualize their results. If the findings of studies deviate significantly from the 95% confidence intervals provided by the current study, this will help point to variables that may potentially affect the rates of the attachment classifications that are important for further investigation.

Given the consistent presence of disorganized attachment across all samples in Study 1, including low risk, community samples, there is a clear indication that the 4-way system of classification is important and more appropriate than the 3-way classification system. The recommendation of noted attachment researchers is to use the 4-way classification system (Solomon & George, 2016); however, the 3-way classification system continues to be used in some research (e.g., Becker-Stoll, Fremmer-Bombik, Wartner, Zimmermann, & Grossmann, 2008; Bohlin, Hagekull, & Andersson, 2005; Diener, Mangelsdorf, McHale, & Frosch, 2002; Planalp & Braungart-Rieker, 2013).

The results indicate that despite the SSP being developed within a Western context, there does not appear to be a systematic bias of a lower rate of secure attachment in non-Western cultures. Although there may be more appropriate methods for understanding attachment in non-

Western cultures (van Ijzendoorn & Sagi-Schwartz, 2008), the SSP is a well-validated measurement tool and is considered the gold standard of measurement (Horowitz, Logsdon, & Anderson, 2005). Attachment research within non-Western countries is growing and using the SSP allows the opportunity to contextualize the research within a vast body of previous research that has used the SSP attachment classifications.

With regard to methodological quality, given that there was no significant association between publication status and the rates of attachment classifications, we can have relative confidence in the results of unpublished research not deviating significantly from the distribution. Similarly, when interrater reliability is poor, there is no indication that this affects the rate of attachment classification; thus, we can still have reasonable confidence in the results of the SSP classifications. The resolution of these disagreements through coder discussion or consultation with an "expert" coder (e.g., Edwards et al., 2004; Tharner et al., 2011) may be steps that are adequate in addressing the coding difficulties.

Implications for clinicians.

The results of this study indicate that clinically, it is important to include the disorganized attachment classification when coding the SSP. Clinicians may be missing key information by failing to consider the disorganized coding procedures in their coding as the disorganized classification was found to be present across all populations included in this study, including the general population in Western countries. This is particularly important given that the disorganized pattern of attachment is associated with the most problematic developmental outcomes (e.g., Edwards et al., 2004; das Eiden et al., 2002; Toth et al., 2009).

Moreover, the results provide support for use of the SSP with culturally and demographically diverse populations. The results of the present study allow clinicians to have

more confidence that the SSP attachment classifications are providing them an accurate representation in their assessment of the quality of the infant-caregiver dyadic relationship across a range of populations. It should be noted that the SSP is only a sample of behaviour of the infant-caregiver dyad at one timepoint (Granqvist et al., 2017). When used at an individual level, there are considerations that clinicians should take for increasing the validity of the SSP results, such as incorporating samples of behaviour over time, and information obtained about the history of the infant and their caregiver (Granqvist et al., 2017).

Future Directions for Research

There is a large body of research using the SSP, yet there are still many parts of the world that have been untouched by attachment research and the SSP. For instance, considering Middle-Eastern countries, outside of the research that has been conducted in Israel, there was one dissertation conducted in Iran that was included in the present study (Mazaheri-Tehrani, 1997). Similarly, within Africa, there was one study conducted in Mali, one in South Africa, and one in Zambia that were retrieved in the present study (Mooya, Sichimba, & Bakermans-Kranenburg, 2016; Tomlinson et al., 2005; True, Pisani, & Oumar, 2001). Despite the gains in cross-cultural research that the field of attachment has made over the last couple of decades, there are still many countries that have not been included. To be able to conduct more in-depth analyses, such as comparing between predominately non-Western continents or between non-Western countries in a meta-analysis, there needs to be a much larger base of cross-cultural research. Beyond comparing across, to be able to compare within a country or culture, again a much larger base of research is needed for this to be feasible in non-Western countries. There is still insufficient research to conduct a meta-analysis of attachment classifications and relevant moderator analyses within a country or continent of non-Western cultures. When further research

accumulates, Cassibba and colleagues' (2013) meta-analysis of Italian attachment research is an excellent example to emulate. They conducted a meta-analysis of infant attachment and Adult Attachment Interview studies and were able to discern differences in distributions, such as a higher rate of avoidant attachment in samples of Italian infants and less unresolved loss in samples of nonclinical Italian adults. Developing a base of research in countries with varying economic and cultural realities is important to enable us to identify differences, which then provides direction for future areas of investigation.

These results provide some indication that coder training and certification may impact the rate of attachment classifications. However, this finding is only correlational, and it is unclear if there is another variable which may be accounting for this association. The present study encountered several difficulties with the coding of these variables from the primary studies (see Chapter IX). Thus, direct comparisons are crucial to substantiate this finding. If there is a true effect of coder training and certification on the rate of attachment classifications, then further investigation is needed to determine what processes might be underlying this finding. This may be an area in which attachment research can learn from behaviourally-oriented research in systematically comparing modality and intensity of training for quality of administration and coding (e.g., de Oliveira et al., 2016; Miljkovic, Kaminski, Yu, & Wishnowski, 2015; Ramon, Yu, Martin, & Martin, 2015). For example, systematically comparing the coding of self-taught coders, to those that have completed the training, to those that have completed the training and certification procedure, to "expert" coders. Empirical evidence is needed to justify the time and financial resources that are currently required to complete the full training and certification.

Conclusions

In conclusion, the results of Study 1 are generally in line with previous meta-analytic findings. The findings are consistent with the universality hypothesis of attachment; although the SSP may not be the most optimal method of understanding attachment in non-Western cultures (van Ijzendoorn & Sagi-Schwartz, 2008), there does not appear to be a systematic bias of classifying children in non-Western cultures as non-secure at a greater rate. Two key areas of future research that were identified include expanding the cross-cultural attachment research and further investigation into the effects of coder training and certification on the distribution of attachment classifications. Strengths and limitations of the present study will be discussed in Chapter IX.

Chapter V

Study 2

The purpose of Study 2 was to examine the rate of underlying attachment classifications in infants classified as disorganized and potential factors that may affect these rates. Main and Solomon (1986) advised that when infants are classified as disorganized that they should also be assigned an underlying attachment classification of secure, insecure-avoidant, or insecure-ambivalent. They noted in their research that the disorganized behaviours occurred briefly and then the infant would return to using an organized strategy (A, B, or C). Assigning an underlying classification to infants classified as disorganized continues to be cited as the recommendation (Solomon & George, 2016).

This meta-analysis is intended to provide context to the studies that use the 3-way (ABC) classification system. Many researchers continue to use the 3-way classification system in analyses (e.g., Becker-Stoll et al., 2008; Bohlin et al., 2005; Diener et al., 2002; Planalp & Braungart-Rieker, 2013). By quantitatively summarizing where children classified as disorganized fall into the 3-way classification system we can better understand where the children with a disorganized attachment classification are likely distributed in studies that only provide the 3-way attachment classifications.

Moreover, in Main and Solomon's (1986, 1990) original sample of infants classified as disorganized, 62% were found to have an underlying secure attachment classification, 23% an underlying ambivalent classification, and 15% an underlying avoidant classification. However, in different samples, there have been deviations in the distribution of underlying attachment classifications. For example, in a maltreated sample, 55% of the infants with a disorganized attachment classification had an underlying avoidant classification, 27% secure, and 18%

ambivalent (Carlson, Cicchetti, Barnett, & Braunwald, 1989). There has been a lack of exploration as to why these differences in the distribution of the underlying classifications occur.

Disorganized attachment is conceptualized as the most problematic pattern of attachment (Solomon & George, 1999), and this has been supported by the research on developmental trajectories (e.g., Carlson, 1998; Delker, Bernstein, & Laurent, 2018; Fearon & Belsky, 2011). It is unclear if the underlying classifications for disorganized infants differentiate within the disorganized category in a meaningful way, such as differences in etiology and sequelae. Exploring whether there are variables associated with the different underlying classifications is an important first step in discerning whether providing underlying classifications for infants classified as disorganized provides a useful categorization.

Within an individual study, there is only typically 15% of the sample with a classification of disorganized (van Ijzendoorn et al., 1999). This small percentage of the entire sample results in even smaller sample sizes to be able to investigate group differences between the underlying classifications of the infants classified as disorganized. Meta-analysis is a useful strategy when there is a lack of power; by combining many samples, this increases power and provides the opportunity to model the variability (heterogeneity) between studies (Borenstein et al., 2009). The purpose of Study 2 was to address these gaps in our understanding now that there is a larger body of research available. Study 2 used meta-analysis to quantify the weighted mean overall rates of underlying attachment classifications of infants classified as disorganized and moderator analyses were conducted to examine variables that may affect the rate of the underlying attachment classifications.

Research Questions

Study 2 addressed the following research questions:

Main Analyses:

1. What is the rate of underlying secure (B) attachment in infants with a primary classification of disorganized (D) attachment in the Strange Situation paradigm?
2. What is the rate of underlying avoidant (A) attachment in infants with a primary classification of disorganized (D) attachment in the Strange Situation paradigm?
3. What is the rate of underlying ambivalent (C) attachment in infants with a primary classification of disorganized (D) attachment in the Strange Situation paradigm?

Moderator Analyses:

1. Does the type of sample (community, targeted, or clinical) affect the rate of attachment classifications?
2. Does child risk status affect the rate of attachment classifications?
3. Does parent risk status affect the rate of attachment classifications?
4. Does the language the study was published in affect the rate of attachment classifications?
5. Does the type of publication affect the rate of attachment classifications?
6. Does the year of publication of the study affect the rate of attachment classifications?
7. Does the state of the economy of the country the study was conducted in affect the rate of attachment classifications?
8. Does the dominant culture (Western versus non-Western culture) of the country the study was conducted in affect the rate of attachment classifications?
9. Does the percentage of female children in the sample affect the rate of attachment classifications?

10. Does the children's mean age at the time the Strange Situation paradigm was administered affect the rate of attachment classifications?
11. Does the parent/caregiver mean age at the time the Strange Situation paradigm was administered affect the rate of attachment classifications?
12. In the U.S. samples, does the percentage of the sample that are White, Black, and Hispanic affect the rate of attachment classifications?
13. Does family form affect the rate of attachment classifications?
14. Does the percent of adolescent parents in the sample affect the rate of attachment classifications?
15. Does the study reporting that the coders received the official training of the SSP classifications affect the rate of attachment classifications?
16. Does the study reporting that the coders completed the reliability certification of the SSP affect the rate of attachment classifications?
17. Does the percent of studies that were second coded affect the rate of attachment classifications?
18. Does the intercoder reliability coefficient (Cohen's Kappa and percent agreement) affect the rate of attachment classifications?
19. Does combining the unclassifiable infants with the D infants affect the rate of disorganized attachment?

Chapter VI

Method

Procedure

Study 2 used the same search strategy as Study 1. The inclusion criteria differed in that instead of requiring studies to include the rates or *n* for the 4-way attachment classifications, the studies must have provided rates or *n* for the underlying attachment classifications of the participants with a disorganized attachment classification. The majority of studies included in Study 2, were thus also included in Study 1. There were circumstances where the most comprehensive data set for Study 1 did not provide the underlying attachment classifications, but these were provided in another study with the same data set.

Data Extraction

The coding manual was the same coding manual that was used in Study 1. The data extraction for the effect size data for Study 2 was located on the last page of the coding manual (Appendix A). As data for the moderator variables are rarely separated by attachment type, for consistency the data from the overall sample was used. Thus, the data that was extracted for the moderator analyses in Study 1 in the coding manual was the same data used for the moderator analyses in Study 2.

For inter-coder reliability, the same second coder, training procedures, and mastery criterion that was used for Study 1 were also used in Study 2. In Study 2, reliability was obtained for 54% of the included studies. Inter-coder reliability was 100%.

Data Analysis

The same data analysis procedures used in Study 1 were also used in Study 2. As Study 2 contained fewer studies than Study 1, there were moderator analyses that were conducted in

Study 1 that had insufficient studies to run them on the underlying classifications in Study 2. For each analysis, there was a minimum requirement of 10 studies in order to run the meta-regression analysis; this is the threshold recommended in the Cochrane Handbook (Higgins & Green, 2011). See Appendix B for a list of the planned moderator analyses that were not conducted.

Chapter VII

Results

Overview

There were 76 studies that were eligible for Study 2. Some studies included more than one independent sample; thus the total number of independent samples (*k*) included in the meta-analysis was 88. See Appendix F for a complete list of the studies and their characteristics that were included in Study 2. Publication dates of eligible studies ranged from 1987 to 2017. The majority of studies were conducted in North America (54%) or Europe (29%).

Main Analyses

All studies. The weighted mean rates of the three underlying attachment classifications for infants classified as disorganized were first calculated with all 88 eligible samples. For the underlying classification of secure, the overall weighted mean rate was 40.37%, 95% CI = [36.42, 44.44], $Q(87) = 155.28$, $p < .001$, $I^2 = 43.97\%$, $\tau^2 = 0.23$. For the underlying avoidant attachment classification, the weighted mean rate was 35.23%, 95% CI = [31.45, 39.21], $Q(87) = 148.66$, $p < .001$, $I^2 = 41.48\%$, $\tau^2 = 0.22$. For the underlying ambivalent classification, the weighted mean rate was 28.07%, 95% CI = [24.71, 31.70], $Q(87) = 140.05$, $p < .001$, $I^2 = 37.88\%$, $\tau^2 = 0.22$. There was significant heterogeneity across all three analyses; the percentage of the observed heterogeneity that is real (I^2) fell within the moderate range.

Community samples. There were 38 community samples included in Study 2. The weighted mean rate of underlying secure attachment classifications for infants classified as disorganized in community samples was 42.36%, 95% CI = [36.24, 48.72], $Q(37) = 57.16$, $p = .018$, $I^2 = 35.27\%$, $\tau^2 = 0.20$. There was significant heterogeneity, however the level of observed heterogeneity that is real (I^2) fell in the low to moderate range. For the underlying avoidant

classification, the weighted mean rate was 35.50%, 95% CI = [30.20, 41.12], $Q(37) = 48.87$, $p = .092$, $I^2 = 24.29\%$, $\tau^2 = 0.13$. The weighted mean rate for the underlying ambivalent classification was 27.00%, 95% CI = [22.30, 32.29], $Q(37) = 46.91$, $p = .127$, $I^2 = 21.13\%$, $\tau^2 = 0.12$. There was not significant heterogeneity observed in these analyses.

Samples with parents at-risk. There were 26 samples included in Study 2 where the parents were classified as at risk. The weighted mean rate of the underlying secure attachment classification in infants with a disorganized classification, in samples with the parents at-risk was 36.12%, 95% CI = [28.95, 43.98], $Q(25) = 53.53$, $p < .001$, $I^2 = 53.30\%$, $\tau^2 = 0.31$. The weighted mean rate for the underlying avoidant classification was 34.33%, 95% CI = [28.35, 40.85], $Q(25) = 39.43$, $p = .033$, $I^2 = 36.60\%$, $\tau^2 = 0.16$. For the underlying ambivalent classification, the weighted mean rate was 30.33%, 95% CI = [23.50, 38.15], $Q(25) = 52.79$, $p < .001$, $I^2 = 52.65\%$, $\tau^2 = 0.35$. Significant heterogeneity was observed across all three analysis and the percentage of the observed heterogeneity that is real (I^2) fell within the moderate range.

Samples with children at-risk. There were 14 studies where the children were classified as at-risk that were included in Study 2. The weighted mean rate for the underlying secure classification of infants classified as disorganized in samples where the children were at-risk was 31.12%, 95% CI = [21.53, 42.67], $Q(13) = 24.36$, $p = .028$, $I^2 = 46.64\%$, $\tau^2 = 0.36$. The weighted mean rate for the underlying avoidant classification was 44.68%, 95% CI = [33.68, 56.22], $Q(13) = 23.74$, $p = .034$, $I^2 = 45.23\%$, $\tau^2 = 0.29$. Significant heterogeneity was observed in these two analyses, which fell within the moderate range of observed heterogeneity that is real (I^2).

For the underlying ambivalent classification, the weighted mean rate was, 28.04%, 95% CI = [21.60, 35.52], $Q(13) = 14.22$, $p = .358$, $I^2 = 8.60\%$, $\tau^2 = 0.04$. There was not significant

heterogeneity. Table 13 contains the results of the main analyses of Study 2 and Appendix G contains the forest plots for the main analyses.

Table 13

Rates of Underlying Attachment Classifications Across Types of Samples

		Secure		Avoidant		Ambivalent	
	k	Rate	95% CI	Rate	95% CI	Rate	95% CI
All Studies	88	40.37	[36.42, 44.44]	35.23	[31.45, 39.21]	28.07	[24.71, 31.70]
Community	38	42.36	[36.24, 48.72]	35.50	[30.20, 41.18]	27.95	[22.30, 32.29]
Parents at-Risk	26	36.12	[28.95, 43.98]	34.33	[28.35, 40.85]	30.33	[23.50, 38.15]
Children at-Risk	14	31.11	[21.53, 42.67]	44.68	[33.68, 56.22]	28.04	[21.60, 35.52]

Moderator Analyses

The moderator analyses were performed on each of the three underlying attachment classifications.

Underlying secure attachment. Table 14 contains the moderator analyses for the underlying secure attachment classification of infants classified as disorganized in the SSP. None of the analyses were statistically significant. However, the moderator analyses on parent and child risk status approached significance, $p = .051$ and $p = .059$, respectively. When the samples were of parents or children classified as at-risk, this was associated with lower rates of underlying secure attachment in the infants classified as disorganized. As well, the moderator analyses for coder training (the official training was associated with higher rates of underlying secure attachment, $p = .078$), and the percent of studies that were second coded (inversely related; $p = .078$) approached significance.

Table 14

Moderator Analyses on the Underlying Secure Attachment Classification

Moderator	*k*	*Q*	*p*-value	R^2
Type of Sample	77	3.87	.145	8%
Parents at-Risk	74	3.82	.051	25%
Children at-Risk	82	3.58	.059	12%
Unclassifiable Combined with D	88	2.19	.335	14%
Language of Publication	88	2.32	.128	1%
Type of Publication	88	0.01	.911	0%
Year of Publication	86	0.34	.560	5%
State of the Economy	88	0.08	.777	1%
% Female Children	61	0.65	.421	9%
Children Mean Age	80	0.68	.420	0%
Caregiver Mean Age	57	0.54	.464	0%
% White	29	0.20	.653	0%
% Black	26	0.00	.985	0%
% Hispanic	23	0.78	.376	8%
% Two-Parent Household	44	0.00	.960	0%
% Adolescent Parent	10	0.08	.783	0%
Coder Training	17	3.05	.081	22%
Coder Certification	24	0.58	.447	4%
% Studies Second Coded	40	3.12	.078	23%
Interrater Reliability - % Agreement	31	0.47	.495	0%
Interrater Reliability – Cohen's Kappa	26	1.99	.159	0%

Note. Q is the statistic used to test the significance of the meta-regression. R^2 is the proportion of variance explained by the moderator.

Underlying avoidant attachment. For the results of the moderator analyses on the underlying avoidant attachment classification see Table 15. Only one of these moderator analyses were statistically significant. In samples where the children were classified as at-risk,

there were lower rates of the underlying avoidant classification, $p = .032$. The moderator analyses for language of publication (studies published in English were associated with lower rates of the underlying avoidant classification; $p = .081$), and the percent of White (inversely related; $p = .074$) and Black (positively related; $p = .086$) participants in the sample of studies conducted in the United States approached significance.

Table 15

Moderator Analyses on the Underlying Avoidant Attachment Classification

Moderator	*k*	*Q*	*p*-value	R^2
Type of Sample	77	1.44	.488	0%
Parents at-Risk	74	0.02	.892	2%
Children at-Risk	82	4.60	.032	30%
Unclassifiable Combined with D	88	1.33	.514	2%
Language of Publication	88	3.05	.081	5%
Type of Publication	88	0.29	.591	7%
Year of Publication	86	1.68	.195	7%
State of the Economy	88	0.18	.670	11%
% Female Children	61	0.00	.969	0%
Children Mean Age	80	0.14	.710	0%
Caregiver Mean Age	58	2.57	.109	20%
% White	29	3.19	.074	3%
% Black	26	2.95	.086	0%
% Hispanic	23	2.29	.131	34%
% Two-Parent Household	44	0.16	.689	0%
% Adolescent Parent	10	0.23	.629	0%
Coder Training	17	0.00	.961	0%
Coder Certification	24	0.36	.547	3%
% Studies Second Coded	40	1.96	.161	0%
Interrater Reliability - % Agreement	31	1.43	.232	0%

Interrater Reliability – Cohen's Kappa	26	0.33	.567	0%

Note. Q is the statistic used to test the significance of the meta-regression. R^2 is the proportion of variance explained by the moderator.

Underlying ambivalent attachment. See Table 16 for the results of the moderator analyses on the underlying ambivalent attachment classification for infants classified as disorganized. The percentage of Black participants in a sample within studies conducted in the United States was significantly inversely related to the rate of underlying ambivalent attachment, $p = .015$. The moderator analysis for coder training approached significance (coder training was associated with lower rates of the underlying ambivalent attachment classification; $p = .080$). No other moderator analyses were statistically significant.

Table 16

Moderator Analyses on the Underlying Ambivalent Attachment Classification

Moderator	*k*	*Q*	*p*-value	R^2
Type of Sample	77	0.95	.621	3%
Parents at-Risk	74	1.74	.187	9%
Children at-Risk	82	0.02	.880	0%
Unclassifiable Combined with D	88	2.77	.250	19%
Language of Publication	88	0.00	.997	0%
Type of Publication	88	0.01	.933	0%
Year of Publication	86	0.94	.333	1%
State of the Economy	88	1.69	.193	3%
% Female Children	61	1.27	.260	14%
Children Mean Age	81	2.41	.121	0%
Caregiver Mean Age	58	0.49	.483	3%
% White	29	1.97	.160	32%
% Black	26	5.88	.015	73%

% Hispanic	23	0.55	.458	5%
% Two-Parent Household	44	0.13	.715	0%
% Adolescent Parent	10	0.09	.768	0%
Coder Training	17	3.08	.080	10%
Coder Certification	24	0.47	.495	12%
% Studies Second Coded	40	0.26	.612	19%
Interrater Reliability - % Agreement	31	0.08	.774	8%
Interrater Reliability – Cohen's Kappa	26	0.20	.657	0%

Note. Q is the statistic used to test the significance of the meta-regression. R^2 is the proportion of variance explained by the moderator.

Chapter VIII

Discussion

Summary

The underlying classifications of infants classified as disorganized in the SSP were relatively evenly distributed across secure, avoidant, and ambivalent. The overall weighted mean rate of underlying secure attachment ranged from 31% to 42%, with at-risk groups having slightly lower rates of underlying secure attachment. The overall weighted mean rate of underlying avoidant attachment ranged from 34% to 45% across the types of samples. With community samples and samples where the parents were classified as at-risk, the rates were 36% and 34% respectively. Samples where the children were classified as being at-risk had a higher rate of underlying avoidant attachment of 45%. There was very little variability across the types of samples for the weighted mean rate of the underlying ambivalent classification (range 28% to 30%). Thus, the majority of the fluctuation in rates across the types of samples was between the underlying secure and avoidant classifications. However, at least a third of the infants that were classified as disorganized had an underlying secure classification regardless of the type of sample or risk status.

For Study 2, there were very few moderator analyses that were statistically significant. The majority of moderators that were statistically significant or approached significance were related to risk status or were SSP methodological quality variables of the primary studies.

Implications

Implications for researchers.

Even within community samples, the disorganized attachment classification is consistently present at a mean overall rate of 15%. This is a sizeable number of infants that are being redistributed within the 3-way classifications, thus making comparisons between studies

that use the 3-way classification system and those that use the 4-way classification system difficult. The findings of the present study can be used as a guide for comparison as it provides an estimate of where disorganized infants are likely distributed, thus facilitating comparison between distributions of 3-way and 4-way classifications across studies.

Disorganized attachment is conceptualized as the most problematic pattern of attachment (Solomon & George, 1999). When the 3-way classifications are used, this may be biasing or misrepresenting the distribution of classifications by inflating the number of securely attached infants. The present study found that approximately a third of disorganized infants have an underlying classification of secure. This further complicates group comparisons when using the 3-way classification system by potentially including infants who in fact have a disorganized pattern of attachment with an underlying classification of secure in the group of actual secure infants. Including infants with an underlying classification of secure with the truly secure infants may actually be reducing between-group differences.

Using the 3-way classification system is sometimes justified by increased power compared to the 4-way classification (e.g., Planalp & Braungart-Rieker, 2013). However, if by doing so it is pulling the mean of the secure group closer to the mean of the insecure groups, then this is not an effective strategy for increasing power. If power is an issue, secure versus non-secure, or organized versus disorganized are more accurate ways to reflect the data. Another option would also be using the 3-way classifications, but removing the disorganized infants from the analyses.

Implications for clinicians.

The results of the present study highlight the risk for clinicians of not considering the disorganized classification when using the SSP; approximately a third of infants that were

classified as disorganized were classified as secure in the 3-way classification system in the present study. Clinicians may be missing dyads with problematic patterns of interaction by using the 3-way classification system for the SSP. Further, clinicians may want to consider if assigning an underlying classification provides clinically useful information. The present study did not find any support that the underlying classifications provided a useful differentiation within infants classified as disorganized in the SSP.

Future Directions for Research

The underlying classifications appear to have been intended to be descriptive of the infants' behaviour between instances of disorganized behaviour (Main & Solomon, 1986). We still know very little about the underlying classification and the utility of also providing an underlying classification in addition to the classification of disorganized. Future research should investigate if providing an underlying classification actually differentiates infants classified as disorganized in a meaningful way. It is critically important to investigate if there are parenting behaviours more strongly associated with one of the underlying classifications and whether or not the underlying classification differentially predict the developmental trajectories of the children classified as disorganized.

Conclusions

The underlying attachment classifications were fairly evenly distributed across the other three categories (secure, avoidant, and ambivalent). The 3-way distribution with the inclusion of infants classified as disorganized within their underlying attachment classification, may not be an optimal comparison. Researchers may want to consider other methods of categorization or using a continuous measure of attachment. Future research should discern if the underlying

classifications provide a useful differentiation and if they do provide information beyond the disorganized classification in regard to development trajectories and the resulting sequelae.

Chapter IX

Overall Discussion

The following discussion will highlight the strengths and limitations that are relevant to both Study 1 and 2 and will provide recommendations for future research.

Strengths

The present studies provide an update of the distributions of attachment, which are widely used for comparison by researchers. With a larger data set, further analyses were able to be completed with the data on underlying classifications, which the previous meta-analysis lacked sufficient data to conduct (van Ijzendoorn et al., 1999). Moreover, there are several important implications of the findings of both Study 1 and Study 2 that have been outlined in previous sections (see Chapter IV and VIII).

Another strength of the two studies was the number of samples included; Study 1 included 266 independent samples and Study 2 included 88 independent samples. Previous reviews have found that an average Cochrane Review contained six trials (Mallett & Clarke, 2002) and a more recent study found that the median number of studies included in systematic reviews and meta-analyses was 15 studies (Page et al., 2016). The present studies far exceed these numbers, which results in more accurate estimations of the mean of the distribution of true effects and greater power for the moderator analyses.

The methodology used in the present studies took proactive steps to reduce publication bias from biasing the analyses. A comprehensive search strategy was used to identify both published and non-published studies. Moreover, the present studies included studies published in languages other than English. Many meta-analyses and reviews restrict their searches based on

language (Moher et al., 2007). Further, the present studies did not exclude any studies on the basis of language.

Limitations

Methodological. A methodological limitation of the moderator analyses is that they are associational only. Thus, these analyses cannot be used to draw conclusions about the direction of any significant associations. The hope is that the findings of the present studies will be used to provide ideas for future research and the rates of the attachment classifications will be used as comparisons for researchers.

Further, the present studies were limited to only the infant version of the SSP with the 4-way attachment coding system. Although limiting to one measure and coding system can provide more clarity in the results, this study was thus unable to conduct comparisons between different measures and coding systems. This would be valuable area for future meta-analyses to address.

The statistical methodology used in the present studies assumes independence of studies (Borenstein et al., 2009) and the recommendation followed by the present studies was if two primary studies were not sufficiently different they should be coded as duplicates or overlapping samples (Wood, 2008). A systematic process was used to identify overlapping samples (Wood, 2008) and other researchers experienced in meta-analysis were consulted to assist in making final decisions when it was unclear. Despite the rigorous process, it is possible that studies were unnecessarily excluded with this approach due to the unclear reporting.

Although the present studies did not exclude any studies based on language, the searches were only conducted in French and English. Due to resource limitations, it was not possible to conduct searches in languages other than English and French. PsycINFO retrieves articles in other languages, but this is not as comprehensive as a systematic search in a given language or

including an attachment researcher who is aware of the literature in a given language, especially to help identify unpublished studies in that language.

Another limitation to note is that not all primary studies provided data on all variables. Thus, as can been seen in Tables 3 to 12, and 14 to 16, several analyses had fewer than 20 samples. This was anticipated for some analyses as they are quite specific, but the number of samples that could be included was also reduced in many instances by authors not reporting on the variable of interest. Even basic demographic variables such as the gender composition of the infants in the sample were not always reported.

A difficulty encountered in the present studies was the inconsistent manner in which coder training and reliability was reported. Coder training and reliability certification are available from the University of Minnesota and there are currently three trainers certified in teaching the SSP (Elizabeth Carlson, Alan Sroufe, and Robert Weigand; Strange Situation Training, 2018). However, some studies had coders that were trained by someone who took the training, or an experienced coder who was not certified in teaching the SSP. Other studies made vague statements to describe training such as "three reliable coders" (Cassidy, Woodhouse, Sherman, Stupica, & Lejuez, 2011). In these cases, it is unclear whether the coders received the official training and reliability certification through the University of Minnesota or if other training procedures were used. Further, some studies simply stated that an "expert coder" completed the coding. Many prolific attachment researchers have been using the SSP since before the official training and certification procedure was developed, which make these nuances hard to code into discrete categories. There were also cases where a portion of the coders were trained (e.g., Ward et al., 2000). These issues resulted in many studies having to be excluded from the moderator analyses for coder training and certification because they did not clearly fit

into the categories (no official training or certification vs. completed the official training and certification).

Another methodological limitation of the present studies was the inconsistent and unclear reporting of reliability statistics in the primary studies. There were a number of primary studies where it was unclear if reliability statistics were for the 4-way classifications or other classifications (3-way, secure vs. insecure, organized vs. disorganized). As well, there were times where the 4-way classifications were used, but the reliability coefficients were not reported for the 4-way classifications. For example, Archer and colleagues (2015) present both 3-way and 4-way classifications, however they state, "One-quarter (16/61) of the procedures were also coded by a second reliable and highly experienced coder HS (initially trained in 1988 by Mary J. Ward), with 88% agreement (Kappa = .80)" (p. 487). From this information, the reader is unable to ascertain whether the reliability coefficients presented are in reference to the 3-way or 4-way distribution or both. Again, this lack of clarity in reporting makes accurate coding difficult.

The limitations with the coding of the methodological variables in the primary studies discussed above have implications for the interpretation of the results. Due to inconsistent and unclear reporting, it is difficult to be confident in the findings related to the methodological quality of the primary studies. These findings should be taken as initial indicators that further research is warranted in these areas.

Recommendations. To assist researchers in conducting future meta-analyses, there should be clearer reporting of the data set used. There are a number of ways in which this can be accomplished to assist in the identification of overlapping samples to satisfy the statistical assumptions in meta-analyses and not unnecessarily exclude relevant studies. First, naming the data set is helpful, especially in large scale studies where there are many studies published using

the same data set. Examples of named data sets that are consistently reported include the Generation R Study (e.g., Tharner et al., 2011) and the NICHD Study of Early Child Care and Youth Development (e.g., NICHD Early Child Care Research Network, 1997). If a study is a replication or similar study, it is helpful for authors to clearly state this and cite the previous study or studies that they have conducted that are similar with different samples (e.g., Ward, Kessler, & Altman, 1993; Ward et al., 2000). Other useful ways for authors to draw attention to overlapping samples in their primary studies are by indicating the time frame that the data was collected and consistently citing the first published or original study using the data set. Some large-scale studies have websites that provide all the citations from the project (e.g., NICHD SECCYD Series, 2018), or ResearchGate can also be used to list all references that were part of a project (ResearchGate, n.d.). Ideally, authors will use more than one of these recommendations in combination to help improve clarity for future meta-analyses trying to discern overlapping samples.

To facilitate future meta-analyses on the methodological quality of primary studies that use the SSP there are a number of recommendations for reporting that have stemmed from the present studies. First, is it important that authors clearly report how all coders were trained and specify if it was the official training and certification through the University of Minnesota. It is also important for authors to report the name of the "expert" coder to enable researchers to make their own coding criteria for who qualifies as an expert coder. Authors should provide the inter-coder reliability for the classifications that are reported and clearly identify which classification system the reliability coefficients correspond to.

Culture variables. A limitation of the present studies, with regard to culture is the simplified classification of culture. By using categorical classifications, generalizations were

made. Culture is clearly more complex and nuanced than splitting countries into non-Western or Western culture dominant. The purpose of the present studies was to provide a "bird's eye view," help direct future research, and discern if there were overall patterns of cultural bias within the body of literature. The present studies did not provide evidence of cultural bias in the classification of infants in the SSP. Despite this finding, it is important for researchers to continue to improve our understanding and measurement of attachment cross-culturally. Primary research studies should continue to explore the nuances of attachment cross-culturally.

Moreover, the classifications for culture into non-Western and Western culture dominant corresponded completely to the classification of countries' state of the economy. Previous research has established the impact of risk on attachment as well as child development more broadly (e.g., Cyr et al., 2010; Grantham-McGregor et al., 2007). Unfortunately, there were no eligible studies conducted in countries where the economy was in transition. As well, Japan is currently the only country that is classified as developed and is a non-Western dominant culture and there were no eligible studies conducted in Japan. Japan and countries who are in a state of economic transition would be important countries for attachment researchers to include to help facilitate disentangling the impact of the higher level of risk present in developing countries and the impact of culture on attachment.

Implications

The coding criteria for the 3-way classification (secure, avoidant, and ambivalent) system and the criteria for the disorganized classification are published separately (Ainsworth et al., 1978; Main & Solomon, 1986). Similarly, the official training for the SSP coding divides the two weeks of training, with the first week focusing on the 3-way classification system and the second week focusing on the disorganized classification. Moreover, these two weeks do not need to be

taken in conjunction (Strange Situation Training, 2018). This may inadvertently send a message that the disorganized classification is optional.

The current recommendation is to use the 4-way classification system (Solomon & George, 2016). The findings from the present studies clearly demonstrate that the 4-way classification should be used instead of the 3-way classification system; there is a consistent presence of disorganized attachment across all populations and a third of the infants classified as disorganized are classified as secure when the 3-way classification system is used. We cannot change the historic publications on the SSP classifications (Ainsworth et al., 1979; Main & Solomon, 1986); however, training and future publications should emphasize the importance of the disorganized classification. This is imperative, given the myriad of negative developmental outcomes associated with the disorganized classification (e.g., Edwards et al., 2004; das Eiden et al., 2002; Toth et al., 2009). Moreover, the findings from the present studies suggest that there should not be a divide between Ainsworth's and colleagues (1978) original three classifications and the disorganized classification, they should be taught and written about as an integrated whole classification system.

Conclusions

Although the present studies have several limitations, these limitations draw awareness to important issues within the SSP literature and recommendations for how researchers can proceed to start addressing these issues. The publication rate of meta-analyses has increased exponentially over time and concerns have been raised about the quality and usefulness of many meta-analyses (Ioannidis, 2016). Improving the clarity of reporting will help future meta-analysts to be able to accurately code the information provided in the primary studies and provide the most comprehensive results.

Risk was an important variable in both studies. In Study 1, cumulative risk was associated with increased rates of disorganized attachment and lower rates of secure attachment. In Study 2, risk did not significantly differentiate between the underlying classifications, which drew into question the utility of providing the underlying classifications. Both studies highlight the importance of using the 4-way classification system. The results suggest that the disorganized classification should not be viewed as optional, but as crucial classification when providing attachment classifications of infants in the SSP.

References

References marked with an asterisk indicate studies included in the meta-analyses

*Abbott, K. (2016). *Attachment during the first year of life: Validity and longitudinal associations to 14 months, of attachment classification at 7 months* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. 10755288).

*Abramis, M. (1990). *Regulation of mother-infant affective engagement* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. 9020091).

*Abrams, K. Y. (2000). *Pathways to disorganization: A study concerning varying types of parental frightened and frightening behaviors as related to infant disorganized attachment* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. 9979538).

*Ahnert, L., Gunnar, M., Lamb, M., & Barthel, M. (2004). Transition to child care: Associations with infant-mother attachment, infant negative emotion, and cortisol elevations. *Child Development, 75*(3), 639–650. doi:10.1111/j.1467-8624.2004.00698.x

*Ahnert, L., & Lamb, M. (2000). Infant–care provider attachments in contrasting child care settings II: Individual-oriented care after German reunification. *Infant Behavior and Development, 23*(2), 211–222. doi:10.1016/S0163-6383(01)00042-X

Ainsworth, M. D. S. (1967). *Infancy in Uganda: Infant care and the growth of love*. Baltimore, MD: John Hopkins University Press.

Ainsworth, M. D. S. (1979) Infant-mother attachment. *American Psychologist, 34*, 932-937.

Ainsworth M. D. S., Bell, S., Stayton, D. (1974). Infant–mother attachment and social development. In M. P. Richards (Eds.) *The Integration of a Child into a Social World* (pp. 99-135). London, UK: Cambridge University Press.

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of Attachment*. Hillsdale, NJ: Erlbaum.

*Ainsworth, M. D. S., & Eichberg, C. G. (1991). Effects on infant-mother attachment of mother's unresolved loss of an attachment figure, or other traumatic experience. In C. M. Parkes, J. Stevenson-Hinde, & P. Marris (Eds.), *Attachment across the life cycle* (pp. 160-183). New York, NY: Tavistock/Routledge.

*Albertson, J. G. (2017). *Minding the Baby®: Maternal adverse childhood experiences and treatment outcomes in a mother-infant home visiting program* (Doctoral dissertation). Retrieved from https://academicworks.cuny.edu/gc_etds/2194/

*Ammaniti, M., Candelori, C., Pola, M., Speranza, A. M., & Tambelli, M. (1994). Influenze culturali e dinamiche relazionali nell'attaccamento infantile. Indagine su un campione Italiano [Cultural influences and relational dynamics in infantile attachment: Study of an Italian sample]. *Età Evolutiva, 47,* 99-109.

*Ammaniti, M., Cimino, S., Lucarelli, L., Speranza, M. A., & Vismara, L. (2010). Infantile anorexia and the child-caregiver relationship: An empirical study on attachment patterns. *Funzione Gamma, 14,* 1-15. Retrieved from https://www.funzionegamma.it/wp-content/uploads/infantile-anorexia-14e.pdf

*Ammaniti, M., Sergi, G., Speranza, A. M., Tambelli, R., & Vismara, L. (2002). Maternità a rischio, interazioni precoci e attaccamento infantile [High-risk motherhood, early interactions, and attachment behavior in infancy]. *Età Evolutiva, 72,* 61-67.

*Ammaniti, M., & Speranza, A. M. (1995). Rappresentazioni materne e attaccamento infantile disorganizzato [Maternal representations and disorganized patterns of attachment in children]. *Giornale di Neuropsichiatria dell'Età Evolutiva, 15,* 27-34.

*Andreozzi, L., Flanagan, P., Seifer, R., Brunner, S., & Lester, B. (2002). Attachment classifications among 18-month-old children of adolescent mothers. *Archives of Pediatrics & Adolescent Medicine, 156*(1), 20–26. doi:10.1001/archpedi.156.1.20

*Archer, M. (2012). *Attachment in institutionalised and community children in China* (Doctoral dissertation). Available from ProQuest Dissertations & Theses A&I (UMI No. U605535).

*Archer, M., Steele, M., Lan, J., Jin, X., Herreros, F., & Steele, H. (2015). Attachment between infants and mothers in China: Strange Situation procedure findings to date and a new sample. *International Journal of Behavioral Development, 39*(6), 485-491. doi:10.1177/0165025415575765

*Arnott, B., Meins, E., & Arnott, B. (2007). Links among antenatal attachment representations, postnatal mindedness, and infant attachment security: A preliminary study of mothers and fathers. *Bulletin of the Menninger Clinic, 71*(2), 132–149. doi:10.1521/bumc.2007.71.2.132

*Atkinson, L., Chrisholm, V., Scott, B., Goldberg, S., Vaughn, B., Blackwell, J., … Tam, F. (1999). Maternal sensitivity, child functional level, and attachment in Down Syndrome. *Monographs of the Society for Research in Child Development, 64*(3), 45–66. doi:10.1111/1540-5834.00033

Baer, J., & Martinez, C. (2006). Child maltreatment and insecure attachment: A meta-analysis. *Journal of Reproductive and Infant Psychology, 24*(3), 187-197. doi:10.1080/02646830600821231

*Bailey, H., Bernier, A., Bouvette-Turcot, A., Tarabulsy, G., Pederson, D., & Becker-Stoll, F. (2017). Deconstructing maternal sensitivity: Predictive relations to mother-child attachment in home and laboratory settings. *Social Development*, *26*(4), 679–693. doi:10.1111/sode.12220

Bakermans-Kranenburg, M. J., & van Ijzendoorn, M. H. (2007). Research review: Genetic vulnerability or differential susceptibility in child development–The case of attachment. *Journal of Child Psychology and Psychiatry,48*(12), 1160-1173. doi:10.1111/j.1469-7610.2007.01801.x

Bakermans-Kranenburg, M. J., & van Ijzendoorn, M. H. (2009). The first 10,000 adult attachment interviews: Distributions of adult attachment representations in clinical and non-clinical groups. *Attachment & Human Development, 11*(3), 223-263. doi:10.1080/14616730902814762

Bakermans-Kranenburg, M., & van Ijzendoorn, M. (2011). Differential susceptibility to rearing environment depending on dopamine-related genes: New evidence and a meta-analysis. *Development and Psychopathology*, *23*(1), 39–52. doi:10.1017/S0954579410000635

Bakermans-Kranenburg, M., van Ijzendoorn, M., & Juffer, F. (2003). Less is more: Meta-analyses of sensitivity and attachment interventions in early childhood. *Psychological Bulletin*, *129*(2), 195–215. doi:10.1037/0033-2909.129.2.195

Becker, B. J. (2005). Failsafe *N* or file-drawer number. In H. R. Rothstein, A. J. Sutton, & M. Borenstein (Eds.), *Publication Bias in Meta-Analysis* (pp. 111-126). West Sussex, England: John Wiley & Sons Ltd.

Becker-Stoll, F., Fremmer-Bombik, E., Wartner, U., Zimmermann, P., & Grossmann, K. E. (2008). Is attachment at ages 1, 6 and 16 related to autonomy and relatedness behavior of adolescents in interaction towards their mothers? *International Journal of Behavioral Development, 32*(5), 372-380. doi:10.1177/0165025408093654

*Beebe, B., Jaffe, J., Markese, S., Buck, K., Chen, H., Cohen, P., … Feldstein, S. (2010). The origins of 12-month attachment: A microanalysis of 4-month mother–infant interaction. *Attachment & Human Development, 12*(1-2), 3–141. doi:10.1080/14616730903338985

*Beeghly, M., Frank, D., Rose-Jacobs, R., Cabral, H., Tronick, E., & Beeghly, M. (2003). Level of prenatal cocaine exposure and infant-caregiver attachment behavior. *Neurotoxicology and Teratology, 25*(1), 23–38. doi:10.1016/S0892-0362(02)00323-9

*Beetz, A., Winkler, N., Julius, H., Uvnäs-Moberg, K., & Kotrschal, K. (2015). A comparison of equine-assisted intervention and conventional play-based early intervention for mother-child dyads with insecure attachment. *Journal of Occupational Therapy, Schools & Early Intervention, 8*(1), 17–39. doi:10.1080/19411243.2015.1026017

*Behrens, K., Parker, A., & Haltigan, J. (2011). Maternal sensitivity assessed during the Strange Situation procedure predicts child's attachment quality and reunion behaviors. *Infant Behavior and Development, 34*(2), 378–381. doi:10.1016/j.infbeh.2011.02.007

*Beijers, R., Jansen, J., Riksen-Walraven, M., & De Weerth, C. (2011). Attachment and infant night waking: A longitudinal study from birth through the first year of life. *Journal of Developmental & Behavioral Pediatrics, 32*(9), 635–643. doi:10.1097/DBP.0b013e318228888d

Belsky, J. (1984). Determinants of parenting: A process model. *Child Development, 55*(1), 83–96. doi:10.2307/1129836

Belsky, J. (2002). Why the "transmission gap" in attachment research: Differential susceptibility to rearing influence. *Journal of Infant, Child, and Adolescent Psychotherapy, 2*(4), 163–183. doi:10.1080/15289168.2002.10486426

Belsky, J. (2013). Differential susceptibility to environmental influences. *International Journal of Child Care and Education Policy, 7*(2), 15–31. doi:10.1007/2288-6729-7-2-15

Belsky, J., & Fearon, R. P. (2002). Infant-mother attachment security, contextual risk, and early development: A moderational analysis. *Development and Psychopathology, 14*(2), 293-310. doi:10.1017/S0954579402002067

*Benoit, D., & Parker, K. (1994). Stability and transmission of attachment across three generations. *Child Development, 65*(5), 1444–1456. Doi:10.1111/j.1467-8624.1994.tb00828.x

*Bergman, K., Sarkar, P., Glover, V., & O'Connor, T. (2008). Quality of child–parent attachment moderates the impact of antenatal stress on child fearfulness. *Journal of Child Psychology and Psychiatry, 49*(10), 1089–1098. doi:10.1111/j.1469-7610.2008.01987.x

*Berlin, L. J. (1994). *Attachment and emotions in preschool children* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I. (UMI No. 9428059).

*Bernard, K., Dozier, M., & García Coll, C. (2010). Examining infants' cortisol responses to laboratory tasks among children varying in attachment disorganization: Stress reactivity or return to baseline? *Developmental Psychology, 46*(6), 1771–1778. doi:10.1037/a0020660

*Bernard, K., Dozier, M., Bick, J., Lewis-Morrarty, E., Lindhiem, O., & Carlson, E. (2012). Enhancing attachment organization among maltreated children: Results of a randomized clinical trial. *Child Development, 83*(2), 623–636. doi:10.1111/j.1467-8624.2011.01712.x

Bernier, A., Matte-Gagné, C., Bélanger, M., & Whipple, N. (2014). Taking stock of two decades of attachment transmission gap: Broadening the assessment of maternal behavior. *Child Development, 85*(5), 1852–1865. doi:10.1111/cdev.12236

Bohlin, G., Hagekull, B., & Andersson, K. (2005). Behavioral inhibition as a precursor of peer social competence in early school age: The interplay with attachment and nonparental care. *Merrill-Palmer Quarterly, 51*(1), 1-19. doi:10.1353/mpq.2005.0001

*Bokhorst, C., Bakermans-Kranenburg, M., Fearon, R. P., van Ijzendoorn, M., Fonagy, P., & Schuengel, C. (2003). The importance of shared environment in mother–infant attachment security: A behavioral genetic study. *Child Development, 74*(6), 1769–1782. doi:10.1046/j.1467-8624.2003.00637.x

*Bombardier, C. L. (1997). *Prenatal exposure to cocaine and other substances: Its effect on newborn behavior and subsequent attachment behavior* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I. (UMI No. 9737507).

*Booth, C., Rose-Krasnor, L., & Rubin, K. (1991). Relating preschoolers' social competence and their mothers' parenting behaviors to early attachment security and high-risk status. *Journal of Social and Personal Relationships, 8*(3), 363–382. doi:10.1177/0265407591083004

Booth-LaForce, C., Groh, A., Burchinal, M., Roisman, G., Owen, M., & Cox, M. (2014). V. Caregiving and contextual sources of continuity and change in attachment security from

infancy to late adolescence. *Monographs of the Society for Research in Child Development, 79*(3), 67-84. doi:10.1111/mono.12114

Borenstein, M., Hedges, L., Higgins, J., & Rothstein, H. (2009). *Introduction to meta-analysis.* West Sussex, UK: John Wiley & Sons Ltd.

Borenstein, M., Hedges, L., Higgins, J., & Rothstein, H. (2015a). Comprehensive Meta-Analysis Version 3.0 [Computer software]. Englewood, NJ: Biostat.

Borenstein, M., Hedges, L., Higgins, J., & Rothstein, H. (2015b). Regression in meta-analysis. Retrieved from https://www.meta-analysis.com/downloads/MRManual.pdf

*Borghini, A., Habersaat, S., Pierrehumbert, B., Forcada-Guex, M., Ansermet, F., & Muller-Nix, C. (2009). Intervention précoce en Guidance Interactive et Modification de la réactivité neuroendocrinienne chez l'ancien grand prématuré âgé de 12 mois et sa mère [Early intervention with Interactive Guidance and neuroendocrine reactivity modification of formal preterm born infants now 12 months old and their mothers]. *Cahiers Critiques De Thérapie Familiale et de Pratiques de Réseaux 43*(2), 117-149. doi:10.3917/ctf.043.0117.

Bowlby, J. (1940). The influence of early environment in the development of neurosis and neurotic character. *International Journal of Psycho-Analysis*, *21*,154-178.

Bowlby, J. (1956). The growth of independence in the young child. *Royal Society of Health Journal, 76*, 587-591.

Bowlby, J. (1958). The nature of the child's tie to his mother. *International Journal of Psycho-analysis, 39*, 350-373.

Bowlby, J. (1965). *Child Care and the Growth of Maternal Love*. London: Penguin Books.

Bowlby, J. (1969). *Attachment and loss: Volume 1. Attachment.* New York: Basic Books.

Bowlby, J. (1973). *Attachment and loss: Volume 2. Separation and loss.* New York: Basic Books.

Bowlby, J. (1977). The making and breaking of affectional bonds. I: Aetiology and psychopathology in the light of attachment theory. *British Journal of Psychiatry, 130,* 201-210.

Bowlby, J. (1979). *The making and breaking of affectionate bonds.* London: Tavistock.

*Brisch, K., Bechinger, D., Betzler, S., Heinemann, H., Kachele, H., Pohlandt, F., … Buchheim, A. (2005). Attachment quality in very low-birthweight premature infants in relation to maternal attachment representations and neurological development. *Parenting, 5*(4), 311–331. doi:10.1207/s15327922par0504_1

*Byrne, M., Goshin, L., & Joestl, S. (2010). Intergenerational transmission of attachment for infants raised in a prison nursery. *Attachment & Human Development, 12*(4), 375–393. doi:10.1080/14616730903417011

Candelaria, M., Teti, D. M., & Black, M. M. (2011). Multi-risk infants: Predicting attachment security from sociodemographic, psychosocial, and health risk among African American preterm infants. *Journal of Child Psychology and Psychiatry, 52*(8), 870-877. doi:10.1111/j.1469-7610.2011.02361.x

*Carlson, E. A. (1998). A prospective longitudinal study of attachment disorganization/disorientation. *Child Development, 69*(4), 1107-28. doi:10.1111/j.1467-8624.1998.tb06163.x

*Carlson, V., Cicchetti, D., Barnett, D., Braunwald, K., & Parke, R. (1989). Disorganized/disoriented attachment relationships in maltreated infants. *Developmental Psychology, 25*(4), 525–531. doi:10.1037/0012-1649.25.4.525

Carlson, V., Cicchetti, D., Barnett, D., & Braunwald, K. (1989). Finding order in disorganization: Lessons from research on maltreated infant's attachments to their caregivers: Theory and research on the causes and consequences. In D. Cicchetti, & V. Carlson (Eds.), *Child maltreatment: Theory and research on the causes and consequences.* (pp. 494-528). New York, NY: Cambridge University Press.

*Carlson, V., & Harwood, R. (2003). Attachment, culture, and the caregiving system: The cultural patterning of everyday experiences among Anglo and Puerto Rican mother–infant pairs. *Infant Mental Health Journal*, *24*(1), 53–73. doi:10.1002/imhj.10043

*Carré, A., Tessier, R., & Tarabulsy, G. M. (2015). Attachement et adoption: Portrait d'enfants d'Asie *Enfance, 3*(3), 273-288. doi:10.4074/S0013754515003031

*Cassé, J., Oosterman, M., Schuengel, C., & Fiese, B. (2016). Parenting self-efficacy moderates linkage between partner relationship dissatisfaction and avoidant infant–mother attachment: A Dutch study. *Journal of Family Psychology*, *30*(8), 935–943. doi:10.1037/fam0000247

*Cassibba, R., van Ijzendoorn, M., & Coppola, G. (2012). Emotional availability and attachment across generations: variations in patterns associated with infant health risk status. *Child: Care, Health and Development, 38*(4), 538–544. doi:10.1111/j.1365-2214.2011.01274.x

Cassibba, R., Sette, G., Bakermans-Kranenburg, M., & van Ijzendoorn, M. (2013). Attachment the Italian way: In search of specific patterns of infant and adult attachments in Italian typical and atypical samples. *European Psychologist*, *18*(1), 47-58. doi:10.1027/1016-9040/a000128

Cassidy, J., Marvin, R. S., & the MacArthur Attachment Working Group (1992). *Attachment organization in preschool children: Coding guidelines* (4th ed.). Unpublished manuscript, University of Virginia.

*Cassidy, J., Woodhouse, S., Sherman, L., Stupica, B., & Lejuez, C. (2011). Enhancing infant attachment security: An examination of treatment efficacy and differential susceptibility. *Development and Psychopathology, 23*(1), 131–148. doi:10.1017/S0954579410000696

*Choi, H. H., Lee, K. S., & Kim, T. L. (1998). A study on agreement between child attachment classification and adult representational level of attachment. *The Korean Journal of Developmental Psychology, 11*(1), 131-142.

*Cicchetti, D., Rogosch, F., & Toth, S. (2006). Fostering secure attachment in infants in maltreating families through preventive interventions. *Development and Psychopathology, 18*(3), 623–649. doi:10.1017/S0954579406060329

*Claussen, A., Mundy, P., Mallik, S., & Willoughby, J. (2002). Joint attention and disorganized attachment status in infants at risk. *Development and Psychopathology*, *14*(2), 279–291. doi:10.1017/S0954579402002055

*Clements, M., & Barnett, D. (2002). Parenting and attachment among toddlers with congenital anomalies: Examining the Strange Situation and Attachment Q-Sort. *Infant Mental Health Journal*, *23*(6), 625–642. doi:10.1002/imhj.10040

*Cohn, J. F., Campbell, S. B., & Ross, S. (1991). Infant response in the still-face paradigm at 6 months predicts avoidant and secure attachment at 12 months. *Development and Psychopathology, 3*(4), 367-376. doi:10.1017/S0954579400007574

*Cole, S. (2005). Infants in foster care: Relational and environmental factors affecting attachment. *Journal of Reproductive and Infant Psychology, 23*(1), 43–61. doi:10.1080/02646830512331330947

Crittenden, P. M. (1992). The quality of attachment in the preschool years. *Development and Psychopathology, 4*(2), 209-241. doi:10.1017/S0954579400000110

Crittenden, A. N., & Marlowe, F. W. (2013). Cooperative child care among the Hadza: Situating multiple attachment in evolutionary context. In N. Quinn & J. M. Mageo (Eds.), *Attachment Reconsidered: Cultural Perspectives on a Western Theory* (pp. 67-84). New York: Palgrave MacMillan.

Cummings, G. (2013). The new statistics: How and why. *Psychological Science, 48*(3), 161-170. doi:10.1111/ap.12018

Cyr, C., Euser, E. M., Bakermans-Kranenburg, M. J., & van Ijzendoorn, M. H. (2010). Attachment security and disorganization in maltreating and high-risk families: A series of meta-analyses. *Development and Psychopathology, 22*(1), 87-108. doi:10.1017/S0954579409990289.

*Daley, A. E. (2013). *Reflective functioning and differentiation-relatedness during pregnancy and infant attachment outcomes at one year* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. 3589757).

das Eiden, R., Edwards, E. P., & Leonard, K. E. (2002). Mother-infant and father-infant attachment among alcoholic families. *Development and Psychopathology, 14*(2), 253-278. doi:10.1017/S0954579402002043

*das Eiden, R., & Leonard, K. E. (1996). Paternal alcohol use and the mother-infant relationship. *Development and Psychopathology, 8*(2), 307-323. Doi:10.1017/S0954579400007112

*Dawson, G., Ashman, S., Hessl, D., Spieker, S., Frey, K., Panagiotides, H., & Embry, L. (2001). Autonomic and brain electrical activity in securely- and insecurely-attached infants of depressed mothers. *Infant Behavior and Development*, *24*(2), 135–149. doi:10.1016/S0163-6383(01)00075-3

*Dawson, G., Klinger, L. G., Panagiotides, H., Spieker, S., & Frey, K. (1992). Infants of mothers with depressive symptoms: Electroencephalographic and behavioral findings related to attachment status. *Development and Psychopathology*, *4*(1), 67-80. doi:10.1017/S0954579400005563

de Oliveira, M. A., Jaksic, H., Lee, M., Wightman, J., Wang, C., Pedreira, K, …Pear, J.J. (2016). The effects of student peer-review on the efficacy of computer-aided system of instruction to teach discrete trials teaching. *Journal on Developmental Disabilities, 22(2)*, 80-90. Retrieved from https://oadd.org/wp-content/uploads/2016/12/41023-JoDD-22-2-v10f-80-90-de-Oliviera-et-al.pdf

de Wolff, M. S., & van Ijzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Development, 68*(4), 571-591. doi:10.2307/1132107

*del Carmen, R., Pedersen, F., Huffman, L., & Bryan, Y. (1993). Dyadic distress management predicts subsequent security of attachment. *Infant Behavior and Development*, *16*(2), 131–147. doi:10.1016/0163-6383(93)80014-Y

Delker, B., Bernstein, R., & Laurent, H. (2018). Out of harm's way: Secure versus insecure–disorganized attachment predicts less adolescent risk taking related to childhood poverty. *Development and Psychopathology, 30*(1), 283-296. doi:10.1017/S0954579417000621

*Demers, I., Bernier, A., Tarabulsy, G., & Provost, M. (2010). Mind-mindedness in adult and adolescent mothers: Relations to maternal sensitivity and infant attachment. *International Journal of Behavioral Development, 34*(6), 529–537. doi:10.1177/0165025410365802

*Deng, H. Z., Zou, X. B., Tang, C., & Li, J. Y. (2007). The characters of infant-fosterer attachment in young autistic children. *Chinese Journal of Clinical Psychology, 15*(5), 480-483.

Dickersin, K., Chan, S., Chamers, T. C., Sacks, H. S., & Smith, H. (1987). Publication bias in clinical trials. *Controlled Clinical Trials, 8,* 348-353. doi:10.1126/science.1255484

Diener, M. L., Mengelsdorf, S. C., McHale, J. L., & Frosch, C. A. (2002). Infants' behavioral strategies for emotion regulation with fathers and mothers: Associations with emotional expressions and attachment quality. *Infancy, 3*(2), 153-174. doi:10.1207/S15327078IN0302_3

*Ding, Y., Wang, Z. Y., Li, H. R., Chi, Z. Y., & Xu, H. (2008). Study of 62 infants' attachment in Shanghai and their relationship with infants' temperament and cognitive development. *Chinese Child Healthcare Journal, 16*(2), 163–165.

*Ding, Y., Xu, X., Wang, Z., Li, H., & Wang, W. (2012). Study of mother–infant attachment patterns and influence factors in Shanghai. *Early Human Development, 88*(5), 295–300. doi:10.1016/j.earlhumdev.2011.08.023

*Domaille, M. (2014). *Adaptation at the toddler stage: Links among parent and child responses to the problem-solving task, Strange Situation Paradigm, and parent adult attachment interview* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. 3622260)

*Dozier, M., Stovall, K., Albus, K., & Bates, B. (2001). Attachment for infants in foster care: The role of caregiver state of mind. *Child Development, 72*(5), 1467–1477. doi:10.1111/1467-8624.00360

*Easterbrooks, M. A. (1989). Quality of attachment to mother and to father: Effects of perinatal risk status. *Child Development, 60*(4), 825-830. doi:10.2307/1131023

*Edwards, E. P., das Eiden, R., & Leonard, K. E. (2004). Impact of fathers' alcoholism and associated risk factors on parent-infant attachment stability from 12 to 18 months. *Infant Mental Health Journal, 25*(6), 556-579. doi:10.1002/imhj.20027

*Egeland, B., & Erickson, M. F. (1993). Attachment theory and findings: Implications for prevention and intervention. In S. Kramer & H. Parens (Eds.), *Prevention in mental health: Now, tomorrow, ever?* (pp. 21–50). Northvale, NJ: Jason Aronson.

*Enlow, M. B., Egeland, B., Carlson, E., Blood, E., & Wright, R. (2014). Mother–infant attachment and the intergenerational transmission of posttraumatic stress disorder, *26*(1), 41–65. doi:10.1017/S0954579413000515

*Ensink, K., Normandin, L., Plamondon, A., Berthelot, N., Fonagy, P., Roberts, W., … Tarabulsy, G. (2016). Intergenerational pathways from reflective functioning to infant attachment through parenting. *Canadian Journal of Behavioural Science/Revue Canadienne des Sciences du Comportement*, *48*(1), 9–18. doi:10.1037/cbs0000030

*Espinosa, M., Beckwith, L., Howard, J., Tyler, R., & Swanson, K. (2001). Maternal psychopathology and attachment in toddlers of heavy cocaine-using mothers. *Infant Mental Health Journal, 22*(3), 316-333. doi:10.1002/imhj.1004

*Estrada, M. T. (1994). *Security of attachment in children of Central American immigrants: An examination of mother-infant interactions* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. 9516629).

*Fava Vizziello, G., & Calvo, V. (1997). La perdita della speranza. Effetti della nascita prematura sulla rappresentazione genitoriale e sullo sviluppo dell'attaccamento [Loss of hope. Effects of preterm birth on parental representation and development of attachment]. *SAGGI – Neuropsicologia Infantile Psicopedagogia Riabilitazione 23*(1), 15-35.

*Fava Vizziello, G., Simonelli, A., & Petena, I. (2000). Representaciones maternas y transmisión de los factores de riesgo y protección en hijos de madres drogodependientes [Maternal representations and intergenerational transmission of risk of protective factors in children of drug addicted mothers]. *Adicciones. 12*, 413-424. doi:10.20882/adicciones.651

Fearon, R. M., & Belsky, J. (2011). Infant-mother attachment and the growth of externalizing problems across the primary-school years. *Journal of Child Psychology and Psychiatry, 52*(7), 782-791. doi:10.1111/j.1469-7610.2010.02350.x

Fearon, R. M., & Belsky, J. (2016). Precursors of attachment security. In J. Cassidy & P. R. Shaver (3rd Eds.), *Handbook of Attachment: Theory, Research, and Clinical Applications* (pp. 291-313). New York, NY: Guilford Press.

Felitti, J., Anda, R., Nordenberg, D., Williamson, D., Spitz, A., Edwards, V., . . . Marks, J. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine, 14*(4), 245-258. doi:10.1016/S0749-3797(98)00017-8

*Finger, B. (2006). *Exploring the intergenerational transmission of attachment disorganization* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. 3240087).

*Finger, B., Hans, S., Bernstein, V., & Cox, S. (2009). Parent relationship quality and infant–mother attachment. *Attachment & Human Development, 11*(3), 285–306. doi:10.1080/14616730902814960

*Fish, M., & Stifter, C. (1995). Patterns of mother-infant interaction and attachment: A cluster-analytic approach. *Infant Behavior and Development*, *18*(4), 435–446. doi:10.1016/0163-6383(95)90033-0

*Fish, M. (2001). Attachment in low-SES rural Appalachian infants: Contextual, infant, and maternal interaction risk and protective factors. *Infant Mental Health Journal*, *22*(6), 641–664. doi:10.1002/imhj.1024

Fraley, R., & Heffernan, M. (2013). Attachment and parental divorce: A test of the diffusion and sensitive period hypotheses. *Personality & Social Psychology Bulletin, 39*(9), 1199-1213. doi:10.1177/0146167213491503

Franco, A., Malhorta, N., & Simonovits, G. (2014). Publication bias in the social sciences: Unlocking the file drawer. *Science, 345*(6203), 1502-1505. doi:10.1126/science.1255484

*Frigerio, A., Ceppi, E., Rusconi, M., Giorda, R., Raggi, M., & Fearon, P. (2009). The role played by the interaction between genetic factors and attachment in the stress response in infancy. *Journal of Child Psychology and Psychiatry*, *50*(12), 1513–1522. doi:10.1111/j.1469-7610.2009.02126.x

*Frosch, C., Cox, M., & Goldman, B. (2001). Infant-parent attachment and parental and child behavior during parent-toddler storybook interaction. *Merrill-Palmer Quarterly*, *47*(4), 445–474. doi:10.1353/mpq.2001.0022

*Ganiban, J., Barnett, D., & Cicchetti, D. (2000). Negative reactivity and attachment: Down Syndromes contribution to the attachment temperament debate. *Development and Psychopathology*, *12*(1), 1–21. doi:10.1017/S0954579400001012

*Gedaly, L., & Leerkes, E. (2016). The role of sociodemographic risk and maternal behavior in the prediction of infant attachment disorganization. *Attachment & Human Development*, *18*(6), 554–569. doi:10.1080/14616734.2016.1213306

George, C., Kaplan, N., & Main, M. (1985). Adult Attachment Interview protocol. Unpublished manuscript, University of California at Berkeley.

*Gibson, F., Ungerer, J., McMahon, C., Leslie, G., & Saunders, D. (2000). The mother-child relationship following in vitro fertilisation (IVF): Infant attachment, responsivity, and maternal sensitivity. *Journal of Child Psychology and Psychiatry*, *41*(8), 1015–1023. doi:10.1017/S0021963099006472

*Girard, M., Lemelin, J., Provost, M., Tarabulsy, G., & Morrison, T. (2013). La sécurité d'attachement durant la deuxième année de vie en tant que facteur prédictif des habiletés sociales en milieu scolaire [Security attachment in the second year of life as a predictive factor of social skills in school setting]. *Canadian Journal of Behavioural Science/Revue Canadienne des Sciences du Comportement*, *45*(4), 329–340. doi:10.1037/a0026696

*Gleason, K. E. (1995). *Maternal attachment cognitions in relation to maternal sensitivity and mother-infant attachment* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. MM03338)

*Gloger-Tippelt, G., Gomille, B., Koenig, L., & Vetter, J. (2002). Attachment representations in 6-year-olds: Related longitudinally to the quality of attachment in infancy and mothers' attachment representations. *Attachment & Human Development*, *4*(3), 318–339. doi:10.1080/14616730210167221

*Gojman, S., Millán, S., Carlson, E., Sánchez, G., Rodarte, A., González, P., & Hernández, G. (2012). Intergenerational relations of attachment: A research synthesis of urban/rural Mexican samples. *Attachment & Human Development*, *14*(6), 553–566. doi:10.1080/14616734.2012.727255

*Goldberg, S., Gotowiec, A., & Simmons, R. J. (1995). Infant-mother attachment and behavior problems in healthy and chronically ill preschoolers. *Development and Psychopathology, 7*(2), 267-282. doi:10.1017/S0954579400006490

*Goldberg, S., Lojkasek, M., Gartner, G. M., & Corter, C. (1989). Maternal responsiveness and social development in preterm infants. *New Directions for Child Development, 43,* 89-103. doi:10.1002/cd.23219894309

*Gradisar, M., Jackson, K., Spurrier, N., Gibson, J., Whitham, J., Williams, A., … Kennaway, D. (2016). Behavioral interventions for infant sleep problems: A randomized controlled trial. *Pediatrics*, *137*(6), 1. doi:10.1542/peds.2015-1486

*Granqvist, P., Hesse, E., Fransson, M., Main, M., Hagekull, B., & Bohlin, G. (2016). Prior participation in the Strange Situation and overstress jointly facilitate disorganized behaviours: Implications for theory, research and practice. *Attachment & Human Development*, *18*(3), 235–249. doi:10.1080/14616734.2016.1151061

Granqvist, P., Sroufe, L., Dozier, M., Hesse, E., Steele, M., van Ijzendoorn, M., … Duschinsky, R. (2017). Disorganized attachment in infancy: A review of the phenomenon and its

implications for clinicians and policy-makers. *Attachment & Human Development, 19*(6), 534–558. doi:10.1080/14616734.2017.1354040

Grantham-McGregor, S., Cheung, Y. B., Cueto, S., Glewwe, P., Richter, L., & Strupp, B. (2007). Developmental potential in the first 5 years for children in developing countries. *The Lancet, 369*(9555), 60-70. doi:10.1016/S0140-6736(07)60032-4

Groh, A., Fearon, R., Ijzendoorn, M., Bakermans-Kranenburg, M., & Roisman, G. (2017). Attachment in the early life course: Meta-analytic evidence for its role in socioemotional development. *Child Development Perspectives, 11*(1), 70-76. doi:10.1111/cdep.12213

*Habersaat, S., Monnier, M., Peter, C., Bolomey, L., Borghini, A., Despars, J., … Hohlfeld, J. (2013). Early mother-child interaction and later quality of attachment in infants with an orofacial cleft compared to infants without cleft. *The Cleft Palate-Craniofacial Journal, 50*(6), 704–712. doi:10.1597/12-094.1

*Haltigan, J., Ekas, N., Seifer, R., & Messinger, D. (2011). Brief report: Attachment security in infants at-risk for autism spectrum disorders. *Journal of Autism and Developmental Disorders, 41*(7), 962–967. doi:10.1007/s10803-010-1107-7

Harel, J., & Scher, A. (2003). Insufficient responsiveness in ambivalent mother–infant relationships: Contextual and affective aspects. *Infant Behavior and Development, 26*(3), 371–383. doi:10.1016/S0163-6383(03)00036-5

*Harrison, L., & Ungerer, J. (1997). Child care predictors of infant-mother attachment security at age 12 months. *Early Child Development and Care, 137*(1), 31–46. doi:10.1080/0300443971370103

*Hawkins, E., Madigan, S., Moran, G., & Pederson, D. (2015). Mediating and moderating processes underlying the association between maternal cognition and infant

attachment. *Journal of Applied Developmental Psychology*, *39*, 24–33. doi:10.1016/j.appdev.2015.04.001

Hazen, N., Allen, S., Christopher, C., Umemura, T., & Jacobvitz, D. (2015). Very extensive nonmaternal care predicts mother–infant attachment disorganization: Convergent evidence from two samples. *Development and Psychopathology, 27*(3), 649–661. doi:10.1017/S0954579414000893

*Heinicke, C., Fineman, N., Ruth, G., Recchia, S., Guthrie, D., & Rodning, C. (1999). Relationship-based intervention with at-risk mothers: Outcome in the first year of life. *Infant Mental Health Journal*, *20*(4), 349–374. doi:10.1002/(SICI)1097-0355(199924)20:4<349::AID-IMHJ1>3.0.CO;2-X

*Herreros, F. (2013). *An investigation of the attachment formation and organization of infants living in Chilean institutions* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. 3566444).

Hesse, E. (2016). The Adult Attachment Interview: Protocol, method of analysis, and selected empirical studies: 1985-2015. In J. Cassidy & P. R. Shaver (3rd Eds.), *Handbook of Attachment: Theory, Research, and Clinical Applications* (pp. 553-590). New York, NY: Guilford Press.

Higgins, J. P. T., & Green, S. (2011). *Cochrane Handbook for Systematic Reviews of Interventions* (Version 5.1.0). The Cochrane Collaboration. Retrieved from http://handbook.cochrane.org.

*Higgins, K. N. (2008). *The role of parental attachment and limit-setting on toddler behavior: Separate and combined influences of mothers and fathers* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. 3341609).

*Higley, E., & Dozier, M. (2009). Nighttime maternal responsiveness and infant attachment at one year. *Attachment & Human Development, 11*(4), 347-363. doi:10.1080/14616730903016979.

*Hippwell, A., Goossens, F., Melhuish, E., & Kumar, R. (2000). Severe maternal psychopathology and infant-mother attachment. *Development and Psychopathology, 12*(2), 157–175. doi:10.1017/S0954579400002030

*Hobson, R., Patrick, M., Crandell, L., Garcaprez, R., & Lee, A. (2005). Personal relatedness and attachment in infants of mothers with borderline personality disorder. *Development and Psychopathology, 17*(2), 329–347. doi:10.1017/S0954579405050169

Hopewell, S., Clarke, M., & Mallett, S. (2005). Grey literature and systematic reviews. In H. Rothestein, A. J. Sutton, & M. Borenstein (Eds.), *Publication Bias in Meta-Analysis: Prevention, Assessment, and Adjustment* (pp. 49-72). West Sussex, UK: John Wiley & Sons Ltd.

Horowitz, J. A., Logsdon, M. C., & Anderson, J. K. (2005). Measurement of maternal-infant interaction. *American Psychiatric Nurses Association, 11*(3), 164–172. doi:10.1177/1078390305278788

*Horton, E., Riddell, P., Flora, P., Moran, P., & Pederson, P. (2015). Distress regulation in infancy: Attachment and temperament in the context of acute pain. *Journal of Developmental & Behavioral Pediatrics, 36*(1), 35–44. doi:10.1097/DBP.0000000000000119

*Howes, C., Rodning, C., Galluzzo, D., & Myers, L. (1988). Attachment and child care: Relationships with mother and caregiver. *Early Childhood Research Quarterly, 3*(4), 403–416. doi:10.1016/0885-2006(88)90037-3

Howes, C., & Spieker, S. (2008). Attachment relationships in the context of multiple caregivers. In J. Cassidy & P. R. Shaver (2nd Eds.), *Handbook of Attachment: Theory, Research, and Clinical Applications* (pp. 317-332). New York, NY: Guilford Press.

*Hsiao, C., Koren-Karie, N., Bailey, H., & Moran, G. (2014). It takes two to talk: Longitudinal associations among infant–mother attachment, maternal attachment representations, and mother–child emotion dialogues. *Attachment & Human Development*, *17*(1), 1–22. doi:10.1080/14616734.2014.981671

*Hu, P., & Meng, Z. (2003). Research on discrimination of mother–infant attachment type. *Acta Psychologica Sinica, 35*, 201–208.

*Hughes, P., Turton, P., Hopper, E., McGauley, G. A., & Fongagy, P. (2001). Disorganised attachment behaviour among infants born subsequent to stillbirth. *Journal of Child Psychology and Psychiatry, 42*(6), 791–801, doi:10.1017/S002196300100748X.

*Huth-Bocks, A., Theran, S., Levendosky, A., & Bogat, G. (2011). A social-contextual understanding of concordance and discordance between maternal prenatal representations of the infant and infant-mother attachment. *Infant Mental Health Journal, 32*(4), 405-426. doi:10.1002/imhj.20304

Inge, B. (1992). The origins of attachment theory: John Bowlby and Mary Ainsworth. *Developmental Psychology, 28*(5), 759-775. doi:10.1037/0012-1649.28.5.759

Ioannidis, J. (2016). The mass production of redundant, misleading, and conflicted systematic reviews and meta-analyses. *Milbank Quarterly,94*(3), 485-514. doi:10.1111/1468-0009.12210.

*Jaffe, J., Beebe, B., Feldstein, S., Crown, C., & Jasnow, M. (2001). Rhythms of dialogue in infancy: Coordinated timing in development. *Monographs of the Society for Research in Child Development, 66*(2), 1–132. Retrieved from https://www.jstor.org/stable/3181589

*Jin, M. K., Jacobvitz, D., Hazen, N., & Jung, S. H. (2012). Maternal sensitivity and infant attachment security in Korea: Cross-cultural validation of the Strange Situation. *Attachment & Human Development, 14*(1), 33-44. doi:10.1080/14616734.2012.636656

Keller, H., & Otto, H. (2009). The cultural socialization of emotion regulation during infancy. *Journal of Cross-Cultural Psychology, 40*(6), 1006-1011. doi:10.1177/0022022109348576

*Keller, T., Spieker, S., & Gilchrist, L. (2005). Patterns of risk and trajectories of preschool problem behaviors: A person-oriented analysis of attachment in context. *Development and Psychopathology*, *17*(2), 349–384. doi:10.1017/S0954579405050170

*Kennedy, J. H. (2008). Is maternal behavior in the Strange Situation related to infant attachment? *Journal of Early Childhood and Infant Psychology, 4*, 83-92.

*Klopfer, M. J. (2009). *Examining the effectiveness of a multiple antecedent intervention for increasing secure infant attachment* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. 3357957).

*Kochanska, G. (2001). Emotional development in children with different attachment histories: The first three years. *Child Development, 72*(2), 474–490. doi:10.1111/1467-8624.00291

*Kochanska, G., Aksan, N., & Carlson, J. (2005). Temperament, relationships, and young children's receptive cooperation with their parents. *Developmental Psychology, 41*(4), 648–660. doi:10.1037/0012-1649.41.4.648

*Koren- Karie, N., Oppenheim, D., Dolev, S., Sher, E., Etzion- Carasso, A., & Dannemiller, J. (2002). Mothers' insightfulness regarding their infants' internal experience: Relations with maternal sensitivity and infant attachment. *Developmental Psychology*, *38*(4), 534–542. doi:10.1037/0012-1649.38.4.534

*Koren-Karie, N., Oppenheim, D., Dolev, S., & Yirmiya, N. (2009). Mothers of securely attached children with autism spectrum disorder are more sensitive than mothers of insecurely attached children. *Journal of Child Psychology and Psychiatry*, *50*(5), 643–650. doi:10.1111/j.1469-7610.2008.02043.x

*Lakatos, K., Toth, I., Nemoda, Z., Ney, K., Sasvari-Szekely, M., & Gervai, J. (2000). Dopamine D4 receptor (DRD4) gene polymorphism is associated with attachment disorganization in infants. *Molecular Psychiatry*, *5*(6), 633–637. doi:10.1038/sj.mp.4000773

*Laurent, H., Ablow, J., & Measelle, J. (2011). Risky shifts: How the timing and course of mothers' depressive symptoms across the perinatal period shape their own and infant's stress response profiles. *Development and Psychopathology*, *23*(2), 521–538. doi:10.1017/S0954579411000083

*Lecannelier, F., Kimelman, M., González, L., Nuñez, C., & Hoffmann, M. (2008). Evaluación de patrones de apego en infantes durante su segundo año en dos centros de atención de Santiago de Chile. *Revista Argentina de Clínica Psicológica*, *17*(3), 197-207. Retrieved from https://www.redalyc.org/pdf/2819/281921795001.pdf

*Lederberg, A., Mobley, C., & Lederberg, A. (1990). The effect of hearing impairment on the quality of attachment and mother-toddler interaction. *Child Development, 61*(5), 1596–1604. doi:10.2307/1130767

*Lemche, E., Klann-Delius, G., Koch, R., & Joraschky, P. (2004). Mentalizing language development in a longitudinal attachment sample: Implications for alexithymia. *Psychotherapy and Psychosomatics, 76*(6), 366-374. doi:10.1159/000080390

LeVine, R. A., & Miller, P. M. (1990). Cross-cultural validity of attachment theory. *Human Development, 33*(1), 73-80. doi:10.1159/000276504

LeVine, R., & Norman, K. (2001). The infant's acquitition of culture early attachment re-examine in anthropological perspective. In C. C. Moore & H. F. Mathews (Eds.), *The Psychology of Cultural Experience* (pp. 83-104). Cambridge, England: Cambridge University Press.

*Leyendecker, B., Lamb, M., & Schölmerich, A. (1997). Studying mother-infant interaction: The effects of context and length of observation in two subcultural groups. *Infant Behavior and Development, 20*(3), 325–337. doi:10.1016/S0163-6383(97)90004-7

Lewis, M., & Feiring, C. (1989). Infant, mother, and mother-infant interaction behavior and subsequent attachment. *Child Development, 60*(4), 831–837. doi:10.2307/1131024

*Li, X., Jing, J., Yang, D., Cai, X., Chen, X., & Su, X. (2004). Characters of 75 infants' attachment towards their mothers. *Chinese Mental Health Journal, 18*(5), 291–293.

*Lieberman, A., Weston, D., & Pawl, J. (1991). Preventive intervention and outcome with anxiously attached dyads. *Child Development, 62*(1), 199–209. doi:10.1111/j.1467-8624.1991.tb01525.x

*Lionetti, F. (2014). What promotes secure attachment in early adoption? The protective roles of infants' temperament and adoptive parents' attachment. *Attachment & Human Development, 16*(6), 1-17. doi:10.1080/14616734.2014.959028

*Lutsky, J. (1994). *Prenatal methamphetamine exposure, caregiving environment, and attachment security in 12- to 24-month-olds* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. 9414186).

*Lyons-Ruth, K., Bronfman, E., & Parsons, E. (1999). Maternal frightened, frightening, or atypical behavior and disorganized infant attachment patterns. *Monographs of the Society for Research in Child Development, 64*(3), 67–96. doi:10.1111/1540-5834.00034

*Madigan, S., Moran, G., Schuengel, C., Pederson, D., & Otten, R. (2007). Unresolved maternal attachment representations, disrupted maternal behavior and disorganized attachment in infancy: Links to toddler behavior problems. *Journal of Child Psychology and Psychiatry, 48*(10), 1042–1050. doi:10.1111/j.1469-7610.2007.01805.x

*Madigan, S., Benoit, D., Boucher, C., & Madigan, S. (2011). Exploration of the links among fathers' unresolved states of mind with respect to attachment, atypical paternal behavior, and disorganized infant-father attachment. *Infant Mental Health Journal, 32*(3), 286–304. doi:10.1002/imhj.20297

Main, M., & Cassidy, J. (1988). Categories of response to reunion with the parent at age 6 predictable from infant attachment classifications and stable over a 1-month period. *Developmental Psychology, 24*(3), 415-426. doi:10.1037/0012-1649.24.3.415

Main, M., & Goldwyn, R. (1984). Predicting rejection of her infant from mother's representation of her own experiences: A preliminary report. *Monograph of the International Journal of Child Abuse and Neglect, 8*, 203-217.

Main, M., Kaplan, N., & Cassidy, J. (1985). Security of infancy, childhood, and adulthood: A move to the level of representation. In I. Bretherton & E. Waters (Eds.), *Growing Points of Attachment Theory and Research* (pp. 66-106). Chicago: University of Chicago Press.

Main, M., & Solomon, J. (1986). Discovery of an insecure disoriented attachment pattern: Procedures, findings, and implications for the classification of behaviour. In M. Yogman & T. B. Brazelton (Eds.), *Affective Development in Infancy* (pp. 95–124). Norwood, NJ: Ablex.

Main, M., & Solomon, J. (1990). Procedures for identifying infants as disorganized/disoriented during the Ainsworth Strange Situation. In M. T. Greenberg, D. Cicchetti, and E. M. Cummings (Eds.), *Attachment in the Preschool Years: Theory, Research, and Intervention* (pp. 121-160). Chicago: University of Chicago Press.

Mallett, S., & Clarke, M. (2002). The typical Cochrane Review: How many trials? How many participants? *International Journal of Technology Assessment in Health Care, 18*(4), 820-823. doi:10.1017/S0266462302000624

*Martorell, G. A. (2000). *Maternal and child adrenocortical responses as a function of attachment classification, temperament, and maternal caregiving attributions* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. 3020292).

*Matos, I., Tereno, S., Wendland, J., Guedeney, N., Dugravier, R., Greacen, T., … Guédeney, A. (2014). Sensibilité maternelle et sécurité de l'attachement de l'enfant au sein d'une population à haut risque psychosocial [Maternal sensitivity and infant attachment in a population at high psychosocial risk]. *Devenir, 26*(1), 5–20. doi:10.3917/dev.141.0005

*Mazaheri-Tehrani, M. (1997). *Attachment from a systemic perspective: A study of Iranian (BL)* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. U109270).

*McFarland-Piazza, L., Hazen, N., Jacobvitz, D., & Boyd-Soisson, E. (2012). The development of father-child attachment: Associations between adult attachment representations,

recollections of childhood experiences and caregiving. *Early Child Development and Care, 182*(6), 701–721. doi:10.1080/03004430.2011.573071

*McMahon, C. A., Barnett, B., Kowalenko, N. M., & Tennant, C. C. (2006). Maternal Attachment state of mind moderates the impact of postnatal depression on infant attachment. *Journal of Child Psychology and Psychiatry, 47*(7), 660-669. doi:10.1111/j.1469-7610.2005.01547.x

*Meadow-Orlans, K., & Koester, L. (2004). Attachment behaviors at 18 months. In K. Meadow-Orlans, P. Spencer, & L. Koester (Eds.), *The world of deaf infants: a longitudinal study* (pp. 132-146). New York: Oxford University Press.

Meehan, C. L., & Hawks, S. (2013). Cooperative breeding and attachment among the Aka foragers. In N. Quinn & J. M. Mageo (Eds.), *Attachment Reconsidered: Cultural Perspectives on a Western Theory* (pp. 85-114). New York: Palgrave MacMillan.

*Mehler, K., Wendrich, D., Kissgen, R., Roth, B., Oberthuer, A., Pillekamp, F., & Kribs, A. (2010). Mothers seeing their VLBW infants within 3 h after birth are more likely to establish a secure attachment behavior: Evidence of a sensitive period with preterm infants? *Journal of Perinatology*, *31*(6), 404–40410. doi:10.1038/jp.2010.139

*Meins, E., Fernyhough, C., Arnott, B., Vittorini, L., Turner, M., Leekam, S., & Parkinson, K. (2011). Individual differences in infants' joint attention behaviors with mother and a new social partner. *Infancy*, *16*(6), 587–610. doi:10.1111/j.1532-7078.2010.00065.x

*Meins, E., Fernyhough, C., Fradley, E., & Tuckey, M. (2001). Rethinking maternal sensitivity: Mothers comments on infants mental processes predict security of attachment at 12 months. *Journal of Child Psychology and Psychiatry*, *42*(5), 637–648. doi:10.1017/S0021963001007302

Meneghini, R., & Packer, A. L. (2007). Is there science beyond English? *EMBO Reports, 8*(2), 112-116. doi:10.1038/sj.embor.7400906

Mesman, J., van Ijzendoorn, M. H., & Sagi-Schwartz, A. (2016). Cross-cultural patterns of attachment: Universal and contextual dimensions. In J. Cassidy & P. R. Shaver (3rd Eds.), *Handbook of Attachment: Theory, Research, and Clinical Applications* (pp. 852-877). New York, NY: Guilford Press.

Miljkovic, M., Kaminski, L., Yu, C. T., & Wishnowski, L. (2015). Evaluation of video modeling and self-instructional manual to teach students to conduct a preference assessment. *Journal on Developmental Disabilities, 21(1),* 3-10. Retrieved from http://oadd.org/wp-content/uploads/2016/12/41020_JoDD_21-1_v9f_3-10_Miljkovic_et_al.pdf

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009) Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PloS Med 6(7): e1000097. doi:10.1371/journal.pmed.1000097

Moher, D., Tetzlaff, J., Tricco, A., Sampson, M., Altman, D., & Clarke, M. (2007). Epidemiology and reporting characteristics of systematic reviews (characteristics of systematic reviews). *PloS Medicine, 4*(3), E78. doi:10.1371/journal.pmed.0040078

*Mooya, H., Sichimba, F., Bakermans-Kranenburg, M., & Mooya, H. (2016). Infant-mother and infant-sibling attachment in Zambia. *Attachment & Human Development*, *18*(6), 618–635. doi:10.1080/14616734.2016.1235216

Moss, E., Cyr, C., Bureau, J., Tarabulsy, G. M., & Dubois-Comtois, K. (2005). Stability of attachment during the preschool period. *Developmental Psychology, 41*(5), 773-783. doi:10.1037/0012-1649.41.5.773

*Murray, L. (1992). The impact of postnatal depression on infant development. *Journal of Child Psychology and Psychiatry, 33*(3), 543-561. doi:10.1111/j.1469-7610.1992.tb00890.x

*Murray, L., Paella, J., De Pascallis, L., Arteche, A., Pass, L., Percy, R., … Cooper, P. (2014). Socially anxious mothers' narratives to their children and their relation to child representations and adjustment. *Development and Psychopathology, 26*(4), 1531-1546. doi:10.1017/S0954579414001187

*Naber, F., Swinkels, S., Buitelaar, J., Bakermans-Kranenburg, M., Ijzendoorn, M., Dietz, C., … Engeland, H. (2007). Attachment in toddlers with autism and other developmental disorders. *Journal of Autism and Developmental Disorders*, *37*(6), 1123–1138. doi:10.1007/s10803-006-0255-2

*NICHD Early Child Care Research Network (1997). The effects of infant child care on infant-mother attachment security: Results of the NICHD study of early child care. *Child Development, 68*(5), 860-879. doi:10.1111/j.1467-8624.1997.tb01967.x

NICHD Study of Early Child Care and Youth Development (SECCYD) Series (2018, September 8). Retrieved from https://www.icpsr.umich.edu/icpsrweb/ICPSR/series/00233

*O'Connor, M., Sigman, M., & Brill, N. (1987). Disorganization of attachment in relation to maternal alcohol consumption. *Journal of Consulting and Clinical Psychology, 55*(6), 831-836. doi:10.1037/0022-006X.55.6.831

O'Connor, T. G., & Byrne, J. G. (2007). Attachment measures for research and practice. *Child and Adolescent Mental Health, 12*(4), 187-192. doi:10.1111/j.1475-3588.2007.00444.x

Otto, H., & Keller, H. (2014). *The different faces of attachment: Cultural variations on a universal human need.* Cambridge, England: Cambridge University Press.

*Out, D., Bakermans-Kranenburg, M., & van Ijzendoorn, M. (2009). The role of disconnected and extremely insensitive parenting in the development of disorganized attachment: Validation of a new measure. *Attachment & Human Development*, *11*(5), 419–443. doi:10.1080/14616730903132289

Page, M. J., Shamseer, L., Altman, D. G., Tetzlaff, J., Sampson, M., Tricco, A. C., . . . Moher, D. (2016). Epidemiology and reporting characteristics of systematic reviews of biomedical research: A cross-sectional study. *PloS Medicine, 13*(5), E1002028. doi:10.1371/journal.pmed.1002028

*Paquette, D., & Dumont, C. (2013). Is father-child rough-and-tumble play associated with attachment or activation relationships? *Early Child Development and Care*, *183*(6), 760–773. doi:10.1080/03004430.2012.723440

*Pauli-Pott, U., & Mertesacker, B. (2009). Affect expression in mother-infant interaction and subsequent attachment development. *Infant Behavior and Development*, *32*(2), 208–215. doi:10.1016/j.infbeh.2008.12.010

*Peltola, M., Forssman, L., Puura, K., Ijzendoorn, M., & Leppänen, J. (2015). Attention to faces expressing negative emotion at 7 months predicts attachment security at 14 months. *Child Development*, *86*(5), 1321–1332. doi:10.1111/cdev.12380

Peters, D., Garg, A., Bloom, G., Walker, D., Brieger, W., & Hafizur Rahman, M. (2008). Poverty and access to health care in developing countries. *Annals of the New York Academy of Sciences, 1136*(1), 161-171. doi:10.1196/annals.1425.011

Pinquart, M., Feussner, C., & Ahnert, L. (2013) Meta-analytic evidence for stability in attachments from infancy to early adulthood. *Attachment & Human Development, 15*(2), 189-218. doi:10.1080/14616734.2013.746257

*Pipp-Siegel, S., Brown, S., Ann Easterbrooks, M., & Harmon, R. (1995). The relation between infants' self/mother knowledge and three attachment categories. *Infant Mental Health Journal, 16*(3), 221–232. doi:10.1002/1097-0355(199523)16:3<221::AID-IMHJ2280160308>3.0.CO;2-B

*Planalp, E. M., & Braungart-Rieker, J. M. (2013). Temperamental precursors of infant attachment with mothers and fathers. *Infant Behavior and Development, 36*(4), 796-808. doi:10.1016/j.infbeh.2013.09.004

Poehlmann, J. (2005). Representations of attachment relationships in children of incarcerated mothers. *Child Development, 76,* 679–696. doi:10.1111/j.1467-8624.2005.00871.x

Polanczyk, G., de Lima, M. S., Horta, B. L., Biederman, J., & Rohde, L. A. (2007). The worldwide prevalence of ADHD: A systematic review and metaregression analysis. *American Journal of Psychiatry, 164*(6), 943-948. doi:10.1176/appi.ajp.164.6.942

Polanczyk, G. V., Willcutt, E. G., Salum, G. A., Kieling, C., & Rohde, L. A. (2014). ADHD prevalence estimates across three decades: An updated systematic review and meta-regression analysis. *International Journal of Epidemiology, 43*(2), 434-442. doi:10.1093/ije/dyt261

*Poster, B. (2014). *Investigating the links between infant-attachment disorganization and maternal personality disorganization* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. 3626212).

Quinn, N., & Mageo, J. M. (2013). Attachment and culture: An introduction. In N. Quinn & J. M. Mageo (Eds.), *Attachment Reconsidered: Cultural Perspectives on a Western Theory* (pp. 3-32). New York: Palgrave MacMillan.

Ramon, D., Yu, C. T., Martin, G. L., & Martin, T. (2015). Evaluation of a self-instructional manual to teach multiple-stimulus without replacement preference assessment procedure. *Journal of Behavioral Education, 24*(3), 289-303. doi:10.1007/s10864-015-9222-3

*Ramsauer, B., Lotzin, A., Quitmann, J., Becker-Stoll, F., Tharner, A., & Romer, G. (2014). Insightfulness and later infant attachment in clinically depressed and nonclinical mothers. *Infant Mental Health Journal*, *35*(3), 210–219. doi:10.1002/imhj.21446

*Raval, V., Goldberg, S., Atkinson, L., Benoit, D., Myhal, N., Poulton, L., & Zwiers, M. (2001). Maternal attachment, maternal responsiveness and infant attachment. *Infant Behavior and Development*, *24*(3), 281–304. doi:10.1016/S0163-6383(01)00082-0

*Rellinger, E. A. (1994). *Precursors and consequences of insecure attachment in children of adolescent mothers* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I. (UMI No. 9505898).

ResearchGate (n.d.). *Creating and editing projects.* Retrieved from https://explore.researchgate.net/display/support/Creating+and+editing+projects

*Rhau, H., Ziegenhain, U., Muller, B., & Wijnroks, L. (2000). Stability and change in infant-mother attachment in the second year of life: Relations to parenting quality and varying degrees of day-care experience. In P. Crittenden, & A. Claussen (Eds.), *The organization of attachment relationships maturation, culture, and context (pp. 251-276)*. Cambridge: Cambridge University Press.

*Robbins, L. S. (2005). *Disorganized attachment in a military sample: Contributions from maternal trauma history, expressed sadness and narrative errors* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. 3167141).

*Rodning, C. (1987). *The relationship between empathy and attachment: A study in mother-child interaction* (Doctoral dissertation). Available from ProQuest Dissertations & Theses A&I (UMI No. 8721054).

*Rodning, C., Beckwith, L., & Howard, J. (1989). Characteristics of attachment organization and play organization in prenatally drug-exposed toddlers. *Development and Psychopathology, 1*(4), 277-289. doi:10.1017/S095457940000047X

*Rodning, C., Beckwith, L., & Howard, J. (1991). Quality of attachment and home environments in children prenatally exposed to PCP and cocaine. *Development and Psychopathology, 3*(4), 351-366. doi:10.1017/S0954579400007562

Rogers, S. J., Ozonoff, S., & Maslin-Cole, C. (1993). Developmental aspects of attachment behavior in young children with pervasive developmental disorders. *Journal of the American Academy of Child & Adolescent Psychiatry, 32*(6), 1274-1282. doi:10.1097/00004583-199311000-00023

*Sagi, A., Koren-Karie, N., Gini, M., Ziv, Y., & Joels, T. (2002). Shedding further light on the effects of various types and quality of early child care on infant–mother attachment relationship: The Haifa Study of Early Child Care. *Child Development, 73*(4), 1166–1186. doi:10.1111/1467-8624.00465

*Sagi, A., van Ijzendoorn, M., Aviezer, O., Donnell, F., & Mayseless, O. (1994). Sleeping out of home in a Kibbutz communal arrangement: It makes a difference for infant-mother attachment. *Child Development, 65*(4), 992–1004. doi:10.1111/j.1467-8624.1994.tb00797.x

*Santelices, M., Guzman, G. M., Aracena, M., Farkas, C., Armijo, I., Perez-Salas, C., & Borghini, A. (2011). Promoting secure attachment: Evaluation of the effectiveness of an

early intervention pilot programme with mother-infant dyads in Santiago, Chile. *Child: Care, Health and Development, 37*(2), 203–210. doi:10.1111/j.1365-2214.2010.01161.x

*Scher, A., & Mayseless, O. (2000). Mothers of anxious/ambivalent infants: Maternal characteristics and child-care context. *Child Development, 71*(6), 1629–1639. doi:10.1111/1467-8624.00253

*Schiller, M. (1994). *Maternal interaction style, the family and attachment outcomes* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. 9526575).

*Schölmerich, A., Lamb, M., Leyendecker, B., & Fracasso, M. (1997). Mother-infant teaching interactions and attachment security in Euro-American and Central-American immigrant families. *Infant Behavior and Development, 20*(2), 165–174. doi:10.1016/S0163-6383(97)90019-9

*Schoppe-Sullivan, S., Diener, M., Mangelsdorf, S., Brown, G., Mchale, J., & Frosch, C. (2006). Attachment and sensitivity in family context: The roles of parent and infant gender. *Infant and Child Development, 15*(4), 367–385. doi:10.1002/icd.449

Schore, A. N. (2001). The effects of a secure attachment relationship on right brain development, affect regulation, and infant mental health. *Infant Mental Health Journal, 22*, 7–66. doi:10.1002/1097-0355(200101/04)22:1<7::AID-IMHJ2>3.0.CO;2-N

Schore, A. N. (2002). Dysregulation of the right brain: A fundamental mechanism of traumatic attachment and the psychopathogenesis of posttraumatic stress disorder. *Australian and New Zealand Journal of Psychiatry, 36*(1), 9-30. doi:10.1046/j.1440-1614.2002.00996.x

Schore, A. N. (2003a). Affect regulation and the repair of the self. New York, NY: W. W. Norton.

Schore, A. N. (2003b). Affect dysregulation and disorders of the self. New York, NY: W. W. Norton.

Schore, J. R., & Schore, A. N. (2008). Modern attachment theory: The central role of affect regulation in development and treatment. *Clinical Social Work Journal, 36*(1), 9-20. doi:10.1007/s10615-007-0111-7

*Schwichtenberg, A., Shah, P., & Poehlmann, J. (2013). Sleep and attachment in preterm infants. *Infant Mental Health Journal*, *34*(1), 37–46. doi:10.1002/imhj.21374

*Seifer, R., LaGasse, L., Lester, B., Bauer, C., Shankaran, S., Bada, H., … Liu, J. (2004). Attachment status in children prenatally exposed to cocaine and other substances. *Child Development*, *75*(3), 850–868. doi:10.1111/j.1467-8624.2004.00710.x

*Seifer, R., Sameroff, A., Dickstein, S., Gitner, G., Miller, I., Rasmussen, S., & Hayden, L. (1996). Parental psychopathology, multiple contextual risks, and one-year outcomes in children. *Journal of Clinical Child Psychology*, *25*(4), 423–435. doi:10.1207/s15374424jccp2504_7

*Shah, P., Fonagy, P., Strathearn, L., Dallos, R., & Crittenden, P. (2010). Is attachment transmitted across generations? The plot thickens. *Clinical Child Psychology and Psychiatry*, *15*(3), 329–345. doi:10.1177/1359104510365449

*Slade, A., Grienenberger, J., Bernbach, E., Levy, D., & Locker, A. (2005). Maternal reflective functioning, attachment, and the transmission gap: A preliminary study. *Attachment & Human Development*, *7*(3), 283–298. doi:10.1080/14616730500245880

*Simonelli, A., De Palo, F., Moretti, M., Baratter, P. M., & Porreca, A. (2014). The Strange Situation Procedure: The role of the attachment patterns in the Italian culture. *American Journal of Applied Psychology*, *3*(3), 47-56. doi:10.11648/j.ajap.20140303.11

*Smith-Nielsen, J., Tharner, A., Steele, H., Cordes, K., Mehlhase, H., & Vaever, M. (2016). Postpartum depression and infant-mother attachment security at one year: The impact of co-morbid maternal personality disorders. *Infant Behavior and Development, 44*, 148–158. doi:10.1016/j.infbeh.2016.06.002

*Solomon, J., & George, C. (1999). The development of attachment in separated and divorced families: Effects of overnight visitation, parent and couple variables. *Attachment & Human Development, 1*(1), 2–33. doi:10.1080/14616739900134011

Solomon, J., & George, C. (2016). The measurement of attachment security and related constructs in infancy and early childhood. In J. Cassidy & P. R. Shaver (3rd Eds.), *Handbook of Attachment: Theory, Research, and Clinical Applications* (pp. 366-398). New York, NY: Guilford Press.

*Sprangler, G., Fremmer-Bombik, E., & Grossmann, K. (1996). Social and individual determinants of infant attachment security and disorganization. *Infant Mental Health Journal, 17*(2), 127–139. doi:10.1002/(SICI)1097-0355(199622)17:2<127::AID-IMHJ3>3.0.CO;2-N

*Spangler, G., & Grossmann, K. (1993). Biobehavioral organization in securely and insecurely attached infants. *Child Development, 64*(5), 1439–1450. doi:10.1111/j.1467-8624.1993.tb02962.x

*Spangler, G., & Schieche, M. (1998). Emotional and adrenocortical responses of infants to the Strange Situation: The differential function of emotional expression. *International Journal of Behavioral Development, 22*(4), 681–706. doi:10.1080/016502598384126

*Speltz, M., Endriga, M., Fisher, P., & Mason, C. (1997). Early predictors of attachment in infants with cleft lip and/or palate. *Child Development*, *68*(1), 12–25. doi:10.1111/j.1467-8624.1997.tb01921.x

*Spieker, S. (1986). Patterns of very insecure attachment found in samples of high-risk infants and toddlers. *Topics in Early Childhood Special Education*, *6*(3), 37–53. doi:10.1177/027112148600600304

*Spieker, S., & Bensley, L. (1994). Roles of living arrangements and grandmother social support in adolescent mothering and infant attachment. *Developmental Psychology*, *30*(1), 102–111. doi:10.1037/0012-1649.30.1.102

*Spieker, S., Nelson, D., Petras, A., Jolley, S., & Barnard, K. (2003). Joint influence of child care and infant attachment security for cognitive and language outcomes of low-income toddlers. *Infant Behavior and Development*, *26*(3), 326–344. doi:10.1016/S0163-6383(03)00034-1

*Stacks, A., Muzik, M., Wong, K., Beeghly, M., Huth-Bocks, A., Irwin, J., & Rosenblum, K. (2014). Maternal reflective functioning among mothers with childhood maltreatment histories: Links to sensitive parenting and infant attachment security. *Attachment & Human Development*, *16*(5), 1–19. doi:10.1080/14616734.2014.935452

*Steele, M., Murphy, A., & Steele, H. (2010). Identifying therapeutic action in an attachment-centered intervention with high risk families. *Clinical Social Work Journal*, *38*(1), 61–72. doi:10.1007/s10615-009-0257-6

*Steele, H., Steele, M., & Fonagy, P. (1996). Associations among attachment classifications of mothers, fathers, and their infants. *Child Development*, *67*(2), 541–555. doi:10.1111/j.1467-8624.1996.tb01750.x

*Stemmle, P. (2012). *An exploration of maternal variables impacting infant attachment status among high-risk, pregnant adolescents* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. 3591884).

Sterne, J. A. C., Becker, B. J., & Egger, M. (2005). The funnel plot. In H. R. Rothstein, A. J. Sutton, & M. Borenstein (Eds.), *Publication Bias in Meta-Analysis* (pp. 75-98). West Sussex, England: John Wiley & Sons Ltd.

Sterne, J. A. C., & Egger, M. (2005). Regression methods to detect publication and other bias in meta-analysis. In H. R. Rothstein, A. J. Sutton, & M. Borenstein (Eds.), *Publication Bias in Meta-Analysis* (pp. 99-110). West Sussex, England: John Wiley & Sons Ltd.

Sterne, J., Sutton, A., Ioannidis, J., Terrin, N., Jones, D., Lau, J., … Higgins, J. (2011). Recommendations for examining and interpreting funnel plot asymmetry in meta-analyses of randomised controlled trials. *British Medical Journal*, *343*(7818). doi:10.1136/bmj.d4002

*Stovall, N. (2014). *Validating a self-report measure of adult attachment informed by developmental psychology* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. 3663223).

*Stovall-McClough, K., & Dozier, M. (2004). Forming attachments in foster care: Infant attachment behaviors during the first 2 months of placement. *Development and Psychopathology*, *16*(2), 253–271. doi:10.1017/S0954579404044505

Strange Situation Training (2018, September 8). Retrieved from https://attachment-training.com/training/#1

*Tambelli, R., Odorisio, F., Speranza, A. M., Realini, R., & Ammaniti, M. (2008). Le differenze di gioco tra madre-bambino e padre-bambino: Uno studio sull'attività ludica durante la

Strange Situation [A comparison of play behavior between mother-child and father-child: A study of playtime during the Strange Situation]. *Psicologia Clinica dello Sviluppo, 12*(3), 485-509. doi:10.1449/28489)

*Teti, D. M., Gelfand, D. M., Messinger, D. S., & Isabella, R. (1995). Maternal depression and the quality of early attachment: An examination of infants, preschoolers, and their mothers. *Developmental Psychology, 31*(3), 364-376. doi:10.1037/0012-1649.31.3.364

*Tharner, A., Herba, C., Luijk, M., Van Ijzendoorn, M., Bakermans-Kranenburg, M., Govaert, P., … Tiemeier, H. (2011). Subcortical structures and the neurobiology of infant attachment disorganization: A longitudinal ultrasound imaging study. *Social Neuroscience*, *6*(4), 336–347. doi:10.1080/17470919.2010.538219

Theule, J., Cheung, K., & Aberdeen, K. (2018). Children's ADHD interventions and parenting stress: A meta-analysis. *Journal of Child and Family Studies*, *27*(9), 2744–2756. doi:10.1007/s10826-018-1137-x

*Tomlinson, M., Cooper, P., & Murray, L. (2005). The mother-infant relationship and infant attachment in a south African peri-urban settlement. *Child Development, 76*(5), 1044-1054. doi: 10.1111/j.1467-8624.2005.00896.x

*Toth, S., Rogosch, F., Manly, J., Cicchetti, D., La Greca, A., Davila, J., & Levy, K. (2006). The efficacy of toddler–parent psychotherapy to reorganize attachment in the young offspring of mothers with major depressive disorder: A randomized preventive trial. *Journal of Consulting and Clinical Psychology*, *74*(6), 1006–1016. doi:10.1037/0022-006X.74.6.1006

Toth, S., Rogosch, F. A., Sturge-Apple, M., & Cicchetti, D. (2009). Maternal depression, children's attachment security, and representational development: An organizational perspective. *Child Development, 80*(1), 192-208. doi: 10.1111/j.1467-8624.2008.01254.x

*True, M., Pisani, L., & Oumar, F. (2001). Infant-mother attachment among the Dogon of Mali. *Child Development*, *72*(5), 1451–1466. doi:10.1111/1467-8624.00359

Udry-Jorgensen, L., Pierrehumbert, B., Borghini, A., Habersaat, S., Forcada-Guex, M., …Muller-Nix, C. (2011). Quality of attachment, perinatal risk, and mother-infant interaction in a high-risk premature sample. *Infant Mental Health Journal, 32*(3), 305-318. doi:10.1002/imhj.20298

United Nations (2014). *World economic situation and prospects: 2014.* Retrieved from http://www.un.org/en/development/desa/policy/wesp/wesp_current/wesp2014.pdf

United Nations (2018). *World economic situation and prospects: 2018.* Retrieved from https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/WESP2018_Full_Web.pdf

*van den Dries, L., Juffer, F., van Ijzendoorn, M., Bakermans-Kranenburg, M., & Alink, L. (2012). Infants' responsiveness, attachment, and indiscriminate friendliness after international adoption from institutions or foster care in China: Application of Emotional Availability Scales to adoptive families. *Development and Psychopathology*, *24*(1), 49–64. doi:10.1017/S0954579411000654

van Ijzendoorn, M. H. (1995). Attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the adult attachment interview. *Psychological Bulletin, 117*(3), 387-403. doi:10.1037/0033-2909.117.3.387

van Ijzendoorn, M., & Bakermans-Kranenburg, M. (2019). Bridges across the intergenerational transmission of attachment gap. *Current Opinion in Psychology, 25*(1), 31-36. doi:10.1016/j.copsyc.2018.02.014

van Ijzendoorn, M. H., & Kroonenberg, P. M. (1988). Cross-cultural patterns of attachment: A meta-analysis of the Strange Situation. *Child Development, 59*, 147-156.

*van Ijzendoorn, M., Moran, G., Belsky, J., Pederson, D., Bakermans-Kranenburg, M., & Kneppers, K. (2000). The similarity of siblings' attachments to their mother. *Child Development, 71*(4), 1086–1098. doi:10.1111/1467-8624.00211

van Ijzendoorn, M. H., & Sagi-Schwartz, A. (2008). Cross-cultural patterns of attachment: Universal and contextual dimensions. In J. Cassidy & P. R. Shaver (2nd Eds.), *Handbook of Attachment: Theory, Research, and Clinical Applications* (pp. 713-734). New York, NY: Guilford Press.

van Ijzendoorn, M. H., Schuengel, C., & Bakermans-Kranenburg, M. J. (1999). Disorganized attachment in early childhood: Meta-analysis of precursors, concomitants and sequelae. *Development and Psychopathology, 11*(2), 225-249. doi:10.1017/S0954579499002035

van Ijzendoorn, M. H., Vereijken, C. M. J. L., Bakermans-Kranenburg, M. J., & Riksen-Walraven, M. (2004). Assessing attachment security with the attachment Q sort: Meta-analytic evidence for the validity of the observer AQS. *Journal of Child Development, 75*(4), 1188-1213. doi:10.1111/j.1467-8624.2004.00733.x

Verhage, M., Schuengel, C., Madigan, S., Fearon, R., Oosterman, M., Cassibba, R.,…van Ijzendoorn, M. (2016). Narrowing the transmission gap: A synthesis of three decades of research on intergenerational transmission of attachment. *Psychological Bulletin, 142*(4), 337–366. https://doi.org/10.1037/bul0000038

*Vaughn, B., Goldberg, S., Atkinson, L., Marcovitch, S., Macgregor, D., & Seifer, R. (1994). Quality of toddler-mother attachment in children with Down Syndrome: Limits to interpretation of Strange Situation behavior. *Child Development, 65*(1), 95–108. doi:10.1111/j.1467-8624.1994.tb00737.x

*von der Lippe, A., Eilertsen, D., Hartmann, E., & Killèn, K. (2010). The role of maternal attachment in children's attachment and cognitive executive functioning: A preliminary study. *Attachment & Human Development*, *12*(5), 429–444. doi:10.1080/14616734.2010.501967

von Elm, E., Poglia, G., Walder, B., & Tramèr, M. (2004). Different patterns of duplicate publication: An analysis of articles used in systematic reviews. *The Journal of the American Medical Association, 291*(8), 974-980. doi:10.1001/jama.291.8.974

Vondra, J., Shaw, D., & Kevenides, M. (1995). Predicting infant attachment classification from multiple, contemporaneous measures of maternal care. *Infant Behavior and Development*, *18*(4), 415–425. doi:10.1016/0163-6383(95)90031-4

*Vondra, J., Shaw, D., Swearingen, L., Cohen, M., & Owens, E. (2001). Attachment stability and emotional and behavioral regulation from infancy to preschool age. *Development and Psychopathology, 13*(1), 13–33. doi:10.1017/S095457940100102X

*Vorria, P., Papaligoura, Z., Dunn, J., van Ijzendoorn, M., Steele, H., Kontopoulou, A., & Sarafidou, Y. (2003). Early experiences and attachment relationships of Greek infants raised in residential group care. *Journal of Child Psychology and Psychiatry*, *44*(8), 1208–1220. doi:10.1111/1469-7610.00202

Walker, S. P., Wachs, T. D., Meeks Gardner, J., Lozoff, B., Wasserman, G. A., Pollitt, E., & Carter, J. A. (2007). Child development: Risk factors for adverse outcomes in developing

countries. *The Lancet, 369*(9556), 145-157. doi:10.1016/S0140-6736(07)60076-2

*Ward, M., & Carlson, E. (1995). Associations among adult attachment presentations, maternal sensitivity, and infant-mother attachment in a sample of adolescent mothers. *Child Development, 66*(1), 69–79. doi:10.2307/1131191

*Ward, M., Kessler, D., & Altman, S. (1993). Infant-mother attachment in children with failure to thrive. *Infant Mental Health Journal, 14*(3), 208-220. doi:10.1002/1097-0355(199323)14:3<208::AID-IMHJ2280140306>3.0.CO;2-C

*Ward, M., Lee, S., & Lipper, E. (2000). Failure-to-thrive is associated with disorganized infant–mother attachment and unresolved maternal attachment. *Infant Mental Health Journal, 21*(6), 428-442. doi:10.1002/1097-0355(200011/12)21:6<428::AID-IMHJ2>3.0.CO;2-B

Waters, E. (1995). Appendix A: The Attachment Q-Set (version 3.0). *Monographs of the Society for Research in Child Development, 60*(2), 234-246. doi.10.1111/j.1540-5834.1995.tb00214.x

Wilkie, K., Germain, S., & Theule, J. (2016). Evaluating the efficacy of equine therapy among at-risk youth: A meta-analysis. *Anthrozoös*, *29*(3), 377–393. doi:10.1080/08927936.2016.1189747

*Wilson, J. (1990). *Stability of attachment classification from one to six years of age in a sample at risk for disorganized attachment* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. 9105889).

*Wolke, D., Eryigit-Madzwamuse, S., & Gutbrod, T. (2014). Very preterm/very low birthweight infants' attachment: infant and maternal characteristics. *Archives of Disease in Childhood – Fetal and Neonatal Edition, 99*(1), 70–75. doi:10.1136/archdischild-2013-303788

Wood, J. A. (2008). Methodology for dealing with duplicate study effects in a meta-analysis. *Organizational Research Methods, 11*(1), 79-95. doi:10.1177/1094428106296638

*Yorgason, L. A. (2015). *Effectiveness of Mary Ainsworth's Maternal Sensitivity Scale with four-week-old infants* (Master's thesis). Retrieved from https://scholarworks.umt.edu/etd/4421/

*Zdebik, M. (2007). *Measuring behavioural inhibition with the Strange Situation* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (UMI No. MR32875).

*Zeanah, C., Smyke, A., Koga, S., & Carlson, E. (2005). Attachment in institutionalized and community children in Romania. *Child Development, 76*(5), 1015–1028. doi:10.1111/j.1467-8624.2005.00894.x

*Zevalkink, J., Riksen-Walraven, J., & van Lieshout, C. F. M. (1999). Attachment in the Indonesian caregiving context. *Social Development, 8*(1), 21-40. doi:10.1111/1467-9507.00078

*Zreik, G., Oppenheim, D., & Sagi-Schwartz, A. (2017). Infant attachment and maternal sensitivity in the Arab minority in Israel. *Child Development, 88*(4), 1338–1349. doi:10.1111/cdev.12692

Appendix A

Coding Manual for Meta-Analysis of Attachment
Classification from the Strange Situation Paradigm

Study Level Descriptors

1. Bibliographic reference: _____
_____
_____

2. Study ID number: _____

3. Language Study Published in:
   a) English
   b) French
   c) Spanish
   d) German
   e) Italian
   f) Dutch
   g) Chinese
   h) Russian
   i) _____

4.Type of publication:
   a) Journal article
   b) Book chapter
   c) Conference paper
   d) Thesis or doctoral dissertation
   e) Unpublished data
   f) Other

5a. Publication year: _____
5b. Indicate if only published online to date: Yes/No
5c. Year that Strange Situation was conducted: _____

6. Where study was conducted:
Country:_____
Oceania includes: Australia, New Zealand, Melenesia, Micronesia, Polynesia
Middle East includes: Bahrain, Cyprus, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Palestinian territories, Qatar, Saudi Arabia, Syria, Turkey, United Arab Emirates, Yemen

   a. North America
   b. Europe
   c. Oceania
   d. South America
   e. Asia
   f. Africa
   g. Middle East

7. What is the state of the economy in the country the study was conducted in?
   a) Developed
   b) In transition
   c) Developing

United Nations Country Classifications (2014, 2018)
All countries not listed are developed or in transition are classified under developing

Developed

Europe
- Austria
- Bulgaria
- Belgium
- Croatia
- Cyprus
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Greece
- Hungary
- Iceland
- Ireland
- Italy
- Latvia
- Lithuania
- Luxembourg
- Malta
- Netherlands
- Norway
- Poland
- Portugal
- Romania
- Slovakia
- Slovenia
- Sweden
- Switzerland
- United Kingdom

Other Countries
- Australia
- Canada
- Japan
- New Zealand
- United States

In transition

South- Europe
- Albania
- Bosnia and Herzegovina
- Montenegro
- Serbia
- The former Yugoslav Republic of Macedonia

Commonwealth of Independent States
- Armenia
- Azerbaijan
- Belarus
- Georgia
- Kazakhstan
- Kyrgyzstan
- Republic of Moldova
- Russian Federation
- Tajikistan
- Turkmenistan
- Ukraine
- Uzbekistan

8. What is the dominant culture in the country the study was conducted in (see van Ijzendoorn et al., 1999)? Western / Non-Western

9. Children's gender

	n male	n female	% male	% female
Total Sample				
Subsample 1:				
Subsample 2:				
Subsample 3:				

10. Parents/caregivers' gender

	n male (fathers)	n female (mothers)	% male	% female
Total Sample				
Subsample 1:				
Subsample 2:				
Subsample 3:				

11. Children's age in months at time of Strange Situation Paradigm

	Mean	SD	Range	n
Total Sample				
Subsample 1:				
Subsample 2:				
Subsample 3:				

12. Parent age in years at time of Strange Situation Paradigm

	Mean	SD	Range	n
Total Sample				
Subsample 1:				
Subsample 2:				
Subsample 3:				

13. Was the sample:

a) Community (general sample)
b) Targeted (recruited a population with specific characteristic(s)), specify:_____
c) Clinical (recruited a population with a disorder), specify:_____

14. Training of the Strange Situation Coders:

- Did the study report that the person(s) who coded the Strange Situation paradigm received the official training through the University of Minnesota – Yes / No
  Other (describe):

  e.g., were trained by someone else who received the training

- Did the study report that the person(s) who coded the Strange Situation were certified (had passed the post training reliability certification process) – Yes / No (circle one)
- Other information provided about training of the coders:

15. Did the study report reliability coding for the attachment classifications from the Strange Situation paradigm – Yes / No (circle one)

If yes, how was reliability measured? _____

What was the percent of studies that were second coded? _____

	Cohen's Kappa	% Agreement	Other
4 way classification			
Secure vs. Insecure			
Organized vs. Disorganized			
3 way classification			
Other:			

16. What ethnicities were included in the sample?
Answer this question only is study was conducted in United States

	White n (%)	Black n (%)	Hispanic n (%)	Asian n (%)	Indigenous n (%)	Other n (%)
Total Sample						
Subsample 1:						
Subsample 2:						
Subsample 3:						

17. What is the socioeconomic status of the sample?
Answer these question only if study was conducted in United States or Canada from 2000 to present

Education

Mean years of education

	Mean Years of Education	Range
Total Sample		
Subsample 1:		
Subsample 2:		
Subsample 3:		

Categorical education classifications

	Did not complete High School n (%)	High School Diploma n (%)	Some college/university, diploma, or degree n (%)
Total Sample			
Subsample 1:			
Subsample 2:			
Subsample 3:			

Income

Mean Income

	Mean Income	Range
Total Sample		
Subsample 1:		
Subsample 2:		
Subsample 3:		

Categorical Low Income Classification
How did study define low income:_____

	Low Income n (%)
Total Sample	
Subsample 1:	
Subsample 2:	
Subsample 3:	

18. Family form

	Two parent household n (%)	Single parent n (%)	Divorced/separated parents n (%)
Total Sample			
Subsample 1:			
Subsample 2:			
Subsample 3:			
Mean Age			

*If data is available also include mean age

19. Did the sample receive an intervention before participating in the Strange Situation? Yes / No
What was the interventions? _____

20. Which of the following risk factors are present in the sample?

Children

Percent of children in the sample with a neurodevelopmental disorder (ADHD, ASD, intellectual disability, FASD, Down syndrome, other genetic conditions such as fragile-X syndrome, motor disorders, tic disorders, communication, speech, and language disorders)

	Disorder: n (%)	Disorder: n (%)	Disorder: n (%)
Total Sample			
Subsample 1:			
Subsample 2:			
Subsample 3:			

Percent of children in the sample with a medical disorder (all disease, illnesses, and injuries except for mental disorders, includes in utero, during birth, and after birth – e.g., premature birth, chronic ear infections, blindness, physical handicap)

	Disorder: n (%)	Disorder: n (%)	Disorder: n (%)
Total Sample			
Subsample 1:			
Subsample 2:			
Subsample 3:			

Percent of children in the sample with internalizing problems and/or mean internalizing symptoms (internal behavioural difficulties, like symptoms of anxiety and depression)

	Internalizing problems n (%)	Mean Internalizing Symptoms Measure:_____
Total Sample		
Subsample 1:		
Subsample 2:		
Subsample 3:		

Percent of children in the sample with externalizing problems and mean externalizing symptoms (overt behavioural problems, like tantrums and oppositional behaviour)

	Externalizing problems n (%)	Mean Externalizing Symptoms Measure:_____
Total Sample		
Subsample 1:		
Subsample 2:		
Subsample 3:		

Percent of children that were adopted, currently in foster care, or were in foster care (circle one)

	n (%)
Total Sample	
Subsample 1:	
Subsample 2:	
Subsample 3:	

Percent of children that live or lived in a institution

	n (%)
Total Sample	
Subsample 1:	
Subsample 2:	
Subsample 3:	

Percent of children that were maltreated by a parent/caregiver
Types of maltreatment for total maltreatment (circle all the apply)

a) Sexual abuse
b) Physical abuse
c) Emotional/psychological abuse
d) Neglect
e) Exposure to intimate partner violence (IPV)

	Total Maltreatment n (%)	Sexual Abuse n (%)	Physical Abuse n (%)	Psychological Abuse n (%)	Neglect n (%)	Exposure to IPV n (%)
Total Sample						
Subsample 1:						
Subsample 2:						
Subsample 3:						

Parents/Caregivers

Percent of adolescent (under 20 years of age) parents/caregivers

	n (%)
Total Sample	
Subsample 1:	
Subsample 2:	
Subsample 3:	

Percent of parental/caregiver psychopathology (include parents undergoing methadone treatment in this table)

	Disorder: n (%)	Disorder: n (%)	Disorder: n (%)	Disorder: n (%)	Disorder: n (%)
Total Sample					
Subsample 1:					
Subsample 2:					
Subsample 3:					

Percent of parents/caregivers that have been incarcerated after birth of child

	n (%)
Total Sample	
Subsample 1:	
Subsample 2:	
Subsample 3:	

Overall Risk Status of Sample

Children at risk – Yes / No / Mixed

Parents at risk – Yes / No / Mixed

Attachment Classifications

Enter the rate of each attachment classification, if more than one independent sample also include the rate of attachment classifications from each subsample along with the total sample.

Anxious attachment: can mean either avoidant or ambivalent.
Dismissive: Code as avoidant (usually used to describe adults)
Disoriented: Same as disorganized.
Fearful: Code as avoidant (usually used to describe adults)
Preoccupied: Code as ambivalent (usually used to describe adults)
Resistant: Same as ambivalent
***If the paper places the word "insecure" or "anxious" before or after another attachment style term, use that other term in coding. E.g., "anxious-ambivalent" should be coded as ambivalent.*

	Avoidant-A (*n*)	Ambivalent-C (*n*)	Disorganized-D (*n*)	Secure-B (*n*)	Total (*n*)
Total					
Subsample 1					
Subsample 2					
Subsample 3					

Were the unclassifiable infants included with D? Yes / No / Unclear

Underlying Classifications of Disorganized Infants/Toddlers

Enter the ABC underlying/forced classifications for the infants/toddlers classified as having a disorganized attachment.

	Disorganized-D Total (*n*)	Underlying Avoidant-A (*n*)	Underlying Ambivalent-C (*n*)	Underlying Secure-B (*n*)
Total				
Subsample 1				
Subsample 2				
Subsample 3				

Appendix B

Analyses that were Omitted with Rationale

Study 1 and Study 2

Insufficient studies to run moderator analysis

- Does the year the SSP was administered affect the rate of attachment classifications?
- Does the percentage of children with internalizing problems affect the rate of attachment classifications?
- Does the mean level of internalizing problems affect the rate of attachment classifications?
- Does the percentage of children with externalizing problems affect the rate of attachment classifications?
- Does the mean level of externalizing problems affect the rate of attachment classifications?

Not enough variability in the data or restricted range

- Does the percentage of female parents/caregivers in the sample affect the rate of attachment classifications?
- In the U.S. samples, does the percentage of the sample that are, Asian, and Indigenous affect the rate of attachment classifications?

Not enough variability in the data or restricted range, and this information was captured by other variables (type of sample and risk status of the children and parents)

- Does the percentage of children with a neurodevelopmental disorder affect the rate of attachment classifications?

- Does the percentage of children with a medical disorder affect the rate of attachment classifications?
- Does the percentage of children in the sample that are currently in or were in foster care or were adopted affect the rate of attachment classifications?
- Does the percent of children that lived in an institution affect the rate of attachment classifications?
- Does the percent of children that were maltreated affect the rate of attachment classifications?
- Does the percent of parents that were or are incarcerated affect the rate of attachment classifications?

Too much covariation with another variable (state of the economy)

- Does the continent the study was conducted in affect the rate of attachment classifications?

Study 2 Only

Insufficient studies to run moderator analysis

- Does the socioeconomic status (mean years of education, percentage that did not complete high school, mean income, and percentage low income) in the Canadian and U.S. samples affect the rate of attachment classifications?
- Does the percent of parents/caregivers with psychopathology affect the rate of attachment classifications?

Not enough variability in the data or restricted range

- Does the percent of premature infants in the sample affect the rate of attachment classification?

Appendix C

Characteristics of Studies Included in Study 1

Table 17

Characteristics of Studies Included in Study 1 – Part 1

Study Name	Language	Type of Publication	Continent	State of Economy	% Female Children	Mean Age Children	Mean Age Parent	Parent at-Risk	Child at-Risk	Type of Sample	% Premature	% Adolescent Parent	%Mood Disorder
Abott (2016)	English	Thesis/ Dissertation	Europe	Developed	51.8	14	29		no				
Abramis (1990)	English	Thesis/ Dissertation	North America	Developed	100	12	30.5	no	no	Community			
Ahnert et al. (2000)	English	Journal Article	Europe	Developed	45	12.2		no	no	Community			
Ahnert et al. (2004)	English	Journal Article	Europe	Developed	51	14.9		no	no	Community			
Ahnert et al. (2004)	English	Journal Article	Europe	Developed	51	17		no	no	Community			
Ainsworth & Eichberg (1993)	English	Journal Article	North America	Developed		16		no	no	Community			
Albertson (2017)	English	Thesis/ Dissertation	North America	Developed		12	20.2	yes	no	Targeted		58.5	
Ammaniti & Speranza (1995)	Italian	Journal Article	Europe	Developed	48	13	32	no	no	Community			
Ammaniti et al. (2002)a	Italian	Journal Article	Europe	Developed		12		yes	no	Clinical			100
Ammaniti et al. (2002)b	Italian	Journal Article	Europe	Developed		12		yes	no	Targeted			

Ammaniti et al. (2002)c	Italian	Journal Article	Europe	Developed		12		no	no	Community	
Ammaniti et al. (2004)a	English	Journal Article	Europe	Developed	78	18.6	35.7	no	yes	Clinical	
Ammaniti et al. (2004)b	English	Journal Article	Europe	Developed	59	18.6	35.7	no	no	Community	
Andreozzi et al. (2002)	English	Journal Article	North America	Developed	52.9	18	17.1	yes	no	Targeted	
Archer (2011)	English	Thesis/ Dissertation	Asia	Developing	64	20.4	35.7		yes	Clinical	
Archer et al. (2015)	English	Journal Article	Asia	Developing	57	20.8	30.7	no	no	Community	
Arnott & Meins (2007)	English	Journal Article	Europe	Developed		12	30.5	no	no	Community	
Arnott & Meins (2007)	English	Journal Article	Europe	Developed		15	35.5	no	no	Community	
Atkinson et al. (1999)	English	Journal Article	North America	Developed	42	19	33	no	yes	Clinical	
Atkinson et al. (1999)	English	Journal Article	North America	Developed	42	42	33	no	yes	Clinical	
Bailey et al. (2015)	English	Journal Article	North America	Developed	50.7	18.3	30.9	no	no	Community	
Beebe et al. (2010)	English	Journal Article	North America	Developed	44	12	29	no	no	Targeted	0
Beeghly et al. (2003)a	English	Journal Article	North America	Developed	45	12.7	25.1	yes	no	Targeted	0
Beeghly et al. (2003)b	English	Journal Article	North America	Developed	51	12.7	27.6		yes	Clinical	
Beeghly et al. (2003)c	English	Journal Article	North America	Developed	45	12.6	26.3		yes	Clinical	
Beetz et al. (2015)	English	Journal Article	Europe	Developed	60	16.55	28.2	yes		Targeted	10
Behrens et al. (2011)	English	Journal Article	North America	Developed	50	12.56	29.4	no	no	Community	

Beijers et al. (2011)	English	Journal Article	Europe	Developed	47	12.6	32.46	no	no	Community	
Benoit & Parker (1994)/Madigan et al. (2011)	English	Journal Article	North America	Developed	45	12	29	no	no	Community	
Benoit & Parker (1994)/Madigan et al. (2011)	English	Journal Article	North America	Developed	54	18	34.6	no	no	Community	
Bergman et al. (2008)	English	Journal Article	Europe	Developed	51.2	16.7	36.5	no	no	Community	0
Berlin (1994)	English	Thesis/ Dissertation	North America	Developed	61	17		no	no	Community	
Bernard & Dozier (2010)	English	Journal Article	North America	Developed	59	15.2		no	no	Community	
Bernard et al. (2012)	English	Journal Article	North America	Developed	42	19	29	yes	no	Targeted	
Bokhorst et al. (2003)	English	Journal Article	Europe	Developed		12.5	35	no	no	Targeted	
Bombardier (1997)	English	Thesis/ Dissertation	North America	Developed		15	25.5		yes	Clinical	
Booth et al. (1991)a	English	Journal Article	North America	Developed	55	20	26	yes	no	Targeted	
Booth et al. (1991)b	English	Journal Article	North America	Developed	55	20	31	no	no	Community	
Borghini et al. (2009)	French	Journal Article	Europe	Developed	50	12		no	yes	Targeted	100
Brisch et al. (2005)	English	Journal Article	Europe	Developed	54.4	14	31	no	yes	Targeted	100
Byrne et al. (2010)	English	Journal Article	North America	Developed			30	yes	no	Targeted	
Carlson (1998)	English	Journal Article	North America	Developed	41	12	21.66				12

Carlson (1998)	English	Journal Article	North America	Developed	41	18	22				12
Carlson & Harwood (2003)a	English	Journal Article	North America	Developed		12	32.2	no	no	Community	
Carlson & Harwood (2003)b	English	Journal Article	Central/ South America	Developing		12	30	no	no	Community	
Carlson et al. (1989)a	English	Journal Article	North America	Developed	51	12.8		yes	yes	Targeted	
Carlson et al. (1989)b	English	Journal Article	North America	Developed	51	12.8		yes	no	Targeted	
Carré et al. (2015)a	French	Journal Article	North America	Developed	67	16.7	39	no	yes	Targeted	
Carré et al. (2015)b	French	Journal Article	North America	Developed	81	16.3	31	no	no	Community	
Cassé et al. (2016)a	English	Journal Article	Europe	Developed		12.95	30.7	no	no	Community	
Cassé et al. (2016)b	English	Journal Article	Europe	Developed		12.95	26.8	yes	no	Targeted	
Cassiba et al. (2011)a	English	Journal Article	Europe	Developed	60	14	32.5	no	yes	Targeted	50
Cassiba et al. (2011)b	English	Journal Article	Europe	Developed	60	14	32.5	no	no	Community	0
Cassidy et al. (2011)a	English	Journal Article	North America	Developed	44.5	12	24	yes	no	Targeted	
Cassidy et al. (2011)b	English	Journal Article	North America	Developed	44.5	12	24	yes	no	Targeted	
Choi et al. (1998)	Korean	Journal Article	Asia	Developing	50	19	30	no	no	Community	
Cicchetti et al. (2011)a	English	Journal Article	North America	Developed	56.6	12	27.6	yes	yes	Targeted	
Cicchetti et al. (2011)b	English	Journal Article	North America	Developed	57.1	12	27.3	yes	yes	Targeted	

Cicchetti et al. (2011)c	English	Journal Article	North America	Developed	54.3	12	27.7	yes	yes	Targeted			
Cicchetti et al. (2011)d	English	Journal Article	North America	Developed	46.2	12	25.8	yes	yes	Targeted			
Claussen et al. (2002)	English	Journal Article	North America	Developed	54	15			yes	Clinical			
Clements & Barnett (2002)a	English	Journal Article	North America	Developed	36	24.8	38	no	yes	Clinical			
Clements & Barnett (2002)b	English	Journal Article	North America	Developed	39	24.6	29.7	no	yes	Targeted			
Cohn et al. (1991)	English	Journal Article	North America	Developed		12.5	29	yes	no	Clinical			15
Cole (2005)	English	Journal Article	North America	Developed		13	46		yes	Targeted	30		
Cox (1995)[a]	English	Journal Article	North America	Developed									
Daley (2013)	English	Thesis/ Dissertation	North America	Developed	52.9	12	19.1	yes	no	Targeted			60
das Eiden & Leonard (1996)	English	Journal Article	North America	Developed			30		no				
Dawson et al. (1992)	English	Journal Article	North America	Developed	61.7	14	18.8	yes	no	Clinical		100	46
Dawson et al. (2001)a	English	Journal Article	North America	Developed	56	13.9	29.6	no	no	Community			
Dawson et al. (2001)b	English	Journal Article	North America	Developed	59	13.9	30.5	yes	no	Targeted			
Dawson et al. (2001)c	English	Journal Article	North America	Developed	48	14	32.6	yes	no	Clinical			100
del Carmen et al. (1993)	English	Journal Article	North America	Developed		12.5	29.9	no	no	Community			
Demers et al. (2010)a	English	Journal Article	North America	Developed	50	18	28.6	yes	no	Targeted		100	

Demers et al. (2010)b	English	Journal Article	North America	Developed	65.6	18	18.4	no	no	Community		0
Deng et al. (2007)	Mandarin	Journal Article	Asia	Developing	11.22%	24		no	yes	Clinical		
Ding et al. (2008)[b]	Mandarin	Journal Article	Asia	Developing	46.67%	15	31.6	no	no	Community		
Ding et al. (2012)	English	Journal Article	Asia	Developing	48.75	14.2	30	no	no	Community		
Domaille (2014)	English	Thesis/ Dissertation	North America	Developed			27.73		no			
Dozier et al. (2001)	English	Journal Article	North America	Developed	42	16.5	47	no	yes	Targeted		
Easterbrooks (1989)	English	Journal Article	North America	Developed	55	13	28	no			50	
Easterbrooks (1989)	English	Journal Article	North America	Developed	55	13	30	no			50	
Easterbrooks (1989)	English	Journal Article	North America	Developed	55	20	29	no			50	
Easterbrooks (1989)	English	Journal Article	North America	Developed	55	20	31	no			50	
Edwards et al. (2004)	English	Journal Article	North America	Developed	49	12	33	yes	no	Clinical		
Edwards et al. (2004)	English	Journal Article	North America	Developed	49	18	33	yes	no	Clinical		
Edwards et al. (2004)	English	Journal Article	North America	Developed	49	12	30	yes	no	Clinical		
Edwards et al. (2004)	English	Journal Article	North America	Developed	49	18	30	yes	no	Clinical		
Egeland & Eickson (1993)a	English	Book Chapter	North America	Developed		13		yes	no	Targeted		
Egeland & Eickson (1993)a	English	Book Chapter	North America	Developed		19		yes	no	Targeted		

Egeland & Eickson (1993)b	English	Book Chapter	North America	Developed		13		yes	no	Targeted			
Egeland & Eickson (1993)b	English	Book Chapter	North America	Developed		19		yes	no	Targeted			
Emery et al. (2008)	English	Journal Article	North America	Developed	57.1	15.3	17.89	yes	no	Targeted		100	
Enlow et al. (2014)a	English	Journal Article	North America	Developed	42	13	29	yes	no	Clinical			
Enlow et al. (2014)b	English	Journal Article	North America	Developed	45	13	28		no				
Ensink et al. (2016)	English	Journal Article	North America	Developed	50	16	30.82	no	no	Community			
Espinosa et al. (2001)	English	Journal Article	North America	Developed		18	28	yes		Clinical	17		57
Estrada (1994)	English	Thesis/ Dissertation	North America	Developed	40	12	24.4	yes	no	Targeted			
Fava Vizziello & Calvo (1997)a	Italian	Journal Article	Europe	Developed	51.4	12	31	no	yes	Targeted	100		
Fava Vizziello & Calvo (1997)b	Italian	Journal Article	Europe	Developed		12		no	no	Community			
Fava Vizziello et al. (2000)	Spanish	Journal Article	Europe	Developed	50	20	29	yes	no	Clinical			
Fava Vizziello et al. (2003)[c]	Italian	Journal Article	Europe	Developed		13		no	no	Community			
Finger (2006)	English	Thesis/ Dissertation	North America	Developed	51	15	29	yes		Clinical	26.3		
Finger et al. (2009)	English	Journal Article	North America	Developed	42	18.5	24.5	yes	no	Targeted			
Fish (2001)	English	Journal Article	North America	Developed	47.9	15		yes	no	Targeted		12.2	
Fish & Stifter (1995)	English	Journal Article	North America	Developed	50	18	29.7	no	no	Community			

Frigerio et al. (2009)	English	Journal Article	Europe	Developed	45	14.6	33.74	no	no	Community		
Frosch et al. (2001)	English	Journal Article	North America	Developed	54		26.1	no	no	Community		
Frosch et al. (2001)	English	Journal Article	North America	Developed	54		28.4	no	no	Community		
Ganiban et al. (2000)	English	Journal Article	North America	Developed	43	19		no	yes	Clinical		
Ganiban et al. (2000)	English	Journal Article	North America	Developed	43	27		no	yes	Clinical		
Gedaly & Leerkes (2016)	English	Journal Article	North America	Developed	51	13	25.1		no			
Gibson et al. (2000)a	English	Journal Article	Oceania	Developed	48	34.5	13.2	no	yes	Targeted	9	0
Gibson et al. (2000)b	English	Journal Article	Oceania	Developed	49	31.9	13.4	no	yes	Community	5	0
Girard et al. (2013)	English	Journal Article	North America	Developed	51	15	22.6	yes	no	Targeted		
Gleason (1995)	English	Thesis/ Dissertation	North America	Developed	47.7	13	31	no	no	Community	2	
Gloger-Tippelt et al. (2002)	English	Journal Article	Europe	Developed	39	13	30	no	no	Community		
Gojman et al. (2012)a	English	Journal Article	Central/ South America	Developing	37	13.1	31	no	no	Community		
Gojman et al. (2012)b	English	Journal Article	Central/ South America	Developing	51.6	14	26.1	yes	no	Targeted		
Goldberg et al. (1989)	English	Journal Article	North America	Developed		15		no	yes	Targeted	100	
Goldberg et al. (1995)a	English	Journal Article	North America	Developed		12	31	no	no	Community		
Goldberg et al. (1995)b	English	Journal Article	North America	Developed		12	27.4	no	yes	Targeted		

Goldberg et al. (1995)c	English	Journal Article	North America	Developed		12	28.2	no	yes	Targeted		
Gradisar et al. (2016)	English	Journal Article	Oceania	Developed	63	12	33.3	no	yes	Targeted		
Granqvist et al. (2016)	English	Journal Article	Europe	Developed	50.5	15	30	no	no	Community		
Habersaat et al. (1016)a	English	Journal Article	Europe	Developed	22.5	12	30.7	no	yes	Targeted		
Habersaat et al. (1016)a	English	Journal Article	Europe	Developed	55	12	34.2	no	no	Community		
Haltigan et al. (2011)a	English	Journal Article	North America	Developed	33	15		no	no	Targeted		
Haltigan et al. (2011)b	English	Journal Article	North America	Developed	56	15		no	no	Community		
Harrison & Ungerer (1997)	English	Journal Article	Oceania	Developed		12	28.9	no	no	Community		
Hawkins et al. (2015)	English	Journal Article	North America	Developed	46	13	30	no	no	Community		
Heinicke et al. (1999)a	English	Journal Article	North America	Developed	51.6	14	24	yes	no	Targeted		
Heinicke et al. (1999)b	English	Journal Article	North America	Developed	48.4	14	24	yes	no	Targeted		
Herreros (2013)		Thesis/ Dissertation	Central/ South America	Developing	48.7	22.6	32		yes	Clinical		
Higgins (2008)/McFarland et al. (2012)	English	Journal Article	North America	Developed		13.5	30	no	no	Community		
Higgins (2008)/McFarland et al. (2012)	English	Thesis/ Dissertation	North America	Developed		13.5	30.5	no	no	Community		
Higley & Dozier (2009)	English	Journal Article	North America	Developed	34	12.8	32.6	no	no	Community	0	0

Hipwell et al. (2000)a	English	Journal Article	Europe	Developed	54	12	29.5	yes	no	Clinical		
Hipwell et al. (2000)b	English	Journal Article	Europe	Developed	37	12	28.9	yes	no	Clinical		100
Hipwell et al. (2000)c	English	Journal Article	Europe	Developed	54	12	29.8	no	no	Community		0
Hipwell et al. (2000)d	English	Journal Article	Europe	Developed	37	12	28.8	no	no	Community		0
Hobson et al. (2005)a	English	Journal Article	Europe	Developed	50	12.18	32	yes	no	Clinical		
Hobson et al. (2005)b	English	Journal Article	Europe	Developed	50	12.64	33	yes	no	Targeted		
Horton et al. (2015)	English	Journal Article	North America	Developed	44.6	13.7	34.7	no	no	Community		
Howes et al. (1988)	English	Journal Article	North America	Developed		12		no	no	Community		
Hu & Meng (2003)a[b]	Mandarin	Journal Article	Asia	Developing		12		no	no	Community		
Hu & Meng (2003)b[b]	Mandarin	Journal Article	Asia	Developing		12		no	no	Community		
Hughes et al. (2001)a	English	Journal Article	Europe	Developed	42	12	30.9	yes	no	Targeted	0	
Hughes et al. (2001)b	English	Journal Article	Europe	Developed	53	12	30.5	no	no	Community	0	
Huth-Bocks et al. (2011)	English	Journal Article	North America	Developed		13.3	26	yes	no			
Jaffe et al. (2001)	English	Journal Article	North America	Developed		12		no	no	Community		
Jin et al. (2012)	English	Journal Article	Asia	Developing		13.5	29	no	no	Community		
Keller et al. (2005)	English	Journal Article	North America	Developed		12	17	yes	no	Targeted	100	
Kennedy (2008)	English	Journal Article	North America	Developed	59.7	14.9	28.2	no	no	Community		

Kier & Lewis (1997)a	English	journal Article	Europe	Developed	60	21.8		yes	no	Targeted	
Kier & Lewis (1997)b	English	journal Article	Europe	Developed	60	20		no	no	Community	
Klopfer (2009)a	English	Thesis/ Dissertation	North America	Developed	44	12	29	no	no	Community	
Klopfer (2009)b	English	Thesis/ Dissertation	North America	Developed	44	12	29	no	no	Community	
Kochanska (2001)	English	Journal Article	North America	Developed	49	13		no	no	Community	0
Kochanska et al. (2005)	English	Journal Article	North America	Developed	50	15		no	no	Community	0
Kochanska et al. (2005)	English	Journal Article	North America	Developed	50	15		no	no	Community	0
Koester & Meadow-Orlands (2004)a	English	Book Chapter	North America	Developed		18		yes	yes	Targeted	
Koester & Meadow-Orlands (2004)b	English	Book Chapter	North America	Developed		18		no	yes	Targeted	
Koester & Meadow-Orlands (2004)c	English	Book Chapter	North America	Developed		18		yes	no	Targeted	
Koester & Meadow-Orlands (2004)d	English	Book Chapter	North America	Developed		18		no	no	Community	
Koren-Karie et al. (2002)	English	Journal Article	Middle East	Developing	47	13.2	31.6	no	no	Community	
Koren-Karie et al. (2009)	English	Journal Article	Middle East	Developing	0	49.35	33.93	no	yes	Clinical	
Lakatos et al. (2000)	English	Journal Article	Europe	Developed	42	12.5		no	no	Community	

Laurent et al. (2011)	English	Journal Article	North America	Developed	58	17.8	26	yes	no	Targeted	4		
Lecannelier et al. (2008)	Spanish	Journal Article	South America	Developing	48	15	28	no	yes	Community		8	
Lederberg & Mobley (1990)a	English	Journal Article	North America	Developed	51	22		no	yes	Targeted			
Lederberg & Mobley (1990)b	English	Journal Article	North America	Developed		22		no	no	Community			
Lemche et al. (2004)	English	Journal Article	Europe	Developed	45.2	12	29	no	no	Community			
Leyendecker et al. (1997)	English	Journal Article	North America	Developed	34	12	27.5		no		0		
Li et al. (2004)[b]	Mandarin	Journal Article	Asia	Developing	46.67%	10		no	no	Community			
Lieberman et al. (1991)	English	Journal Article	North America	Developed	56	13.5	25.8	yes	no	Targeted			
Lionetti (2014)	English	Journal Article	Europe	Developed	47	17.63	38.1		yes	Targeted		0	
Lutsky (1994)	English	Thesis/ Dissertation	North America	Developed	46.7	18							
Lyons-Ruth et al. (1999)	English	Journal Article	North America	Developed	40	18		yes		Targeted		47	46
Madigan et al. (2007)	English	Journal Article	North America	Developed	56	12	19.4	yes	no	Targeted		100	
Main (1990)[a]	English	Book Chapter	North America	Developed				no	no	Community			
Martorell (2000)	English	Thesis/ Dissertation	North America	Developed	43	16.4	26.93	yes	no	Targeted			
Matos et al. (2014)	French	Journal Article	Europe	Developed	55.6	14.3	23.5	yes	no	Targeted			
Mazaheri-Tehrani (1997)a	English	Thesis/ Dissertation	Europe	Developed	40	15.5	29.8	no	no	Targeted			

Mazaheri-Tehrani (1997)b	English	Thesis/ Dissertation	Middle East	Developing	49	16	28.7	no	no	Community		
McMahon et al. (2006)	English	Journal Article	Oceania	Developed	47	15	31.4	no	no	Community		36
Mehler et al. (2011)	English	Journal Article	Europe	Developed	54.8	12	31	no	yes	Targeted	100	
Meins et a. (2001)	English	Journal Article	Europe	Developed	49	12	28	no	no	Community		
Meins et al. (2011)	English	Journal Article	Europe	Developed	52	15	28	no	no	Community		
Mooya et al. (2016)	English	Journal Article	Africa	Developing	68	17.5	29.7	yes	no	Targeted		
Murray (1991)a	English	Journal Article	Europe	Developed	49	18	29	no	no	Community		0
Murray (1991)b	English	Journal Article	Europe	Developed	49	18	29	yes	no	Clinical		100
Murray (1991)c	English	Journal Article	Europe	Developed	49	18	29	yes	no	Clinical		100
Murray (1991)d	English	Journal Article	Europe	Developed	49	18	29	yes	no	Clinical		100
Murray et al. (2014)	English	Journal Article	Europe	Developed	56	14	36		no			
Naber et al. (2007)a	English	Journal Article	Europe	Developed	20.5	29.7		no	yes	Clinical		
Naber et al. (2007)b	English	Journal Article	Europe	Developed	33.3	24.5		no	yes	Clinical		
Naber et al. (2007)c	English	Journal Article	Europe	Developed	6.25	25.4		no	yes	Clinical		
Naber et al. (2007)d	English	Journal Article	Europe	Developed	61.11	28.11		no	no	Community		
NICHD Early Child Care Research Network (1997)	English	Journal Article	North America	Developed	49.4	15		no	no	Community		

O'Conner et al. (1987)	English	Journal Article	North America	Developed		12	37	no	no	Targeted	0
Out et al. (2009)	English	Journal Article	Europe	Developed	65	14.29	32.48	no	no		
Paquette & Dumont (2013)	English	Journal Article	North America	Developed	62	15.8	34.8	no	no	Community	
Pauli-Pott & Mertesacker (2009)	English	Journal Article	Europe	Developed	43	18		no	no	Community	
Peltola et al. (2015)	English	Journal Article	Europe	Developed	44	14		no	no	Community	
Pipp-Siegel et al. (1995)	English	Journal Article	North America	Developed	48			no	no	Community	
Planalp & Braungart-Rieker (2013)	English	Journal Article	North America	Developed	52.6	13	29.3	no	no	Community	
Planalp & Braungart-Rieker (2013)	English	Journal Article	North America	Developed	52.6	14	30.8	no	no	Community	
Poster (2014)	English	Thesis/ Dissertation	Europe	Developed	51	14.6	27.1		no		
Ramsauer et al. (2014)a	English	Journal Article	Europe	Developed	31.6	14.68	36	yes	no	Clinical	
Ramsauer et al. (2014)b	English	Journal Article	Europe	Developed	50	14.68	36	no	no	Community	
Rauh et al. (2000)	English	Book Chapter	Europe	Developed	46	12	31	no	no	Community	
Rauh et al. (2000)	English	Book Chapter	Europe	Developed	46	21	32	no	no	Community	
Raval et al. (2001)	English	Journal Article	North America	Developed		12	31	no	no	Community	
Rellinger (1994)	English	Thesis/ Dissertation	North America	Developed	49	12	17	yes	no	Targeted	100
Robbins (2005)	English	Thesis/ Dissertation	North America	Developed	51	14.5	26.3	no	no	Targeted	

Rodning (1987)	English	Thesis/ Dissertation	North America	Developed	46	13.3	31	no	no	Community			
Rodning et al. (1989)a	English	Journal Article	North America	Developed		19			yes	Clinical			
Rodning et al. (1989)b	English	Journal Article	North America	Developed		19		no	yes	Targeted	100		
Rodning et al. (1991)a	English	Journal Article	North America	Developed	40	15	26.05	yes	yes	Clinical	8	0	
Rodning et al. (1991)b	English	Journal Article	North America	Developed	44	15	23.3	yes	no	Targeted	8	0	
Sagi et al. (1994)	English	Journal Article	Middle East	Developing	46	18	31.5	no	no	Targeted			
Sagi et al. (2002)	English	Journal Article	Middle East	Developing	49	12	29	no	no	Community			
Santalices et al. (2010)	English	Journal Article	Central/ South America	Developing			26	no	no	Community			
Scher & Mayseless (2000)	English	Journal Article	Middle East	Developing	51	12	28.4	no	no	Community	0	0	
Schiller (1994)	English	Thesis/ Dissertation	North America	Developed	53	12		no	no	Community			
Scholmerich et al. (1997)a	English	Journal Article	North America	Developed	45	12	23.4	yes	no	Targeted			
Scholmerich et al. (1997)b	English	Journal Article	North America	Developed	52	12	31.4	no	no	Community			
Schoppe-Sullivan et al. (2006)	English	Journal Article	North America	Developed	52	12	32	no	no	Community	0		
Schoppe-Sullivan et al. (2006)	English	Journal Article	North America	Developed	52	12	32	no	no	Community	0		
Schwichtenberg et al. (2013)	English	Journal Article	North America	Developed	47	16	29	no	yes	Targeted	100		
Seifer et al. (1996)	English	Journal Article	North America	Developed	63	14	30.7	yes	no	Clinical			39

Seifer et al. (2004)a	English	Journal Article	North America	Developed	48	18		yes	yes	Clinical	40
Seifer et al. (2004)b	English	Journal Article	North America	Developed	47	18		yes	yes		40
Shah et al. (2010)	English	Journal Article	North America	Developed		14	28	no	no	Community	
Sierra (1989)[a]	English	Thesis/ Dissertation	North America	Developed				no	yes	Clinical	
Simonelli et al. (2014)	English	Journal Article	Europe	Developed	43.3	12	33	no	no	Community	
Slade et al. (2005)	English	Journal Article	North America	Developed		14		no	no	Community	3
Smith-Nielsen et al. (2016)a	English	Journal Article	Europe	Developed	53	12	30.3	no	no	Community	
Smith-Nielsen et al. (2016)b	English	Journal Article	Europe	Developed	48	12	30.7	yes	no	Clinical	100
Solomon & George (1999)a	English	Journal Article	North America	Developed	45	16	29		yes	Targeted	
Solomon & George (1999)a	English	Journal Article	North America	Developed	45	16.8	32.7		yes	Targeted	
Solomon & George (1999)b	English	Journal Article	North America	Developed	45	15	30	no	no	Targeted	
Solomon & George (1999)b	English	Journal Article	North America	Developed	45	15.7	31.8	no	no	Targeted	
Spangler & Grossman (1993)	English	Journal Article	Europe	Developed	41	12		no	no	Community	
Spangler & Schiech (1998)	English	Journal Article	Europe	Developed	50	12.4		no	no	Community	
Spangler et al. (1996)	English	Journal Article	Europe	Developed	47	12		no	no	Community	

Speltz et al. (1997)a	English	Journal Article	North America	Developed	48	12	29	no	yes	Targeted			
Speltz et al. (1997)b	English	Journal Article	North America	Developed	48	12	29	no	no	Community			
Spieker (1986)	English	Journal Article	North America	Developed		13	21	yes	no	Targeted			
Spieker & Bensley	English	Journal Article	North America	Developed	52		18	yes	no	Targeted		100	
Spieker et al. (2003)	English	Journal Article	North America	Developed	54	19	24	yes	no	Targeted			
Stacks et al. (2014)	English	Journal Article	North America	Developed	41	16	31	yes	no	Targeted	0		24
Steele et al. (1996)	English	Journal Article	Europe	Developed	47.9	12	32	no	no	Community			
Steele et al. (1996)	English	Journal Article	Europe	Developed	47.9	18	34	no	no	Community			
Stemmle (2010)	English	Thesis/ Dissertation	North America	Developed	58.3	13.27	16.8	yes	no	Targeted		100	
Stovall (2013)	English	Thesis/ Dissertation	North America	Developed		14	32	no	no	Community			
Stovall-McClough & Dozier (2004)	English	Journal Article	North America	Developed	40	16	50.5	no	yes	Targeted			
Tambelli et al. (2008)	Italian	Journal Article	Europe	Developed		13.78	32.3	no	no	Community			
Tambelli et al. (2008)	Italian	Journal Article	Europe	Developed		19.5	35.45	no	no	Community			
Teti et al. (1995)a	English	Journal Article	North America	Developed	40		30	yes	no	Clinical			
Teti et al. (1995)b	English	Journal Article	North America	Developed	40		30	no	no	Community			
Tharner et al. (2011)	English	Journal Article	Europe	Developed	50	14.7	33	no	no	Community			
Tomlinson et al. (2005)	English	Journal Article	Africa	Developing	44.9	18		yes	no	Targeted			

Toth et al. (2006)a	English	Journal Article	North America	Developed	47	20	31.6	yes	no	Clinical		100
Toth et al. (2006)b	English	Journal Article	North America	Developed	47	20	31.6	no	no	Community		
True et al. (2001)	English	Journal Article	Africa	Developing	57	12.5		no	no	Community		
van den Dries et al. (2012)a	English	Journal Article	Europe	Developed	100	15.7	36.3	no	yes	Clinical		
van den Dries et al. (2012)a	English	Journal Article	Europe	Developed	100	19.8	36.3	no	yes	Clinical		
van den Dries et al. (2012)b	English	Journal Article	Europe	Developed	100	15.6	36.8	no	yes	Targeted		
van den Dries et al. (2012)b	English	Journal Article	Europe	Developed	100	19.8	36.8	no	yes	Targeted		
van Ijzendoorn et al. (2000)a	English	Journal Article	Europe	Developed		12	27	no	no	Community		
van Ijzendoorn et al. (2000)a	English	Journal Article	Europe	Developed		12	29	no	no	Community		
van Ijzendoorn et al. (2000)b	English	Journal Article	North America	Developed		12	29	no	no	Community		
van Ijzendoorn et al. (2000)b	English	Journal Article	North America	Developed		12	31	no	no	Community		
Vaughn et al. (1994)a	English	Journal Article	North America	Developed	23.7	37.9	34.7	no	yes	Clinical		
Vaughn et al. (1994)b	English	Journal Article	North America	Developed	50	24.9	31.4	no	yes	Clinical		
von der Lippe et al. (2010)	English	Journal Article	Europe	Developed		12	38	no	no	Community		
Vondra et al. (2001)	English	Journal Article	North America	Developed	46	12	25	yes	no	Targeted	20	
Vondra et al. (2001)	English	Journal Article	North America	Developed	46	18	25	yes	no	Targeted	20	

Vorria et al. (2003)a	English	Journal Article	Europe	Developed	51	13	34		yes	Clinical	20.6	
Vorria et al. (2003)b	English	Journal Article	Europe	Developed	48.7	14	33	no	no	Community	4.9	
Ward & Carlson (1995)	English	Journal Article	North America	Developed		15	18	yes	no	Targeted		100
Ward et al. (1993)a	English	Journal Article	North America	Developed		16.8	24.1	no	no	Community		
Ward et al. (1993)b	English	Journal Article	North America	Developed		16.1	37.7		yes	Clinical		
Ward et al. (2000)a	English	Journal Article	North America	Developed		18.9	29.8		yes	Clinical	0	
Ward et al. (2000)b	English	Journal Article	North America	Developed		16.4	27.9	no	no	Community	0	
Wilson (1990)	English	Thesis/ Dissertation	North America	Developed		12		no	yes	Targeted		
Wolke et al. (2014)a	English	Journal Article	Europe	Developed	43	18	31	no	yes	Targeted	100	
Wolke et al. (2014)b	English	Journal Article	Europe	Developed	45	18	31	no	no	Community	0	
Yorgason (2015)	English	Thesis/ Dissertation	North America	Developed	47	16	26.5	no	no	Community		
Zdebik (2006)	English	Thesis/ Dissertation	North America	Developed	54.5	18	27.89	no	no	Community		
Zeanah et al. (2005)a	English	Journal Article	Europe	Developed	47.5	23.8			yes	Clinical		
Zeanah et al. (2005)b	English	Journal Article	Europe	Developed	50	22.2		no	no	Community		
Zevalkink et al. (1999)	English	Journal Article	Asia	Developing	45.6	20			no			
Zreik et al. (2017)	English	Journal Article	Middle East	Developing	52	14	29.9	no	no	Community		

[a]Was coded from van Ijzendoorn et al. (1999). [b]Was coded from Archer (2012). [c]Was coded from Simonelli et al. (2014).

Table 18

Characteristics of Studies Included in Study 1 – Part 2

Study Name	Coder Training	Coder Certification	% Studies 2nd Coded	% Agreement	Cohen's Kappa	% White	% Black	% Hispanic	Mean Years Education	% Did Not Complete High School	% College/ University	% 2 Parent Household
Abott (2016)												
Abramis (1990)												
Ahnert et al. (2000)			42	89	0.82							
Ahnert et al. (2004)												
Ahnert et al. (2004)												
Ainsworth & Eichberg (1993)												
Albertson (2017)							13.8	69	11.3	44	24.1	
Ammaniti & Speranza (1995)												100
Ammaniti et al. (2002)a												
Ammaniti et al. (2002)b												
Ammaniti et al. (2002)c												
Ammaniti et al. (2004)a												
Ammaniti et al. (2004)b												
Andreozzi et al. (2002)						23.5	29.4	45.1	9.1			

Archer (2011)	Yes	Yes										
Archer et al. (2015)	Yes	Yes	25									
Arnott & Meins (2007)			50		0.88							
Arnott & Meins (2007)			50		0.88							
Atkinson et al. (1999)			28	73	0.53							87.5
Atkinson et al. (1999)			28	73	0.53							87.5
Bailey et al. (2015)	Yes	Yes	30	83	0.67				15.6			
Beebe et al. (2010)			40			51	17	30		4	87	100
Beeghly et al. (2003)a	Yes	Yes	56			8	89	2	11.52			17
Beeghly et al. (2003)b	Yes	Yes	56			8	84	5	11.56			3
Beeghly et al. (2003)c	Yes	Yes	56			10	90	0	11.31			4
Beetz et al. (2015)			0									60
Behrens et al. (2011)			51	82	0.74	84	0	11				
Beijers et al. (2011)			27	86	0.82							98
Benoit & Parker (1994)/Madigan et al. (2011)			31	82	0.64							98
Benoit & Parker (1994)/Madigan et al. (2011)			32	80	0.71							100

Bergman et al. (2008)	Yes	Yes											
Berlin (1994)				79		97		1					
Bernard & Dozier (2010)	Yes	Yes	20	100		69	16	6			84		
Bernard et al. (2012)	Yes	Yes	34	85	0.74	8	61	11		68			
Bokhorst et al. (2003)													
Bombardier (1997)						20	41	45					
Booth et al. (1991)a						90						40	
Booth et al. (1991)b						100						100	
Borghini et al. (2009)	No	No											
Brisch et al. (2005)												86	
Byrne et al. (2010)	No	No	13	100	0.71								
Carlson (1998)				86	0.72	80	13			39			
Carlson (1998)				86	0.72	80	13			39			
Carlson & Harwood (2003)a									15.8			90.6	
Carlson & Harwood (2003)b												82.1	
Carlson et al. (1989)a			100	88									
Carlson et al. (1989)b			100	88									

Carré et al. (2015)a			30							100
Carré et al. (2015)b			30							
Cassé et al. (2016)a										88
Cassé et al. (2016)b										88
Cassiba et al. (2011)a	Yes	Yes								100
Cassiba et al. (2011)b	Yes	Yes								100
Cassidy et al. (2011)a			34	79	0.69	20.5	43.2	14.1		57.3
Cassidy et al. (2011)b			34	79	0.69	20.5	43.2	14.1		57.3
Choi et al. (1998)	Yes		100	86						
Cicchetti et al. (2011)a										40.6
Cicchetti et al. (2011)b										29.2
Cicchetti et al. (2011)c										33.3
Cicchetti et al. (2011)d										17.3
Claussen et al. (2002)			23		0.69	4	75	5	11	
Clements & Barnett (2002)a	No	No	25			54				79.5
Clements & Barnett (2002)b	No	No	25			85				85
Cohn et al. (1991)						100	0	0		

Cole (2005)							70		13.24		
Cox (1995)[a]											
Daley (2013)						5.7	22.9	60			14.3
das Eiden & Leonard (1996)			15	98		93	7	0			100
Dawson et al. (1992)						71	24	3			
Dawson et al. (2001)a			100	83	0.7	85	1	1			96
Dawson et al. (2001)b			100	83	0.7	85	1	1			81
Dawson et al. (2001)c			100	83	0.7	85	1	1			85
del Carmen et al. (1993)			38								100
Demers et al. (2010)a			25.5	92					10		
Demers et al. (2010)b			25.5	92					14.9		
Deng et al. (2007)	No	No		94							
Ding et al. (2008)[b]	No	No		92							100%
Ding et al. (2012)			18.75	95							100
Domaille (2014)						66	10	18.7			
Dozier et al. (2001)	Yes	Yes	24	82	0.73	28	64	8			50
Easterbrooks (1989)											100
Easterbrooks (1989)											100

Easterbrooks (1989)												100
Easterbrooks (1989)												100
Edwards et al. (2004)	No	No	15	89	0.78	90	7			5	51	100
Edwards et al. (2004)	No	No	15	89	0.78	90	7			5	51	100
Edwards et al. (2004)	No	No	15	89	0.78	94	4			2	58	100
Edwards et al. (2004)	No	No	15	89	0.78	94	4			2	58	100
Egeland & Eickson (1993)a												
Egeland & Eickson (1993)a												
Egeland & Eickson (1993)b												
Egeland & Eickson (1993)b												
Emery et al. (2008)	Yes	No	10.8	87	0.78				9.07			
Enlow et al. (2014)a				80		17	33	33		42	33	25
Enlow et al. (2014)b				80		42	39	33		18	52	36
Ensink et al. (2016)		No	50	97							86	98
Espinosa et al. (2001)						26	57	17	11.7			6
Estrada (1994)						0	0	100				95
Fava Vizziello & Calvo (1997)a												

Fava Vizziello & Calvo (1997)b											
Fava Vizziello et al. (2000)			100	89	0.74						50
Fava Vizziello et al. (2003)[c]											
Finger (2006)	Yes	Yes							11.6		68
Finger et al. (2009)	Yes	Ues	100	80		0	100	0			51
Fish (2001)						100	0	0			77.6
Fish & Stifter (1995)			30	86		96.7	1.6	1.6			
Frigerio et al. (2009)	No	No	48	85.5	0.77						
Frosch et al. (2001)		No	10	87			3		13.8		100
Frosch et al. (2001)		No	10	87			3		13.9		100
Ganiban et al. (2000)			50			100					100
Ganiban et al. (2000)			50			100					100
Gedaly & Leerkes (2016)			14.7		0.66	49	51				71
Gibson et al. (2000)a		Yes	39.6								100
Gibson et al. (2000)b		Yes	39.6								100
Girard et al. (2013)									12		78
Gleason (1995)	No	No	20								

Gloger-Tippelt et al. (2002)		No		82	0.63						100
Gojman et al. (2012)a		No	75								
Gojman et al. (2012)b		No	75								
Goldberg et al. (1989)											
Goldberg et al. (1995)a											
Goldberg et al. (1995)b											
Goldberg et al. (1995)c											
Gradisar et al. (2016)	No	No									88
Granqvist et al. (2016)			16	86	0.8						
Habersaat et al. (1016)a	No	No									
Habersaat et al. (1016)a	No	No									
Haltigan et al. (2011)a	Yes	Yes	25	80	0.63	39	1	47			
Haltigan et al. (2011)b	Yes	Yes	25	80	0.63	41	12	47			
Harrison & Ungerer (1997)											
Hawkins et al. (2015)			30	90	0.83				14.5		
Heinicke et al. (1999)a	Yes	Yes	48			35.5	19.4	41.9			6.5
Heinicke et al. (1999)b	Yes	Yes	45			27.2	27.3	48.5			24.2

Herreros (2013)	Yes	Yes	20									
Higgins (2008)/McFarland et al. (2012)			100		0.6	82	3	9			92	100
Higgins (2008)/McFarland et al. (2012)			100			85	3	8			90	100
Higley & Dozier (2009)	Yes	Yes	100	68	0.49	82	7	0		0	86	
Hipwell et al. (2000)a												80
Hipwell et al. (2000)b												88
Hipwell et al. (2000)c												80
Hipwell et al. (2000)d												88
Hobson et al. (2005)a	Yes	Yes	62.5		0.83							60
Hobson et al. (2005)b	Yes	Yes	62.5		0.83							73
Horton et al. (2015)		No	70							1	97	94
Howes et al. (1988)		No										
Hu & Meng (2003)a[b]	No	No		96								
Hu & Meng (2003)b[b]	No	No										
Hughes et al. (2001)a	Yes	Yes			0.65							100
Hughes et al. (2001)b	Yes	Yes			0.65							100

Huth-Bocks et al. (2011)			11	90	0.84	63	25	5				55	67
Jaffe et al. (2001)		No	24		0.59								100
Jin et al. (2012)	Yes	Yes	23		0.93								
Keller et al. (2005)				82	0.74	60	21		9.2				
Kennedy (2008)		No	30	88	0.72	77	23	0		1		84	77
Kier & Lewis (1997)a		No											0
Kier & Lewis (1997)b		No											100
Klopfer (2009)a	Yes	Yes	31			58	4	2	16.1				
Klopfer (2009)b	Yes	Yes	31			58	4	2	16.1				
Kochanska (2001)					0.9	97						74	100
Kochanska et al. (2005)					0.78	91	1	3				65	
Kochanska et al. (2005)					0.78	91	1	3				61	
Koester & Meadow-Orlands (2004)a	Yes												
Koester & Meadow-Orlands (2004)b	Yes												
Koester & Meadow-Orlands (2004)c	Yes												
Koester & Meadow-Orlands (2004)d	Yes												

Koren-Karie et al. (2002)			20		0.89						100
Koren-Karie et al. (2009)			27		0.76						
Lakatos et al. (2000)											
Laurent et al. (2011)						80					
Lecannelier et al. (2008)	Yes		0								57.5
Lederberg & Mobley (1990)a		No	32	83		80	17	1			90
Lederberg & Mobley (1990)b		No	27	83							
Lemche et al. (2004)	Yes	Yes									
Leyendecker et al. (1997)	Yes	Yes				49		51			
Li et al. (2004)[b]	No	No		9							100%
Lieberman et al. (1991)		No				0	0	100			
Lionetti (2014)			25	83	0.77						100
Lutsky (1994)	No	No		83	0.827	66.7	5	21.7			65
Lyons-Ruth et al. (1999)			49	83	0.73	81					55
Madigan et al. (2007)	Yes	Yes	28	89	0.8				11		43
Main (1990)[a]											
Martorell (2000)	Yes	Yes				8.2	0	91.8	6		

Matos et al. (2014)	No	No	30		0.79	
Mazaheri-Tehrani (1997)a	No	No	100	85	0.51	100
Mazaheri-Tehrani (1997)b	No	No	63	88	0.64	100
McMahon et al. (2006)		Yes	26	79	0.65	100
Mehler et al. (2011)	No	No	0			
Meins et a. (2001)	Yes		22.5		0.87	
Meins et al. (2011)			25		0.82	
Mooya et al. (2016)			29	92	0.88	
Murray (1991)a						100
Murray (1991)b						100
Murray (1991)c						100
Murray (1991)d						100
Murray et al. (2014)			15.26		0.86	98
Naber et al. (2007)a			35		0.74	
Naber et al. (2007)b			35		0.74	
Naber et al. (2007)c			35		0.74	
Naber et al. (2007)d			35		0.74	

NICHD Early Child Care Research Network (1997)			100	83	0.7	81.5	11.9	5.7				86.9
O'Conner et al. (1987)			0			92	4	0				98
Out et al. (2009)			10									
Paquette & Dumont (2013)		No		80					15.4			94.8
Pauli-Pott & Mertesacker (2009)			16									100
Peltola et al. (2015)			18		0.88							
Pipp-Siegel et al. (1995)												
Planalp & Braungart-Rieker (2013)						90.4				3	79.3	100
Planalp & Braungart-Rieker (2013)						87.4				5.2	73.8	100
Poster (2014)			20	81	0.72							74
Ramsauer et al. (2014)a	Yes		61	70	0.51							79
Ramsauer et al. (2014)b	Yes		61	70	0.51							85
Rauh et al. (2000)				94								
Rauh et al. (2000)				94								
Raval et al. (2001)			31	83	0.79				15.6			91.4
Rellinger (1994)	No	No				32	65	3				

Robbins (2005)	Yes	Yes				79	6	13			43	98	
Rodning (1987)		No										95	
Rodning et al. (1989)a						6	61	33					
Rodning et al. (1989)b													
Rodning et al. (1991)a						5						95	
Rodning et al. (1991)b						4						75	
Sagi et al. (1994)													
Sagi et al. (2002)			15	90	0.84								
Santalices et al. (2010)			20										
Scher & Mayseless (2000)		No	20	95								99	
Schiller (1994)	No	No				98						94	
Scholmerich et al. (1997)a	Yes	Yes	100	79.5		0	0	100					
Scholmerich et al. (1997)b	Yes	Yes	100	81.5		100	0	0					
Schoppe-Sullivan et al. (2006)			33			96	2			0		100	
Schoppe-Sullivan et al. (2006)			33			96	2			2		100	
Schwichtenberg et al. (2013)			14						14				
Seifer et al. (1996)						90	2	1				92	

Seifer et al. (2004)a			0			17	75	6	46			
Seifer et al. (2004)b			0			15	78	6	31			
Shah et al. (2010)						62				79		
Sierra (1989)[a]												
Simonelli et al. (2014)												
Slade et al. (2005)						94	6	0	0	100	100	
Smith-Nielsen et al. (2016)a	Yes	Yes	25	80	0.73							
Smith-Nielsen et al. (2016)b	Yes	Yes	25	80	0.73							
Solomon & George (1999)a						60.5					0	
Solomon & George (1999)a						57.7					0	
Solomon & George (1999)b						66.7					100	
Solomon & George (1999)b						68.8					100	
Spangler & Grossman (1993)											100	
Spangler & Schiech (1998)											100	
Spangler et al. (1996)											100	
Speltz et al. (1997)a			100	79	0.58	86	3.5	1			85	
Speltz et al. (1997)b			100	79	0.58	86	3.5	1			85	

Spieker (1986)												50
Spieker & Bensley				82	0.7	79	15	1	11			32
Spieker et al. (2003)				71	0.55	60						
Stacks et al. (2014)			20	89	0.83	73	14	3		1	91	78
Steele et al. (1996)												
Steele et al. (1996)												
Stemmle (2010)						4	40	56	9.9			56
Stovall (2013)	Yes	Yes										
Stovall-McClough & Dozier (2004)			100			34	63		12			57.9
Tambelli et al. (2008)												100
Tambelli et al. (2008)												100
Teti et al. (1995)a			48			95	1	4				
Teti et al. (1995)b			48			95	1	4				
Tharner et al. (2011)			11	77	0.63							
Tomlinson et al. (2005)			16									32.7
Toth et al. (2006)a						93					55	82
Toth et al. (2006)b						93					55	98.5
True et al. (2001)			44	88								

van den Dries et al. (2012)a			67							
van den Dries et al. (2012)a			67							
van den Dries et al. (2012)b			67							
van den Dries et al. (2012)b			67							
van Ijzendoorn et al. (2000)a										
van Ijzendoorn et al. (2000)a										
van Ijzendoorn et al. (2000)b										
van Ijzendoorn et al. (2000)b										
Vaughn et al. (1994)a	No									
Vaughn et al. (1994)b	No				91					
von der Lippe et al. (2010)										
Vondra et al. (2001)					61				26	45
Vondra et al. (2001)					61				26	45
Vorria et al. (2003)a		12	69							
Vorria et al. (2003)b		12	69							100
Ward & Carlson (1995)	No	40	74	0.64	5	76	12			
Ward et al. (1993)a		33	88							

Ward et al. (1993)b			33	88						
Ward et al. (2000)a	Yes	Yes				27	29	32		70
Ward et al. (2000)b	Yes	Yes				27	29	32		48
Wilson (1990)	No	No				88				
Wolke et al. (2014)a			38							90
Wolke et al. (2014)b			32							94
Yorgason (2015)	Yes	Yes				100	0	0	15.17	
Zdebik (2006)										
Zeanah et al. (2005)a					0.78					
Zeanah et al. (2005)b					0.78					
Zevalkink et al. (1999)										
Zreik et al. (2017)			31	81	0.61					

[a]Was coded from van Ijzendoorn et al. (1999). [b]Was coded from Archer (2012). [c]Was coded from Simonelli et al. (2014).

Appendix D

Study 1 Main Analyses Forest Plots

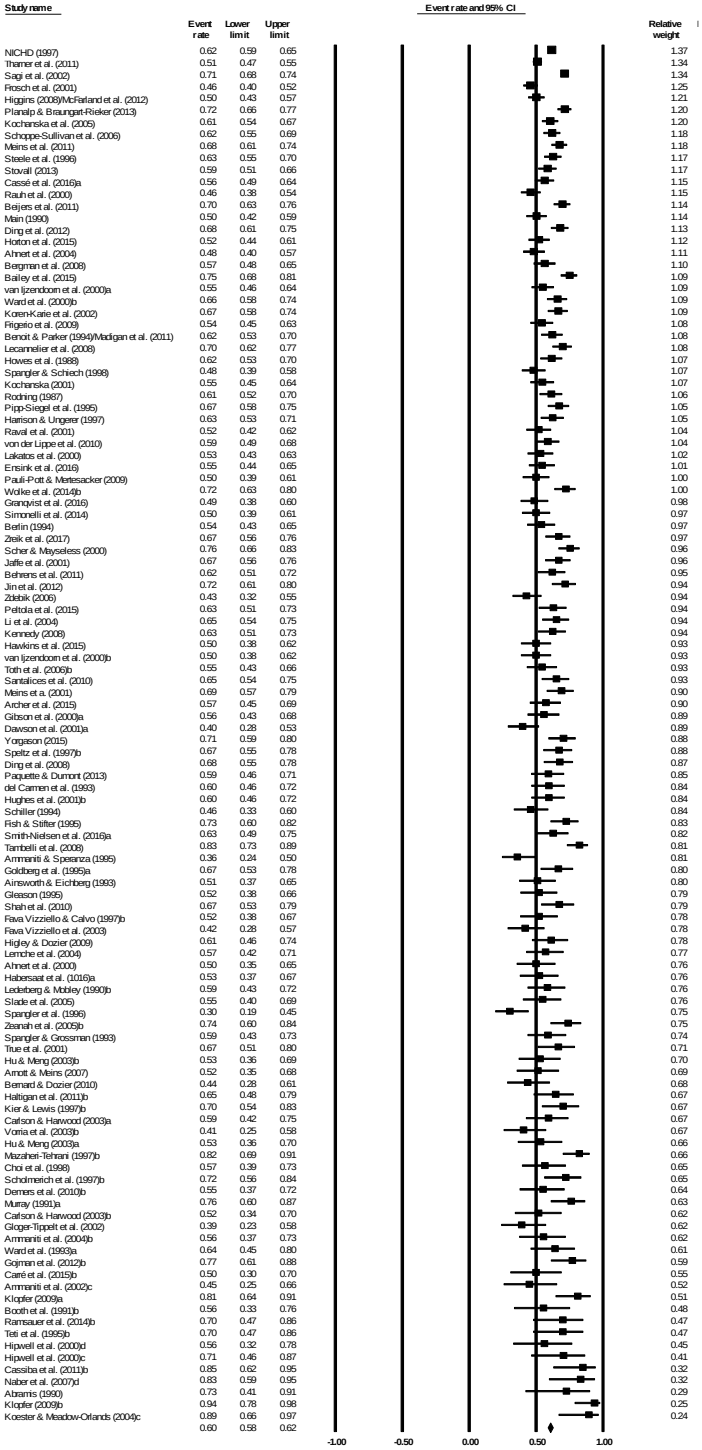


Figure 2. Forest plot of studies included in secure attachment analysis with community samples.

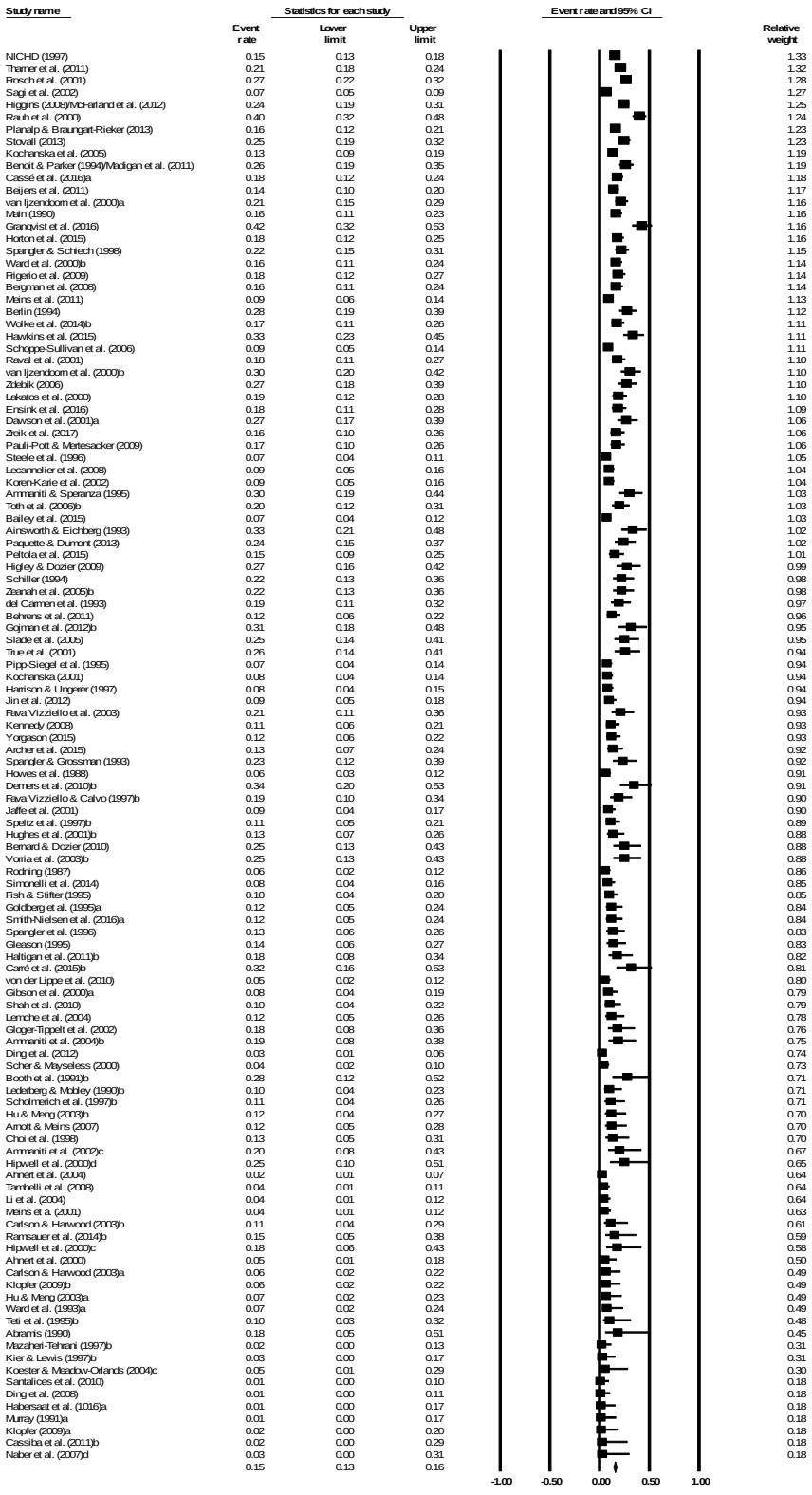


Figure 3. Forest plot of studies included in disorganized attachment analysis with community samples.

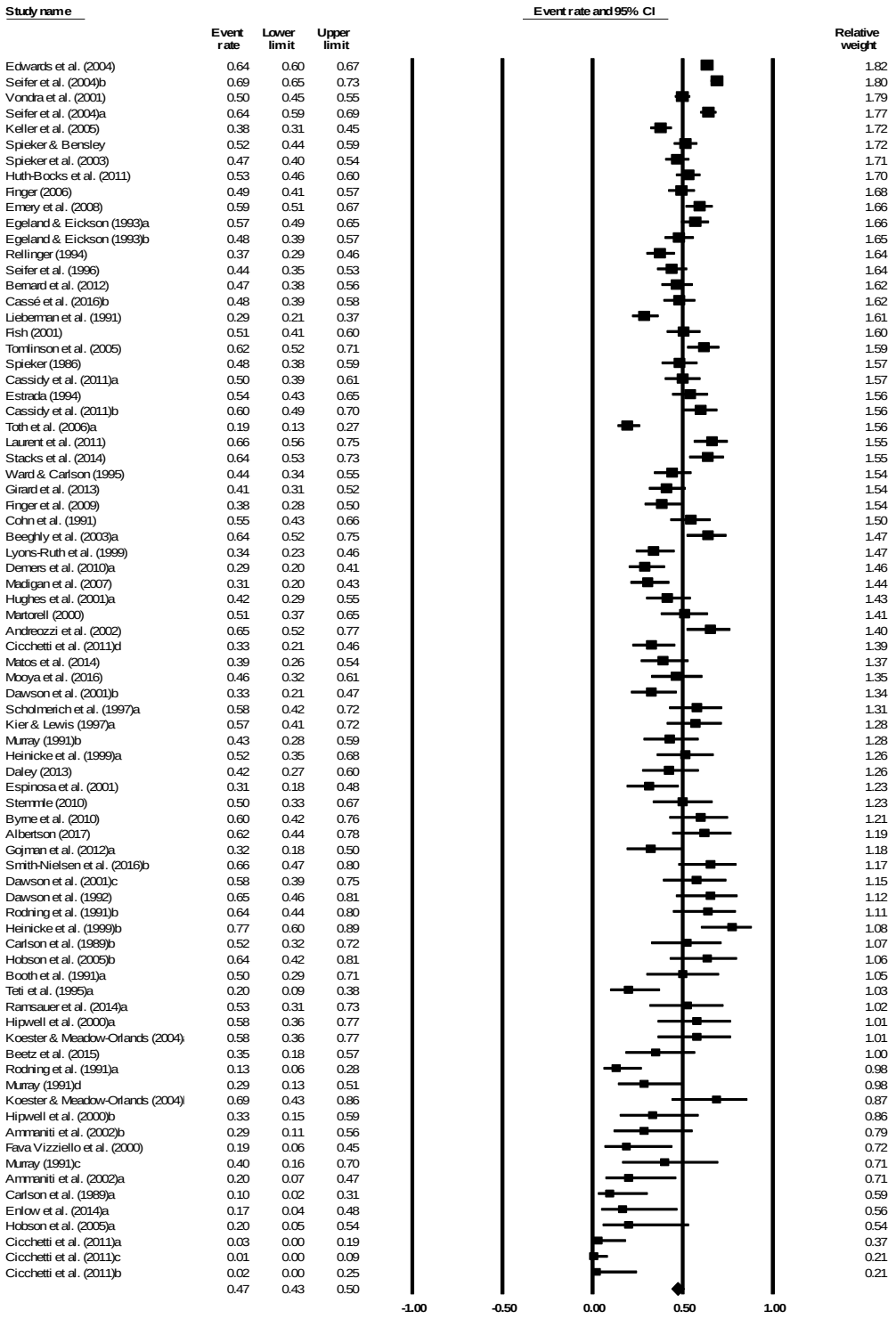


Figure 4. Forest plot of studies included in secure attachment analysis with samples of parents at-risk.

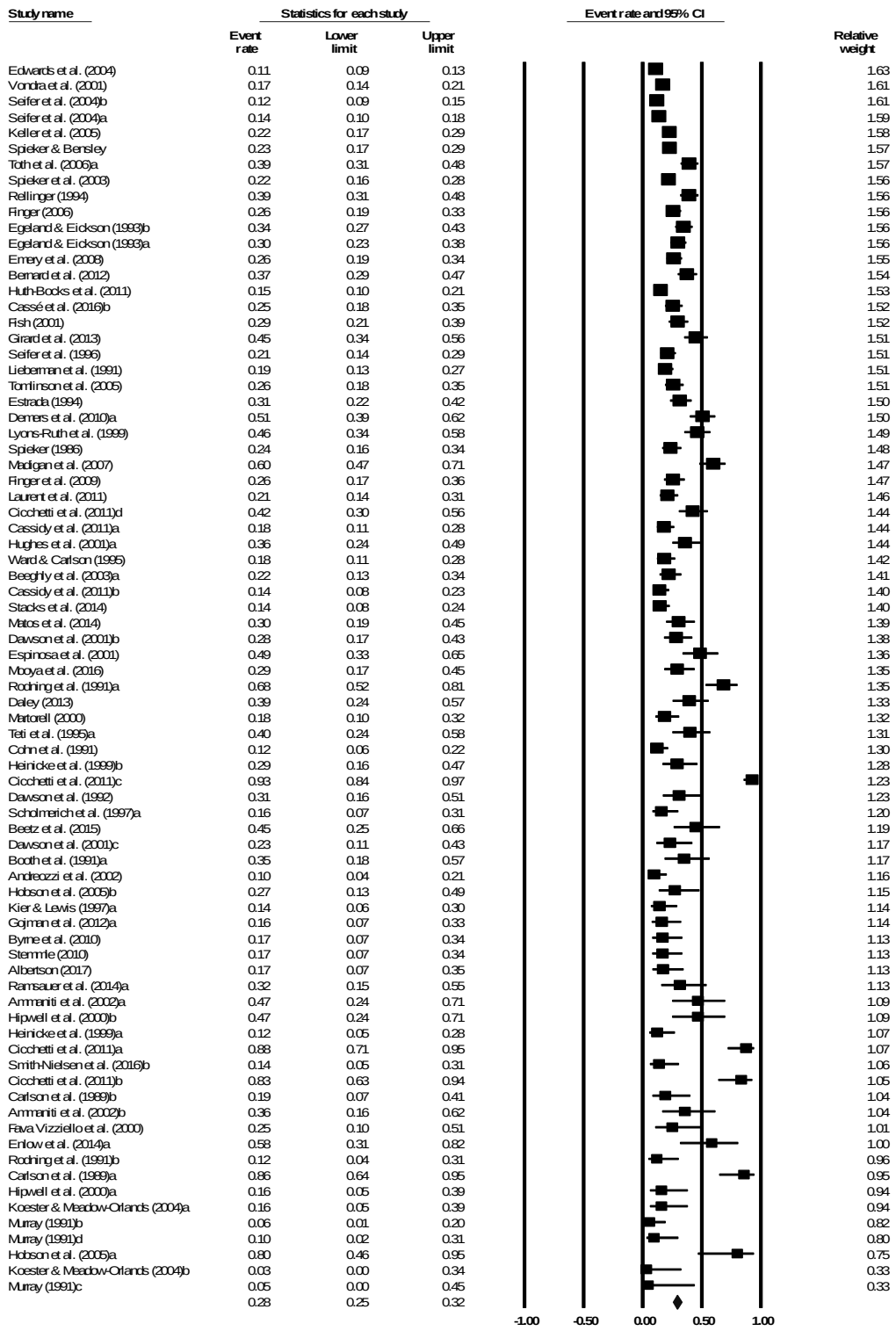


Figure 5. Forest plot of studies included in disorganized attachment analysis with samples of parents at-risk.

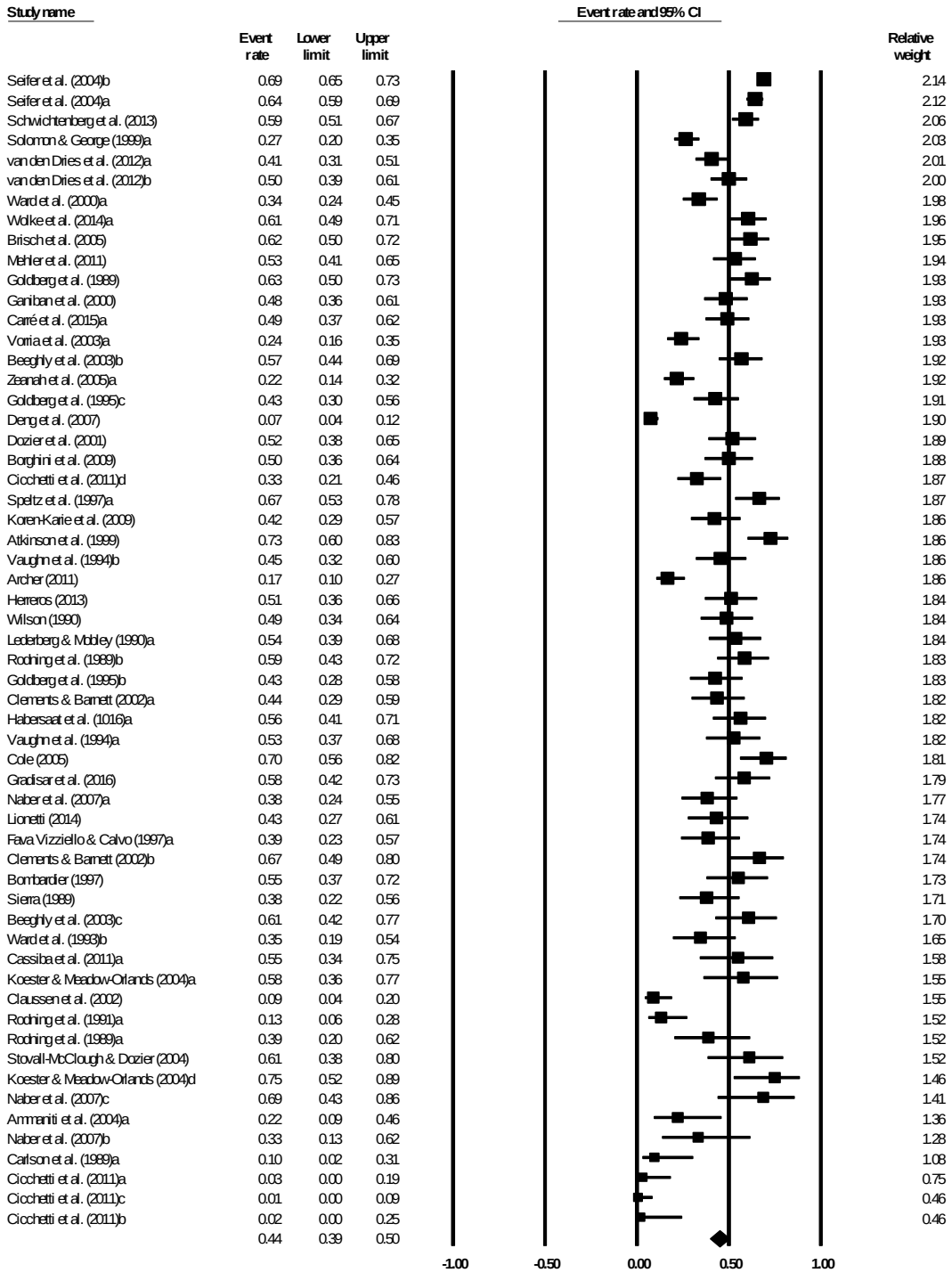


Figure 6. Forest plot of studies included in secure attachment analysis with samples of children at-risk.

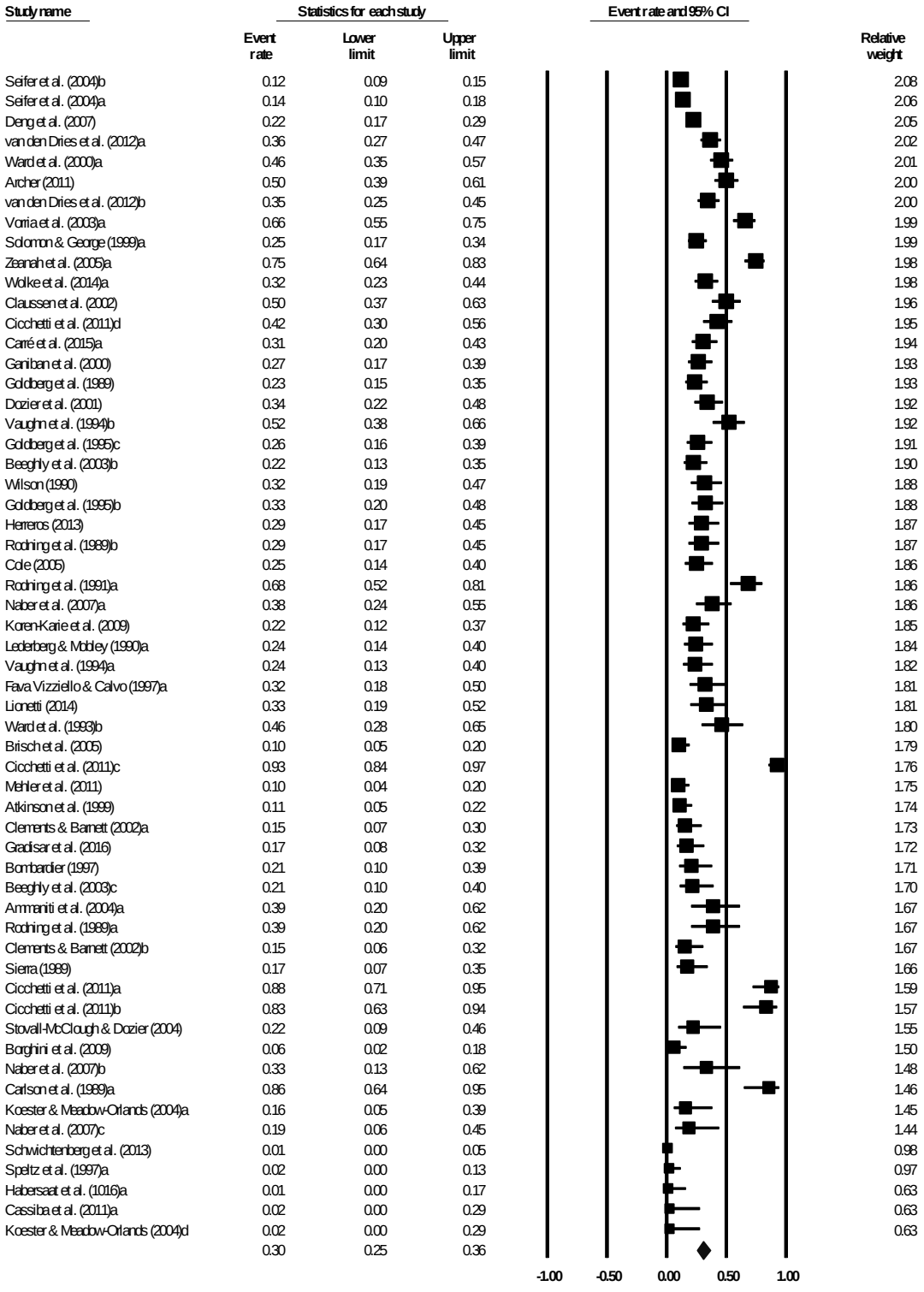


Figure 7. Forest plot of studies included in disorganized attachment analysis with samples of children at-risk.

Appendix E

Correlation Matrices

Table 19

Correlation Matrix for Secure Attachment Multiple Meta-Regression Model

	Intercept	Type of sample (Clinical)	Type of sample (Targeted)	Parents at risk (yes)	Children At Risk (yes)
Intercept	1.00	-0.25	-0.31	-0.00	-0.00
Type of sample (Clinical)	-0.25	1.00	0.78	-0.76	-0.75
Type of sample (Targeted)	-0.31	0.78	1.00	-0.84	-0.76
Parents at risk (yes)	-0.00	-0.76	-0.84	1.00	0.73
Children At Risk (yes)	-0.00	-0.75	-0.76	0.73	1.00

Table 20

Correlation Matrix for Disorganized Attachment Multiple Meta-Regression Model

	Intercept	Parents at risk (yes)	Children At Risk (yes)	Type of sample (Clinical)	Type of sample (Targeted)
Intercept	1.00	-0.00	-0.00	-0.29	-0.35
Parents at risk (yes)	-0.00	1.00	0.67	-0.73	-0.82
Children At Risk (yes)	-0.00	0.67	1.00	-0.72	-0.71
Type of sample (Clinical)	-0.29	-0.73	-0.72	1.00	0.76
Type of sample (Targeted)	-0.35	-0.82	-0.71	0.76	1.00

Appendix F

Characteristics of Studies Included in Study 2

Table 21

Characteristics of Studies Included in Study 2 – Part 1

Study Name	Language	Type of Publication	State of Economy	% Female Children	Mean Age Children	Mean Age Parents	Parent at-Risk	Child at-Risk	Type of Sample	% Adolescent Parents
Abrams (2000)	English	Thesis/Dissertation	Developed	45	13.6		No	No		
Ahnert et al. (2000)	English	Journal Article	Developed	50	12.4		No	No	Community	
Ainsworth & Eichberg (1993)	English	Journal Article	Developed		16		No	No	Community	
Ammaniti et al. (1994)	Italian	Journal Article	Developed		13		No	No		
Archer (2011)	English	Journal Article	Developing	64	20.4	35.7		Yes	Clinical	
Archer et al. (2015)	English	Journal Article	Developing	57	20.8	30.7	No	No	Community	
Beebe et al. (2010)	English	Journal Article	Developed	47	17.63	38.1		Yes	Targeted	0
Beetz et al. (2015)	English	Journal Article	Developed	47	12.6	32.46	No	No	Community	
Behrens et al. (2011)	English	Journal Article	Developed	60	16.55	28.2	Yes		Targeted	
Beijers et al. (2011)	English	Journal Article	Developed		12.5	29	Yes	No	Clinical	
Berlin (1994)	English	Thesis/Dissertation	Developed	61	17		No	No	Community	

Bernard et al. (2012)	English	Journal Article	Developed	42	19	29	Yes	No	Targeted	
Bombardier (1997)	English	Thesis/Dissertation	Developed		15	25.5		Yes	Clinical	
Brisch et al. (2005)	English	Journal Article	Developed	54.4	14	31	No	Yes	Targeted	
Byrne et al. (2010)	English	Journal Article	Developed			30	Yes	No	Targeted	
Carlson (1998)	English	Journal Article	Developed		18	28	Yes		Clinical	
Carlson (1998)	English	Journal Article	Developed	41	12	21.66				
Carlson et al. (1989)a	English	Journal Article	Developed	51	12.8		Yes	Yes	Targeted	
Carlson et al. (1989)b	English	Journal Article	Developed	51	12.8		Yes	No	Targeted	
Cassé et al. (2016)a	English	Journal Article	Developed		12.95	30.7	No	No	Community	
Cassé et al. (2016)b	English	Journal Article	Developed		12.95	26.8	Yes	No	Targeted	
Cohn et al. (1991)	English	Journal Article	Developed			30		No		
Cole (2005)	English	Journal Article	Developed		13	46		Yes	Targeted	
das Eiden & Leonard (1996)	English	Journal Article	Developed	45	12.2		No	No	Community	
Dawson et al. (1992)	English	Journal Article	Developed	61.7	14	18.8	Yes	No	Clinical	100
Enlow et al. (2014)a	English	Thesis/Dissertation	Developed	40	12	24.4	Yes	No	Targeted	
Enlow et al. (2014)b	English	Journal Article	Developed	42	13	29	Yes	No	Clinical	
Espinosa et al. (2001)	English	Journal Article	Developed	45	13	28		No		
Estrada (1994)	English	Journal Article	Developed	50	12.56	29.4	No	No	Community	

Fava Vizziello et al. (2000)	Spanish	Journal Article	Developed	50	20	29	Yes	No	Clinical	
Fava Vizziello et al. (2003)[a]	Italian	Journal Article	Developed		13		No	No	Community	
Finger (2006)	English	Thesis/Dissertation	Developed	51	15	29	Yes		Clinical	
Finger et al. (2009)	English	Journal Article	Developed	44	15	23.3	Yes	No	Targeted	0
Fish & Stifter (1995)	English	Journal Article	Developed	50	18	29.7	No	No	Community	
Frosch et al. (2001)	English	Journal Article	Developed	42	18.5	24.5	Yes	No	Targeted	
Frosch et al. (2001)	English	Journal Article	Developed	54		26.1	No	No	Community	
Gleason (1995)	English	Thesis/Dissertation	Developed	47.7	13	31	No	No	Community	
Gloger-Tippelt et al. (2002)	English	Journal Article	Developed	54		28.4	No	No	Community	
Goldberg et al. (1995)a	English	Journal Article	Developed		12	31	No	No	Community	
Goldberg et al. (1995)b	English	Journal Article	Developed		12	27.4	No	Yes	Targeted	
Goldberg et al. (1995)c	English	Journal Article	Developed		12	28.2	No	Yes	Targeted	
Granqvist et al. (2016)	English	Journal Article	Developed	50.5	15	30	No	No	Community	
Haltigan et al. (2011)a	English	Journal Article	Developed	39	13	30	No	No	Community	
Haltigan et al. (2011)b	English	Journal Article	Developed	33	15		No	No	Targeted	
Higley & Dozier (2009)	English	Journal Article	Developed	41	18	22				
Hobson et al. (2005)a	English	Journal Article	Developed	50	12.18	32	Yes	No	Clinical	
Hobson et al. (2005)b	English	Journal Article	Developed	50	12.18	32	Yes	No	Clinical	

Hsiao et al. (2015)	English	Journal Article	Developed	56	15		No	No	Community	
Hughes et al. (2001)a	English	Journal Article	Developed	50	12.64	33	Yes	No	Targeted	
Hughes et al. (2001)b	English	Journal Article	Developed	42	12	30.9	Yes	No	Targeted	0
Jin et al. (2012)	English	Journal Article	Developing		13.5	29	No	No	Community	
Kochanska (2001)	English	Journal Article	Developed	49	13		No	No	Community	
Lakatos et al. (2000)	English	Journal Article	Developed	42	12.5		No	No	Community	
Lecannelier et al. (2008)	English	Journal Article	Developed	53	12	30.5	No	No	Community	0
Lederberg & Mobley (1990)a	Spanish	Journal Article	Developing	48	15	28	No	No	Community	8
Lederberg & Mobley (1990)b	English	Journal Article	Developed	51	22		No	Yes	Targeted	
Lionetti (2014)	English	Journal Article	Developed		22		No	No	Community	
Lysons-Ruth et al. (1999)	English	Journal Article	Developed	44	12	29	No	No	Targeted	
McFarland et al. (2012)	English	Journal Article	Developed		13.5	30	No	No	Community	
McMahon et al. (2006)	English	Journal Article	Developed	40	18		Yes		Targeted	47
Mooya et al. (2016)	English	Journal Article	Developing	68	17.5	29.7	Yes	No	Targeted	
O'Conner et al. (1987)	English	Journal Article	Developed	47	15	31.4		No		
Paquette & Dumont (2013)	English	Journal Article	Developed	43	18		No	No	Community	
Pauli-Pott & Mertesacker (2009)	English	Journal Article	Developing	51	12	28.4	No	No	Community	0
Planalp & Braungart-Rieker (2013)	English	Journal Article	Developed	52.6	13	29.3	No	No	Community	

Planalp & Braungart-Rieker (2013)	English	Journal Article	Developed	52.6	14	30.8	No	No	Community	
Poster (2014)	English	Thesis/Dissertation	Developed	51	14.6	27.1		No		
Raval et al. (2001)	English	Journal Article	Developed		12	31	No	No	Community	
Robbins (2005)	English	Thesis/Dissertation	Developed	51	14.5	26.3	No	No	Targeted	
Rodning et al. (1989)a	English	Journal Article	Developed		19			Yes	Clinical	
Rodning et al. (1989)b	English	Journal Article	Developed		19		No	Yes	Targeted	
Rodning et al. (1991)a	English	Journal Article	Developed	62	15.8	34.8	No	No	Community	
Rodning et al. (1991)b	English	Journal Article	Developed	40	15	26.05	Yes	Yes	Clinical	0
Sagi et al. (1994)	English	Journal Article	Developing	46	18	31.5	No	No	Targeted	
Scher & Mayseless (2000)	English	Journal Article	Developed		16.4	27.9	No	No	Community	
Seifer et al. (1996)	English	Journal Article	Developed	63	14	30.7	Yes	No	Clinical	
Seifer et al. (2004)	English	Journal Article	Developed	48	18		Yes	Yes	Clinical	
Simonelli et al. (2014)	English	Journal Article	Developed	43.3	12	33	No	No	Community	
Spangler & Grossman (1993)	English	Journal Article	Developed	41	12		No	No	Community	
Spangler & Schiech (1998)	English	Journal Article	Developed		12	37	No	No	Targeted	0
Spangler et al. (1996)	English	Journal Article	Developed	47	12		No	No	Community	
Steele et al. (1996)	English	Journal Article	Developed	47.9	12	32	No	No	Community	
Steele et al. (1996)	English	Journal Article	Developed	47.9	18	34	No	No	Community	

Steele et al. (2010)	English	Journal Article	Developed			28	Yes	No	Targeted
Stovall-McClough & Dozier (2004)	English	Journal Article	Developed	40	16	50.5	No	Yes	Targeted
Tomlinson et al. (2005)	English	Journal Article	Developing	44.9	18		Yes	No	Targeted
True et al. (2001)	English	Journal Article	Developing	57	12.5		No	No	Community
van Ijzendoorn et al. (2000)a	English	Journal Article	Developed		12	27	No	No	Community
van Ijzendoorn et al. (2000)a	English	Journal Article	Developed		12	29	No	No	Community
van Ijzendoorn et al. (2000)b	English	Journal Article	Developed		12	29	No	No	Community
van Ijzendoorn et al. (2000)b	English	Journal Article	Developed		12	31	No	No	Community
Ward et al. (2000)	English	Journal Article	Developed		17.4	28.6			
Zevalkink et al. (1999)	English	Journal Article	Developing	45.6	20			No	
Zreik et al. (2017)	English	Journal Article	Developing	52	14	29.9	No	No	Community

[a]Was coded from Simonelli et al. (2014).

Table 22

Characteristics of Studies Included in Study 2 – Part 2

Study Name	Unclassifiable	Coder Training	Coder Certification	% Studies 2nd Coded	% Agreement	Cohen's Kappa	% White	% Black	% Hispanic	% 2 Parent Household
Abrams (2000)	U not included									
Ahnert et al. (2000)	Does not explicitly state that there were not any U			42	89	82				100
Ainsworth & Eichberg (1993)	Does not explicitly state that there were not any U									
Ammaniti et al. (1994)	Does not explicitly state that there were not any U									
Archer (2011)	Does not explicitly state that there were not any U	Yes	Yes							
Archer et al. (2015)	Does not explicitly state that there were not any U	Yes	Yes	25						
Beebe et al. (2010)	U not included			40			51	17	30	100
Beetz et al. (2015)	Does not explicitly state that there were not any U			0						98
Behrens et al. (2011)	Does not explicitly state that there were not any U			51	82	0.74	84		11	60
Beijers et al. (2011)	Does not explicitly state that there were not any U			27	86	82				
Berlin (1994)	Does not explicitly state that there were not any U				79		97		1	
Bernard et al. (2012)	U not included	Yes	Yes	34	85	0.74	8	61	11	
Bombardier (1997)	Does not explicitly state that there were not any U						20	41	45	
Brisch et al. (2005)	U not included									86

Byrne et al. (2010)	D and U combined	No	No	13	100	0.71				
Carlson (1998)	Does not explicitly state that there were not any U				86	0.72	80	13		6
Carlson (1998)	Does not explicitly state that there were not any U				86	0.72	80	13		
Carlson et al. (1989)a	Does not explicitly state that there were not any U			100	88					
Carlson et al. (1989)b	Does not explicitly state that there were not any U			100	88					
Cassé et al. (2016)a	Does not explicitly state that there were not any U									88
Cassé et al. (2016)b	Does not explicitly state that there were not any U									88
Cohn et al. (1991)	Does not explicitly state that there were not any U						100			100
Cole (2005)	U not included							70		
das Eiden & Leonard (1996)	U not included			15	98		93	7		
Dawson et al. (1992)	Does not explicitly state that there were not any U						71	24	3	
Enlow et al. (2014)a	Does not explicitly state that there were not any U				80		17	33	33	95
Enlow et al. (2014)b	Does not explicitly state that there were not any U				80		42	39	33	25
Espinosa et al. (2001)	Does not explicitly state that there were not any U						26	57	17	36
Estrada (1994)	Does not explicitly state that there were not any U								100	
Fava Vizziello et al. (2000)	Does not explicitly state that there were not any U			100	89	0.74				50
Fava Vizziello et al. (2003)[a]	Does not explicitly state that there were not any U									

Finger (2006)	Does not explicitly state that there were not any U	Yes	Yes							68
Finger et al. (2009)	U not included			100	80			100		75
Fish & Stifter (1995)	Does not explicitly state that there were not any U			30	86		96.7	1.6	1.6	
Frosch et al. (2001)	U not included	Yes	Yes	10	87			3		51
Frosch et al. (2001)	U not included		No	10	87			3		100
Gleason (1995)	Does not explicitly state that there were not any U	No	No	20						
Gloger-Tippelt et al. (2002)	Does not explicitly state that there were not any U		No		82	0.63				100
Goldberg et al. (1995)a	Does not explicitly state that there were not any U									
Goldberg et al. (1995)b	Does not explicitly state that there were not any U									
Goldberg et al. (1995)c	Does not explicitly state that there were not any U									
Granqvist et al. (2016)	U not included			16	86	0.8				
Haltigan et al. (2011)a	Does not explicitly state that there were not any U		No	25	80	0.63	39	1	47	100
Haltigan et al. (2011)b	Does not explicitly state that there were not any U	Yes	Yes	25	80	0.63	41	12	47	
Higley & Dozier (2009)	Does not explicitly state that there were not any U			100	68	0.49	82	7	0	
Hobson et al. (2005)a	U not included	Yes	Yes	62.5		0.83				60
Hobson et al. (2005)b	U not included	Yes	Yes	62.5		0.83				60
Hsiao et al. (2015)	Does not explicitly state that there were not any U	Yes	Yes	30	90	0.83				

Hughes et al. (2001)a	Does not explicitly state that there were not any U	Yes	Yes			0.65				73
Hughes et al. (2001)b	Does not explicitly state that there were not any U	Yes	Yes			0.65				100
Jin et al. (2012)	Does not explicitly state that there were not any U	Yes	Yes	23		0.93				
Kochanska (2001)	U not included					0.9	97			100
Lakatos et al. (2000)	Does not explicitly state that there were not any U									
Lecannelier et al. (2008)	Does not explicitly state that there were not any U	Yes	Yes	0						100
Lederberg & Mobley (1990)a	Does not explicitly state that there were not any U	Yes		32	83		80	17	1	57.5
Lederberg & Mobley (1990)b	Does not explicitly state that there were not any U		No	27	83					90
Lionetti (2014)	Does not explicitly state that there were not any U		No	25	83	0.77				
Lysons-Ruth et al. (1999)	U not included			49	83	0.73	81			100
McFarland et al. (2012)	D and U combined			100		0.6	82	3	9	100
McMahon et al. (2006)	Does not explicitly state that there were not any U			26	79	0.65				55
Mooya et al. (2016)	Does not explicitly state that there were not any U			29	92	0.88				
O'Conner et al. (1987)	D and U combined		Yes	0			92	4		100
Paquette & Dumont (2013)	U not included				80					100
Pauli-Pott & Mertesacker (2009)	U not included		No	16						99
Planalp & Braungart-Rieker (2013)	U not included						90.4			100

Planalp & Braungart-Rieker (2013)	U not included						87.4			100
Poster (2014)	Does not explicitly state that there were not any U			20	81	0.72				74
Raval et al. (2001)	Does not explicitly state that there were not any U			31	83	0.79				91.4
Robbins (2005)	Does not explicitly state that there were not any U	Yes	Yes				79	6	13	98
Rodning et al. (1989)a	Does not explicitly state that there were not any U						6	61	33	
Rodning et al. (1989)b	Does not explicitly state that there were not any U									
Rodning et al. (1991)a	Does not explicitly state that there were not any U		No				5			94.8
Rodning et al. (1991)b	Does not explicitly state that there were not any U						4			95
Sagi et al. (1994)	U not included									
Scher & Mayseless (2000)	D and U combined	Yes	Yes	20	95					48
Seifer et al. (1996)	U not included						90	2	1	92
Seifer et al. (2004)	U not included			0			16	76	6	
Simonelli et al. (2014)	Does not explicitly state that there were not any U									
Spangler & Grossman (1993)	U not included									100
Spangler & Schiech (1998)	Does not explicitly state that there were not any U									98
Spangler et al. (1996)	U not included									100
Steele et al. (1996)	Does not explicitly state that there were not any U									

Steele et al. (1996)	Does not explicitly state that there were not any U								
Steele et al. (2010)	Does not explicitly state that there were not any U								
Stovall-McClough & Dozier (2004)	U not included		100			34	63		57.9
Tomlinson et al. (2005)	Does not explicitly state that there were not any U		16						32.7
True et al. (2001)	D and U combined		44	88					
van Ijzendoorn et al. (2000)a	Does not explicitly state that there were not any U								
van Ijzendoorn et al. (2000)a	Does not explicitly state that there were not any U								
van Ijzendoorn et al. (2000)b	Does not explicitly state that there were not any U								
van Ijzendoorn et al. (2000)b	Does not explicitly state that there were not any U								
Ward et al. (2000)	U not included	Yes				27	29	32	57
Zevalkink et al. (1999)	U not included								
Zreik et al. (2017)	D and U combined		31	81	0.61				

[a]Was coded from Simonelli et al. (2014).

Appendix G

Study 2 Main Analyses Forest Plots

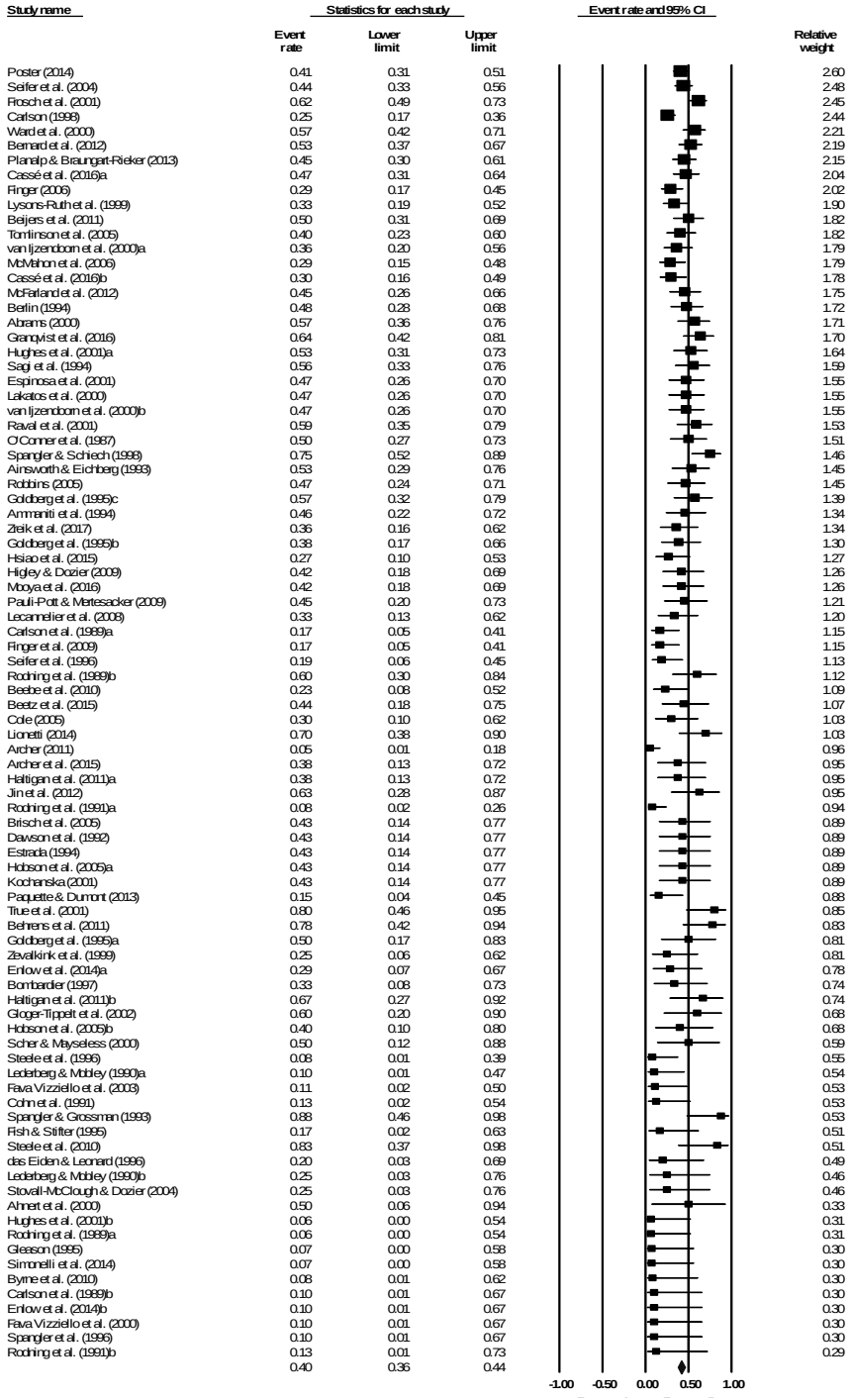


Figure 8. Forest plot of studies included in underlying secure attachment analysis.

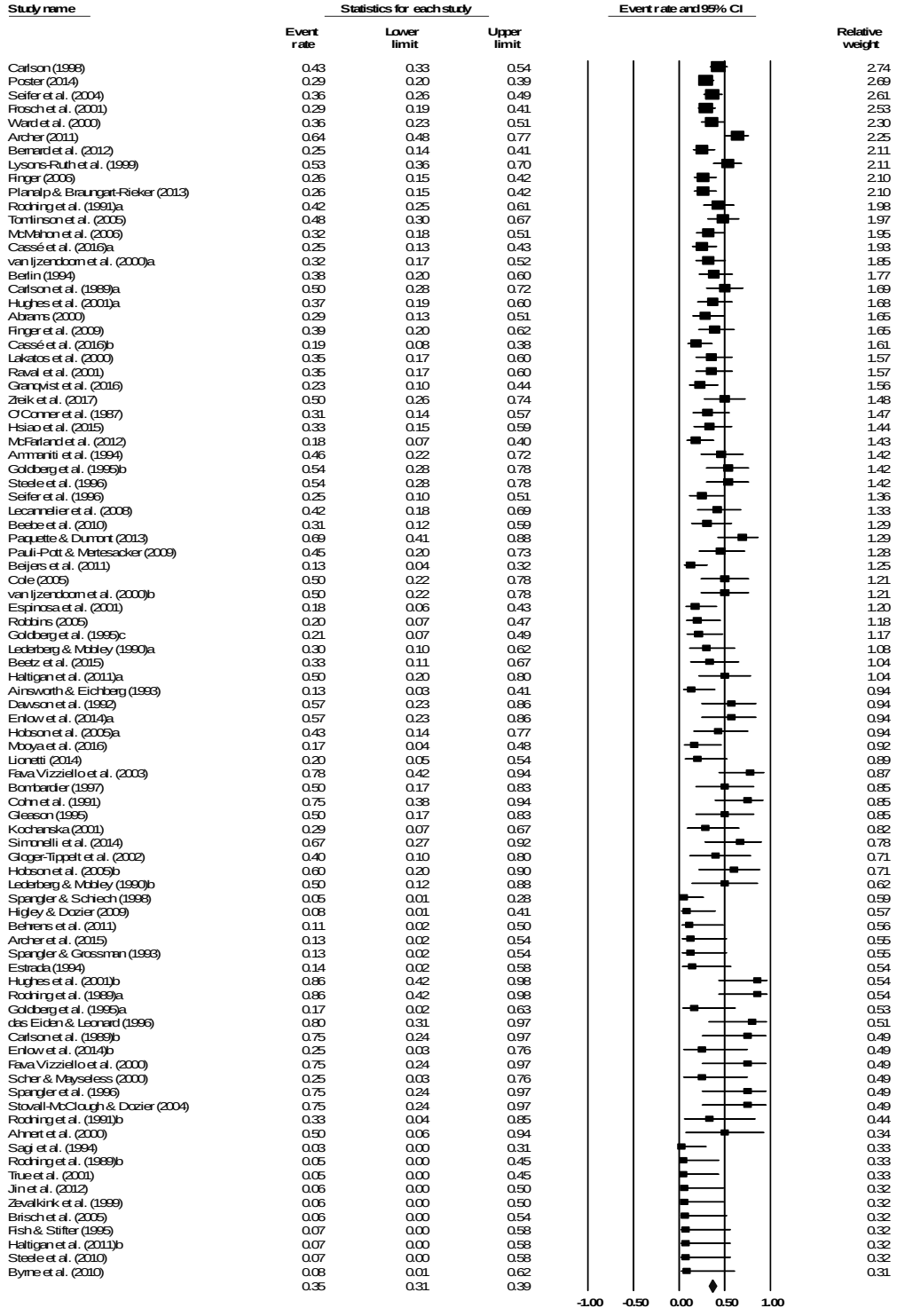


Figure 9. Forest plot of studies included in underlying avoidant attachment analysis.

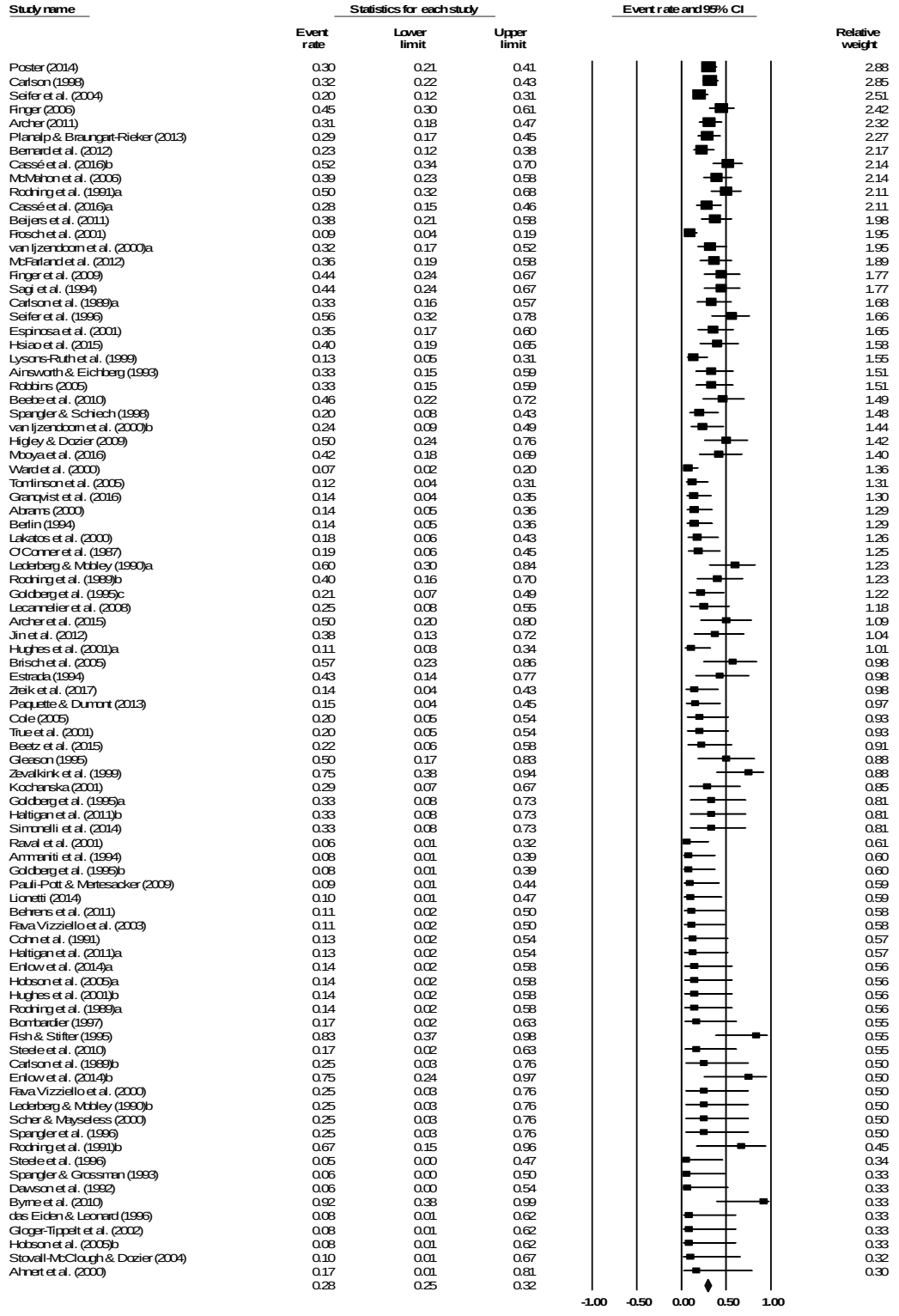


Figure 10. Forest plot of studies included in underlying ambivalent attachment analysis.