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## Secure Base Scripts are Associated with Maternal Parenting Behavior across Contexts and Reflective Functioning among Trauma-Exposed Mothers

Alissa C. Huth-Bocks<sup>1,\*</sup>, Maria Muzik<sup>2,3,\*</sup>, Marjorie Beeghly<sup>4,5</sup>, Lauren Earls<sup>1</sup>, and Ann M. Stacks<sup>6</sup>

<sup>1</sup>Department of Psychology, Eastern Michigan University, Ypsilanti, USA

<sup>2</sup>Department of Psychiatry, University of Michigan, Ann Arbor, USA

<sup>3</sup>Center for Human Growth & Development, University of Michigan, Ann Arbor, MI USA

<sup>4</sup>Department of Psychology, Wayne State University, Detroit, USA

<sup>5</sup>Division of Developmental Medicine, Boston Children's Hospital, Boston, USA

<sup>6</sup>Merrill-Palmer Skillman Institute, Wayne State University, Detroit, USA

### Abstract

There is growing evidence that 'secure-base scripts' (Waters & Waters, 2006) are an important part of the cognitive underpinnings of internal working models of attachment. Recent research in middle class samples has shown that secure-base scripts are linked to maternal attachment-oriented behavior and child outcomes. However, little is known about the correlates of secure base scripts in higher-risk samples. Participants in the current study included 115 mothers who were oversampled for childhood maltreatment and their infants. Results revealed that a higher level of secure base scriptedness was significantly related to more positive and less negative maternal parenting in both unstructured free play and structured teaching contexts, and to higher reflective functioning scores on the Parent Development Interview-Revised Short Form (Slade, Aber, Berger, Bresgi, & Kaplan, 2003). Associations with parent-child secure base scripts, specifically, indicate some level of relationship-specificity in attachment scripts. Many, but not all, significant associations remained after controlling for family income and maternal age. Findings suggest that assessing secure base scripts among mothers known to be at risk for parenting difficulties may be important for interventions aimed at altering problematic parental representations and caregiving behavior.

### Keywords

secure base; attachment script; parenting behavior; trauma; caregiving

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Correspondence should be addressed to: Alissa Huth-Bocks, Ph.D., Eastern Michigan University, Ypsilanti, MI. 48197; ahuthboc@emich.edu.

\*Alissa Huth-Bocks and Maria Muzik are co-first authors.

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Bowlby's conceptualization of the 'internal working model' (Bowlby, 1969/1982/1973/1988), along with Bretherton's clarifications and elaborations on this important construct (Bretherton, 1990; Bretherton & Munholland, 2008), have had an enormous influence on attachment research. Bowlby defined internal working models as mental representations of self and others in relationships. He proposed that, by the end of the first year of life, infants begin to form internal working models based on their history of interpersonal experiences (most notably, with the primary caregiver), resulting in separate, but complementary, working models of the self and other. Bowlby chose the term internal working model because it emphasized the dynamic and functional aspects of representations (Bretherton, 2005; Bretherton & Munholland, 2008). For example, he believed that internal working models serve a very important purpose, namely, to help the individual organize experience, interpret and anticipate others' behaviors, and guide one's behavior in future interactions in order to promote adaptation.

Although internal working models were initially empirically examined through inferences made about infants' behaviors toward their attachment figures, the advent of the Adult Attachment Interview (George, Kaplan, & Main, 1985) propelled a new wave of attachment research focused on "the level of representation" in adults (Main, Kaplan, & Cassidy, 1985). Although this wave of research has been extremely productive, there has been a recent call to the field to examine and identify *specific components* of working models, or representations, in order to further refine attachment theory and research (Waters & Waters, 2006). As a result, a recently developed measure, called the Attachment Script Assessment (ASA; Waters & Rodrigues-Doolabh, 2004), has led to an emerging body of literature linking the "cognitive architecture" of attachment representations to a number of important predictors and correlates in low-risk samples of adults in the United States and around the world (e.g., Bost et al., 2006; Vaughn et al., 2007; Wong et al., 2011). In the present study, these cognitive components of attachment representations, as measured by the ASA, are examined in a unique, trauma-exposed sample of mothers in relation to their parenting behavior in the first 2 years after giving birth. This study makes an important contribution to the growing body of literature on attachment scripts by extending the small set of existing studies and evaluating evidence for the validity of the ASA among a higher-risk sample, yielding clear implications for intervening with those at risk for parenting difficulties.

### **Internal Working Models, Mental Models, and Scripts**

In a number of important papers, Bretherton clarified, expanded, and updated Bowlby's initial propositions about internal working models within the context of attachment relationships (e.g., Bretherton, 1990; 2005; Bretherton & Munholland, 2008). Based upon Craik's (1943) ideas about mental models, Bowlby emphasized early on that internal working models allow individuals to imagine interactions with others, based on prior experiences, before deciding how to behave; this is part of the *dynamic* nature of internal working models that Bowlby wished to highlight. Bretherton later expanded ideas about the organization and structure of internal working models, following work in the cognitive sciences by Schank (1982) and others regarding the organization of long-term memory. Schank, for instance, speculated that memories are organized from specific "mini-event" representations into longer event sequences he called "scripts," which in turn, are integrated

into more generalized event sequences. Applying this to attachment theory, Bretherton subsequently proposed that internal working models of self and other are probably best conceptualized as hierarchically-organized representations (or schemas), with lower levels consisting of specific, event-focused, interactional representations and higher levels becoming more and more general representations, as they subsume lower-level representations. Further, working models of self and others can be thought of as several interlinked hierarchies of representations rather than one hierarchy (Bretherton, 1990), with both content *and* organizational quality of hierarchies affecting a person's interpretation of events and subsequent behaviors. This organizational framework helps address a particularly important question about the degree to which individuals' working models of attachment are relationship-specific or more generalized. These ideas will be further discussed later in this paper in relation to study findings.

### Adults' Secure Base Scripts and Their Correlates

In addition to providing a framework for understanding the organization of attachment working models, Bretherton (1990) also suggested ways in which attachment experiences may result in certain attachment-relevant scripts. For example, just as a 'restaurant script' may provide the cognitive structures necessary for understanding what to expect and how to behave while eating out in a restaurant (Schank & Abelson as cited in Waters & Waters, 2006), scripts related to the availability of secure base support may be differentially represented in memory and more or less available to organize ongoing behavior, depending on past experience. Taking this idea further, Waters and Waters (2006) proposed that individuals vary according to their knowledge of and access to a secure base script based on experiences in infancy and early childhood; adults with a history of consistent secure base support can readily access a secure base script marked by expectations of eliciting and receiving help, whereas those without a history of secure base experiences will have less knowledge of and access to a secure base script. Presumably, individuals in the latter case will have a harder time understanding relational experiences, behaving in an effective way, and feeling emotionally regulated within close relationships.

In order to test these ideas, Waters and Rodrigues-Doolabh (2001; 2004) developed a semi-projective, narrative measure whereby individuals are given lists of words (prompt word sets) and asked to tell a story using the words as a guide. Because they were concerned with attachment representations in particular, the instrument's word sets were designed to elicit attachment-relevant stories between a mother and child (two stories) and between two adult partners (two stories). Each story is scored along a 7-point scale indicating the degree of 'secure base scriptedness' based on the presence or absence of specific secure base content such as the acknowledgement of a problem by characters, a bid for help, responsiveness of the other, effectiveness of help in relieving distress, and a return to constructive interaction. Scores across all four attachment narratives have typically been averaged together in past studies (rather than having separate, average scores for the mother-child stories and the partner stories), despite the proposition that representations vary in their specificity about past relational experiences (Bretherton 1990; 2005). The emphasis on content in coding (rather than, for example, affect or signs of defensive processes) is important because the measure aims to tap the cognitive underpinnings, specifically, of attachment working

models. Importantly, several studies have shown that secure base script scores are significantly associated with representational features on the AAI such as coherence (Coppola, Vaughn, Cassibba, & Costantini, 2006; Dykas, Woodhouse, Cassidy, & Waters, 2006; Waters & Rodrigues-Doolabh, 2001), as would be expected since both aim to measure representations of attachment.

Since the development of this measure, a small, but growing body of literature is demonstrating that parents' level of secure base scriptedness is related to their children's secure base behavior and attachment representations, as well as to certain parenting behaviors. For example, several studies show that greater maternal secure base scriptedness is significantly related to infant attachment security in the Strange Situation (Tini, Corcoran, Rodrigues-Doolabh, & Waters, 2003) and to infant, toddler, and preschooler attachment security as assessed using the Attachment Q-Set and story completion tasks (Bost et al., 2006; Monteiro, Verissimo, Vaughn, Santos, & Bost, 2008; Vaughn et al., 2007; Wong et al., 2011). These associations have been reported in the United States, Colombia, and Portugal, demonstrating cross-cultural consistency and validity, and providing further evidence of the intergenerational transmission of secure base relationships. However, all of these studies were conducted with middle-class samples, leaving less known about associations within higher risk samples.

Based on a long history of attachment research, the findings described above are presumably explained, at least in part, by the quality of parenting during parent-child social interaction, yet only a few existing studies have examined parents' secure base scriptedness and parent-child interactions. In the first study to do so (Guttman-Steinmetz, Elliot, Steiner, & Waters, 2003), multiple dimensions of maternal behavior during a task that required the co-construction of simple, made-up stories in mother-preschooler dyads ( $N = 25$ ) were coded using Likert type rating scales. Results showed that maternal secure base scriptedness (based on a total score) was positively associated with maternal sensitivity, cooperation with the child, and use of strategies to regulate the child's affect, but only during the co-construction of the 'negative' story (and not during the 'positive' story); maternal IQ was unrelated to study variables. The authors suggested that the negative stories were more challenging for the dyads, which may have prompted more engagement from the mothers, making these associations stronger. In a similar study ( $N = 90$ ; Bost et al., 2006), maternal behavior was coded during mother-preschooler conversations about past family memories (of the mother's choosing). Findings revealed that greater maternal secure base scriptedness was related to more maternal references to emotions (both positive and negative) during these reminiscing conversations, suggesting that more secure mothers were more comfortable with emotional material and/or may have a greater capacity to understand their children's mental states (i.e., greater capacity for reflective functioning) while conversing with their children compared to mothers with lower levels of secure base scriptedness. Finally, in a small ( $N = 31$ ) middle-class Italian sample (Coppola et al., 2006), total maternal secure base scriptedness was positively associated with previously observed maternal sensitivity during a 3-minute mother-infant free play interaction. Furthermore, in this study, maternal script scores predicted maternal behavior above and beyond the effect of maternal education; in fact, education had no association with maternal behavior once maternal scriptedness was entered

as a predictor. Thus, overall, results from this small set of existing studies indicate that greater knowledge of and access to a secure base script is linked to more positive, supportive forms of maternal behavior, and possibly a greater capacity for understanding mental states, in a variety of interactive contexts with young children. These findings are consistent with expectations based on a long history of attachment research; however, again, the former studies have only been conducted with low-risk, middle-class samples. It is also unclear if findings would have differed in these studies with the use of separate script scores (e.g., mother-child scripts, romantic partner scripts) rather than one, more general script score.

## The Present Study

The overall purpose of the present study was to expand the existing literature on maternal attachment scripts by examining them within a higher risk sample (characterized by varying levels of maternal trauma exposure) in relation to parenting during infancy. The first specific aim was to evaluate whether maternal secure base scriptedness was associated with positive and negative dimensions of parenting behavior at 7 months postpartum. Because parenting behavior may be somewhat context-specific, i.e., different behaviors may characterize parenting in low-demand versus high-demand situations, two contrasting interaction tasks varying in level of challenge for the dyad were included. Furthermore, secure base scriptedness was examined both in a dimensional way (using a continuous score) as well as categorically (using three groups based on cut points of the total scores: Secure Script, Marginal/Event Focused Script, or No/Atypical Script). Although past research in this area has been conducted with low-risk samples only, we expected to find similar patterns of associations in general between secure base scriptedness and parenting in our higher risk sample due to consistent evidence that similar patterns of associations are found between adults' representations on the AAI and parenting in both low- and high-risk samples (Madigan, Bakermans-Kranenburg, van IJzendoorn, Moran, Pederson, & Benoit, 2006; van IJzendoorn, 1995).

A second, exploratory aim was to examine whether relationship-specific (i.e., parent-child, romantic partner) or generalized attachment scripts were more robust predictors of parenting. Although we expected parent-child and adult romantic attachment scripts to be highly related to one another, as consistently documented in prior studies, we anticipated that they may exhibit different associations with maternal parenting because of how emotionally-arousing and goal-directed mother-infant interactions are during the first year postpartum. Thus, in contrast to prior studies that have only used a total secure base script score, parent-child attachment scripts and adult romantic attachment scripts were examined separately, as well as together, in relation to maternal parenting. We hypothesized that total maternal secure base scriptedness scores would be positively associated with more positive parenting and less negative parenting across interaction contexts. However, we also expected the magnitude of the associations between parent-child scripts and maternal behavior would be larger than those for the associations between romantic partner scripts and maternal behavior. Likewise, we expected between-group differences in parenting behavior among script groups based on parent-child script scores, but not between groups based on romantic partner script scores.

Finally, we explored associations between maternal attachment scripts and mothers' parental reflective functioning, defined by the capacity to consider and understand the mental states of the child, as assessed with an interview-based measure of maternal representations of the infant and the mother-infant relationship. These latter associations have not yet been tested to our knowledge; however, findings reported by Bost and colleagues (2006) related to maternal use of emotion words during mother-child conversations suggest that mothers higher in secure base scriptedness may be more aware of their own and their children's emotional states.

## Method

### Participants

Participants included 115 women who were part of a larger ( $N = 268$ ) longitudinal study, the Maternal Anxiety during the Childbearing Years project (MACY; PI: Maria Muzik), which aimed to examine mothers' childhood history of maltreatment in relation to postpartum mental health, parenting, and infant bio-psycho-social developmental outcomes from 4 to 18 months postpartum. Mothers were included in the present study if they had participated in the 16 month follow-up visit and completed the attachment script assessment measure (see Measures below), the central variable of interest in this paper.

Participants were recruited into the larger study either as a postpartum follow-up to another study investigating the prenatal effects of trauma on childbearing, for which participants were first seen at 14–28 weeks gestation in three large hospitals in the Midwest, or via flyers posted in the community (e.g., health clinics, social service programs for pregnant and postpartum women, retail stores, and perinatal community mental health clinics). In line with the aims of the larger study, recruited mothers were oversampled for childhood maltreatment experiences during the initial phone call. Eligible mothers had to be fluent in English, be 18 years or older, and have term or near term ( $> 34$  gestational weeks) babies. Exclusion criteria included: maternal drug use in the past month and maternal history of Bipolar Disorder or Psychosis (according to the M.I.N.I.; Sheehan et al., 1998), infant developmental disability, and severe maternal or child illness, as reported by mothers at the 4 month interview (for more details on recruitment and overall study design see Stacks et al., 2014).

The age of mothers in the present study ranged from 18 to 45 years at study entry, with an average of 29.58 years ( $SD = 5.66$ ). The majority of mothers (71%) were married, followed by single (26%), separated (2%) and divorced (1%); 4% of the non-married women were living with the father of the target infant. Mothers identified themselves as Caucasian (65%), African American (22%), Asian (5%), Latina (4%), multi-racial (2%), or other (2%). In terms of education, 13% had a high school degree or less schooling, 27% had some college or technical training beyond high school, 33% had a 4-year college degree, and 27% had a graduate-level degree. About half of mothers (51%) resided in households with yearly earnings of more than \$50,000, and half were from families earning \$50,000 or less. Among women from lower-income families, 21% were from families earning \$25,000-\$50,000 per year, 8% from families earning \$15,000-\$20,000 per year, and 20% from families earning

less than \$15,000. Fifty-seven percent of the infants in the present study were male, and 43% were female.

Due to the intentional oversampling for childhood maltreatment history in the larger study (based on reaching the cut-off score for at least “minimal” trauma exposure before the age of 16 on the Childhood Trauma Questionnaire; Bernstein & Fink, 1998), women in the present study had a high rate of childhood trauma exposure. Based on maternal report, 74% reported experiencing some form of childhood maltreatment including physical, sexual, or emotional violence and/or physical or emotional neglect. Thirty-seven percent reported severe levels of one or more forms of childhood maltreatment. Many of the mothers also reported a high level of posttraumatic stress symptoms during the first 18 months postpartum: 19% met criteria for a PTSD diagnosis based on scoring above the cut-off on the National Women’s Study PTSD Module (Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993) at study entry (4 months), followed by 28% at 7 months, 19% at 12 months, 15% at 16 months, and 13% at 18 months.

The 115 participants in the present analysis did not differ significantly from the 153 non-participants (i.e., those without an attachment script assessment from the larger longitudinal study) on key demographic variables, including infant sex, maternal marital status, race/ethnicity, education, childhood maltreatment severity, or PTSD diagnosis at any time point. However, participants were slightly older ( $M = 29.58$  years,  $SD = 5.66$ ) than non-participants ( $M = 27.7$  years,  $SD = 5.4$ ),  $t = 2.30$ ,  $p < .05$ , and had higher incomes than non-participants,  $\chi^2(3) = 13.21$ ,  $p < .01$ .

## Procedures

At the time of initial recruitment into the study, participants completed a phone interview at 4 months postpartum, during which they were given information about the study, provided assent to participate, were screened for child maltreatment, and completed a number of other measures over the phone. Later waves of data collection included two home visits at 7 months, a phone interview at 12 months, a lab visit at 16 months, and a final phone interview at 18 months. Data for the current study primarily come from the 7-month home visits and the 16-month lab visit.

**7-month home visits**—Two home visits separated by a 1–2 week time interval were conducted at 7 months postpartum. During the home visits, mothers provided demographic information, completed a questionnaire battery about child and family functioning, and were interviewed in depth about their childhood trauma histories. Additionally, mother-infant dyads were videotaped during several mother-infant interactions tasks, which were later coded for multiple dimensions of maternal and infant behavior.

**16-month lab visit**—At the 16-month lab visit, mothers participated in several mother-child observational tasks, and completed a questionnaire battery. They also participated in a semi-structured interview about the mother’s thoughts and feelings about the target infant, and completed the attachment script assessment. Measures pertinent to the current study are detailed below. Following each visit, mothers received \$50 and children received a small toy as compensation.

As a way to stay in contact and minimize attrition over time, participants were asked to provide an alternate contact person at each time point. Research assistants also made “check up” calls between the 7-month and 12-month interviews to update contact information and provide community resources if necessary. The most common reasons for attrition at each time point were the same: unable to be located, moved out of the area, and no longer interested in participating. All mothers provided written informed consent to participate in the study. All study procedures were approved and maintained by the University Institutional Review Board throughout the duration of the study.

## Measures

**Maternal Secure Base Scripts**—Mothers’ secure base scripts were assessed using the Attachment Script Assessment (ASA; Waters & Rodrigues-Doolabh, 2001; 2004) at the 16-month lab visit. This narrative task, described earlier in the paper, aims to assess adults’ representations of secure base behavior, or ‘secure base scriptedness’, through their attachment-relevant stories. Individuals are presented with a series of four word-prompt lists depicting attachment-related scenarios, and two neutral, non-attachment-related scenarios. Two of the attachment lists refer to a mother and child and two refer to two romantic partners. When presented with each list of words, participants are asked to tell the best story they can using the words from each list as a guide. The full task takes about 15 minutes to complete and is audio-recorded and transcribed. Each story is later coded for level of secure base scriptedness on a scale ranging from 1 (*low secure base*) to 7 (*high secure base*). Assignment of scores is based on a number of elements that are present or missing from the stories including: identification of a problem, character distress, a bid for help, responsiveness to the bid by the other character, assistance being accepted, help is effective at comforting the distressed individual, and the dyad returning to their activity.

Scores from the two mother-infant stories are averaged together, as are scores from the two romantic partner stories. Scores from these two composites can also then be averaged for a total secure base script score. The use of one total score has been recommended by H. Waters (personal communication, April 2013) due to consistently high correlations between the composites in prior studies (e.g., Rodrigues-Doolabh, Zevallos, Turan, & Green 2003; Vaughn et al., 2007; Wong et al., 2011). However, in the present study, the total score, the parent-child composite score, and the romantic partner composite score were all evaluated in relation to parenting variables. Although secure base scriptedness has typically been examined along the continuum noted above, recent research (H. Waters, personal communication, November, 2013) has suggested that individuals can also be grouped categorically in meaningful ways according to the quality of their scripts, such that scores of 3.8 and above are in the ‘secure’ script range, scores of 3.0 to 3.7 can be considered in the ‘marginal’ or ‘event-focused’ script range, and scores below 3.0 indicate an atypical or absent script range. Thus, secure base scriptedness was also examined as a categorical variable in analyses.

Previous research has consistently demonstrated good inter-rater reliability and internal consistency of composite scores derived from the ASA (e.g., Waters & Rodrigues-Doolabh, 2001, Vaughn et al., 2007), as well as stability over time (Vaughn et al., 2006). Research has



also supported the measure's convergent and predictive validity through significant associations with the Adult Attachment Interview coherence and security scales (Coppola et al., 2006; Waters & Rodrigues-Doolabh, 2001) and with child attachment security (e.g., Bost et al., 2006; Tini et al., 2003). In the present study, the fourth author (L. Earls) learned to reliably code the task through training with Dr. H. Waters, one of the developers of this measure. Subsequently, 15% of the sample was double-coded by these two individuals; they were both blind to participant trauma history and other study variables. The intra-class correlation (ICC) was .83 for the mother-child composite and .87 for the romantic partner composite. Both ICCs indicate very good inter-rater reliability and were significant at the  $p < .001$  level. The mother-child and romantic partner composites were correlated at .63,  $p < .001$ , with  $\alpha = .77$ .

**Parenting Behavior**—At the 7-month home visits, mothers' interactive behavior with their infant was assessed during several different interaction tasks varying in level of challenge for the dyad: two 5-minute free play tasks (one at each home visit) and two 3-minute teaching tasks (both conducted at the first home visit). During the free play tasks, mothers were asked to play with their infants “as you normally would” with a standard set of age-appropriate toys brought by the researchers. Free play was considered a low-demand, low-stress interaction task. The teaching tasks were designed to be beyond the developmental capacities of the infant and were, therefore, considered more stressful and demanding. In the first teaching task, mothers were instructed to teach their infants to put blocks into a bucket, and in the second task, to teach their infants to stack nesting cups and then knock them down. All interaction tasks were video-recorded for later coding.

In the present study, multiple dimensions of maternal behavior and affect were coded from the videotapes of mother-infant interaction for each free play and teaching context using 5-point Likert scales from the MACY-Infant-Parent Coding System (MIPCS, Earls, Muzik, & Beeghly 2009). The MIPCS was designed for the MACY project and evaluates dimensions of parent, infant, and dyadic behavior relevant to attachment formation, as guided by attachment theory and related literature (e.g., Ainsworth, Blehar, Waters, & Wall, 1978; Crittenden, 1981; Lyons-Ruth, Zoll, Connell, & Grunebaum, 1986). With a few exceptions, the MIPCS scales were adapted from selected scales from several extant scoring systems (e.g., Clark, 1999; Egeland et al., 1995; Feldman, 1998). Maternal scales evaluated in the present study included: Behavioral Sensitivity, Engagement, Overcontrolling/Intrusive, Hostility, Flexibility, Warmth, Affective Sensitivity, Anxiety, Positive Affect, and Negative Affect. Scoring was conducted by trained coders, led by the third author of this study. All coders were masked to maternal trauma history and other study variables.

To assess inter-coder reliability, coders independently double-scored a randomly selected subset of the videotapes (22%) made in each free play and teaching context. The intra-class correlation coefficients (ICCs) for almost all codes for all tasks were well above .80, indicating very good reliability. ICCs ranged from .77 (Anxiety) to .93 (Positive Affect) for the free play tasks and .56 (Anxiety) to .97 (Negative Affect) for the teaching tasks. Due to high cross-context correlations ( $ps < .001$ ), codes derived from similar contexts were averaged. This yielded one average score for each maternal scale across the two free play contexts and one average score for each maternal scale across the two teaching contexts.

Based on the pattern of inter-correlations between scales, a principal components factor analysis was first conducted with the free play codes. As a result, a *Maternal Positive Parenting* composite for free play behavior was formed by averaging mothers' Behavioral Sensitivity, Engagement, Flexibility, Warmth, Affective Sensitivity, and Positive Affect scores. This composite explained 71.28% of the factor variance ( $\alpha=.91$ ). A follow-up confirmatory factor analysis (using R Version 3.1.0) indicated an excellent fit (CFI = .97, TFI = .95, SRMR = .06, all factor loadings were significant). Based on the initial principal components analysis, two negative parenting factors emerged; one factor, labeled *Hostile/Intrusive Parenting*, was composed of the Overcontrolling/Intrusive and Hostility scales and accounted for 39.29% of the variance ( $\alpha=.61$ ), and the second factor, which comprised the Anxiety and Negative Affect scales, accounted for 29.00% of the variance ( $\alpha=.24$ ). The latter factor was excluded from further analysis given its low internal reliability. A confirmatory analysis could not be performed on the former factor because it only had two scales and was, therefore, under-identified.

A similar set of analyses was conducted on the maternal ratings made during the teaching tasks, with similar results. A *Maternal Positive Parenting* composite for teaching task behavior was obtained by averaging scores on the Behavioral Sensitivity, Engagement, Flexibility, Warmth, Affective Sensitivity, and Positive Affect scales. This composite explained 73.54% of the factor variance ( $\alpha=.91$ ). A follow-up confirmatory factor analysis revealed an excellent fit (CFI = .97, TFI = .96, SRMR = .05, all factor loadings were significant). Based on the exploratory factor analysis for the teaching task, two negative parenting factors again emerged: a *Hostile/Intrusive Parenting* factor, composed of the Overcontrolling/Intrusive and Hostility scales, accounting for 42.78% of the variance ( $\alpha=.57$ ), and a second factor comprised of the Anxiety and Negative Affect scales ( $\alpha=.43$ ). Again, a confirmatory analysis was not possible for the former factor, and the latter factor was excluded due to low internal reliability. For conceptual reasons and to maintain consistency with the free play composites, the *Hostile/Intrusive Parenting* factor from the teaching context was retained for analyses.

**Reflective Functioning**—Mothers' level of reflective functioning regarding the target infant was assessed using the Parent Development Interview-Revised Short Form (PDI-R2-S; Slade et al., 2003) at the 16-month lab visit. The PDI-R2-S is a 30-item semi-structured interview that assesses a parent's representations of a specific child, with a particular focus on the parent's ability to reflect on her own and her child's thoughts, feelings, beliefs, desires, and intentions. An example item is "when your child is upset, what does s/he do and how does that make you feel?" Interviews last about 45 to 60 minutes and are audio-recorded, transcribed, and later coded. Responses to certain "demand" questions are scored and then the interview, as a whole, is given a score, ranging from -1 to 9. The overall score is used in analyses, with higher scores indicating greater reflective functioning. Indices of high reflective functioning are denoted by four different types of reflective capacity: (1) displaying an awareness of the nature of mental states, (2) explicitly attempting to tease out mental states underlying behavior, (3) recognizing developmental aspects of mental states, and (4) awareness of mental states in relation to the interviewer (Slade, Grienenberger, Bernbach, Levy, & Locker, 2005).

The measure has been shown to have good inter-rater reliability with trained coders, and validity has been established through numerous studies showing associations between reflective functioning based on the PDI and reflective functioning on the Adult Attachment Interview, maternal sensitivity and affective communication toward the child, as well as infant attachment security (Grienenberger et al., 2005; Slade et al., 2005). In the present study, the fifth author and another researcher were trained to reliably code the PDI by A. Slade, the author of the measure. Over one-third (36.9%) of the transcripts was double-coded; both coders were blind to maternal trauma history and other study variables. Comparisons of the two sets of codes indicated a high degree of inter-rater reliability ( $ICC = .76, p = .00$ ). Disagreements were conferenced after reliability had been determined, and consensus scores were used in the analyses.

## Results

### Missing Data

Of the 115 participants in the current sample, one did not participate in the 7-month home visits, and the videotapes of two participants' free play interactions and three participants' teaching tasks could not be scored due to recording problems. Additionally, three participants' PDI-R2-S interviews had recording errors and four participants' interviews were not score-able due to missing questions/problematic administration of the interview. These missing data were estimated using the Expectation Maximization (EM) algorithm in SPSS 22.0 prior to analyses. The EM method uses a maximum likelihood (ML) approach to iteratively impute missing values. An ML approach such as EM is considered an effective approach for handling missing data that are Missing at Random (MAR; Enders, 2013), which is the case in the present study. Enders and others have noted that the EM method results in estimates that are comparable to those of Full-Information Maximum Likelihood (FIML), another common ML approach. The rates of missingness in the present study (less than 6%) were well within guidelines for the use of EM (McCartney, Burchinal, & Bub, 2006). Therefore, all analyses were based on 115 participants after imputation.

### Descriptive Statistics

Descriptive statistics (see Table 1) indicate that women in the present sample had a moderate level of secure base scriptedness, with average scores indicating 'marginal' or 'event-focused' scripts ( $M = 3.33, 3.26,$  and  $3.41$  for total scripts, parent-child scripts, and romantic partner scripts, respectively). These averages are slightly lower than the averages reported in other samples, where the means are typically above 4.00, perhaps due to the higher-risk nature of the present sample (over-selection for child maltreatment history). On average, mothers' positive parenting scores in both the free play ( $M = 3.45$ ) and teaching tasks ( $M = 3.21$ ) fell in the moderate range, with good variability. In contrast, mothers' average negative parenting scores fell in the low range in both tasks ( $M = 1.74$  and  $2.08$ , respectively). Results from the PDI interviews indicated that mothers generally exhibited a moderate level of reflective functioning in this sample ( $M = 4.40$ ), with good variability among mothers.

### Associations between Trauma and Other Study Variables

Due to the nature of the sample, maternal trauma variables were examined in relation to other study variables before hypothesis testing. Correlation analyses indicated that maternal childhood maltreatment severity was unrelated to maternal secure base scriptedness, positive parenting, negative parenting, and reflective functioning ( $r$ 's ranged from .03 to .14, all non-significant). Likewise, maternal PTSD symptom severity and diagnosis at all waves were unrelated to maternal secure base scriptedness, positive parenting, negative parenting, and reflective functioning ( $r$ 's ranged from .00 to .16, all non-significant), with one exception; PTSD symptom severity at study entry (4 months) was positively related to reflective functioning ( $r = .28, p < .01$ ). Due to the consistent lack of associations between maternal trauma experiences and other study variables and one counter-intuitive association, subsequent analyses were conducted without co-varying for trauma experiences.

### Associations between Secure Base Scriptedness and Maternal Behavior

As Table 1 shows, results of Pearson correlations indicated that secure base scriptedness for the parent-child stories was highly related to secure base scriptedness for the romantic partner stories, with a correlation coefficient ( $r = .63, p < .001$ ) nearly identical to that reported in previous published studies. However, scriptedness for these different types of relationships were not collinear, therefore, analyses were conducted using the total attachment script score, as well as separately using the total scores for parent-child and romantic partner stories. Examining separate script scores also seemed important given that the other variables of interest included maternal behavior and representations related specifically to the parent-infant relationship.

Total secure base scriptedness was significantly, positively related to positive parenting ( $r = .27, p < .01$ ), but significantly, negatively related to negative parenting ( $r = -.23, p < .05$ ) in the free play context (see Table 1). The same pattern of associations was found with parenting during the teaching task ( $r = .17, p = .07$  and  $r = -.16, p = .09$ ), although these correlations were at trend-level significance only. Interestingly, when analyzed separately for secure base scriptedness regarding parent-child relationships and romantic partner relationships, a notably different pattern of results was found. Specifically, secure base scriptedness for parent-child relationships was significantly, positively related to positive parenting in both free play ( $r = .33, p < .001$ ) and teaching contexts ( $r = .25, p < .01$ ) and significantly, negatively related to negative parenting in both contexts ( $r = -.30, p < .01$  and  $r = -.24, p < .05$ , respectively); however, no significant associations emerged between secure base scriptedness for romantic relationships and parenting in either type of parent-infant interaction task. Thus, associations found using the total scriptedness score appeared to be driven primarily by the influence of parent-child scripts and less so by the romantic relationship scripts. These results suggest that, although the two types of scripts are highly related and often combined in analyses, secure base scripts may show specificity in terms of experiences and behaviors within specific types of relationships.

Because recent research has suggested that individuals can also be grouped categorically in meaningful ways according to the quality of their scripts, associations between these categories of secure base scriptedness and maternal parenting behavior in different

interactive contexts were examined using a series of MANOVAs. Again, analyses were conducted based on total secure base script scores, as well as separately based on parent-child script scores and romantic partner script scores. Table 2 displays the results of these group comparisons, with individuals being fairly evenly distributed among the three script groups. As can be seen in the table, there were no significant between-group differences based on the overall model when groups were formed by participants' total secure base script scores or when groups were formed by participants' romantic partner script scores. That is, there were no differences in positive or negative parenting in either interaction context by group. However, when groups were formed based on participants' script scores for the parent-child stories only, significant group differences emerged for all parenting behavior outcomes including positive parenting in the free play ( $F = 4.84, p < .05$ ) and teaching ( $F = 3.56, p < .05$ ) contexts and negative parenting in the free play ( $F = 3.26, p < .05$ ) and teaching ( $F = 3.54, p < .05$ ) contexts (see Table 2). Tukey post-hoc comparisons revealed that mothers in the 'secure script' group demonstrated significantly more positive parenting in both free play and teaching tasks compared to mothers in the 'no/atypical script' group. Furthermore, mothers in the 'no/atypical script' group showed significantly more negative parenting in the free play task compared to those in the 'secure script' group and showed more negative parenting in the teaching task compared to those in the 'marginal/event-focused' group. Thus, consistent with results from correlational analyses, associations between levels of secure base scriptedness and parenting behavior were specific to relationship type (parent-child scripts).

Because of the heterogeneity of the sample in this study, several demographic characteristics were examined in relation to secure base scripts and parenting. More specifically, analyses were re-run with family income and maternal age as covariates; these particular characteristics were chosen because they were both significantly related to secure base scripts and parenting outcomes, they are common covariates in studies of parenting, and they showed good variability in our sample. Results from partial correlations (see Table 1) revealed that, after controlling for income and age, total secure base scriptedness was still significantly, positively associated with positive parenting in free play ( $r = .21, p < .05$ ). However, the association with negative parenting in free play was reduced to a statistical trend ( $r = -.15, p = .10$ ). Not surprisingly, associations with positive and negative parenting in the teaching task became non-significant (from trend-level associations before adding in the covariates). Associations between parent-child scriptedness and both positive and negative parenting in free play remained significant ( $r = .26, p < .01$  and  $r = -.20, p < .05$ , respectively), whereas the association with positive parenting in the teaching task became a trend-level finding ( $r = .18, p = .06$ ); the association with negative parenting in the teaching task was not significant. As expected, associations between romantic partner scripts and parenting behaviors remained non-significant.

MANCOVAs were also conducted to examine between-group differences (based on script score range) while co-varying for family income and maternal age. Planned contrasts were examined when between-group main effects were at  $p < .10$ , but only contrasts that were significant at  $p < .05$  are reported. As Table 2 shows, several between-group contrasts remained significant or marginally significant after accounting for demographic

characteristics including differences in positive parenting for the free play context ( $F = 2.86$ ,  $p = .06$ ) and negative parenting for the teaching context ( $F = 2.31$ ,  $p = .10$ ) when groups were based on parent-child script scores (only). As before, mothers in the 'secure script' group demonstrated significantly more positive parenting in the free play task compared to mothers in the 'no/atypical script' group, and mothers in the 'no/atypical script' group showed significantly more negative parenting in the teaching task compared to those in the 'marginal/event-focused' group.

### Associations between Secure Base Scriptedness and Maternal Reflective Functioning

To provide further support for the validity of the ASA, associations between secure base scriptedness and maternal reflective functioning, i.e., the mother's capacity for thinking about the mental states of her child, were examined using the total script score, as well as script scores for parent-child and romantic partner stories. The correlations in Table 1 show that secure base scriptedness, using all script totals, was significantly, positively related to maternal reflective functioning ( $r = .24$ ,  $p < .01$ ,  $r = .25$ ,  $p < .01$ ,  $r = .19$ ,  $p < .05$ , respectively). That is, mothers with greater access to a secure base script overall, as well as to parent-child and adult partner attachment scripts, demonstrated a greater capacity to think about their child's mental states via a semi-structured representational interview. Although the magnitude of the association between parent-child scripts and reflective functioning was larger than that of the association between romantic partner scripts and reflective functioning, the strength of these associations was not significantly different. After controlling for family income and maternal age, maternal reflective functioning was still significantly associated with total secure base script scores ( $r = .20$ ,  $p < .05$ ) and parent-child script scores ( $r = .19$ ,  $p < .05$ ), but the association with romantic partner script scores was reduced to a statistical trend ( $r = .17$ ,  $p = .07$ ).

Results of MANOVA analyses (see Table 2) indicated significant between-group differences on reflective functioning scores when groups were based on total script scores ( $F = 3.67$ ,  $p < .05$ ), as well as when groups were based on parent-child script scores ( $F = 4.52$ ,  $p < .05$ ). Post-hoc analyses indicated that mothers in the 'secure script' group based on total script scores demonstrated significantly higher reflective functioning compared to mothers in the 'marginal script' group, whereas mothers in the 'secure script' group based on parent-child script scores demonstrated significantly more reflective functioning compared to mothers in the 'marginal' and 'no/atypical script' groups. In contrast, there were no differences on maternal reflective functioning between script groups based on romantic partner script stories. After controlling for family income and maternal age, between-group differences remained for groups based on total script scores ( $F = 2.34$ ,  $p = .10$ ), as well as groups based on parent-child script scores ( $F = 2.98$ ,  $p = .06$ ). Planned contrasts revealed that, again, mothers in the 'secure script' group based on total script scores demonstrated significantly higher reflective functioning compared to mothers in the 'marginal script' group, and mothers in the 'secure script' group based on parent-child script scores demonstrated significantly more reflective functioning compared to mothers in the 'marginal' and 'no/atypical script' groups. That is, all three significant contrasts for reflective functioning level remained after controlling for income and maternal age.

## Discussion

Given the importance of the internal working model construct within attachment theory and research, as well as the need to better understand the structure, organization, and utility of attachment working models, recent research has begun identifying and exploring correlates of 'secure base scripts' in middle-class samples around the world. Studies have consistently found that greater access to secure base scripts is related to more adaptive interpersonal behavior and greater attachment security in offspring, even after controlling for sample demographics (e.g., Bost et al., 2006; Coppola et al., 2006; Vaughn et al., 2007; Wong et al., 2011). Additionally, it has generally been accepted that secure base scripts operate at a more general representational level rather than a more relationship-specific level (Bretherton & Munholland, 2008), as evidenced by the overwhelming use of one global secure base script score as compared to separate script scores for different types of attachment relationships (e.g., parent-child versus romantic partners) in past studies. The present study aimed to extend this small set of existing studies on secure base scripts by examining mothers' scripts within a higher risk sample of women (based on an oversampling of maternal histories of childhood maltreatment) in relation to parenting outcomes. Another important aim was to further explore the question regarding how parent-child secure base scripts and romantic partner scripts may be differentially associated with parenting in this unique sample.

Overall, results using one global (total) secure base script score revealed that a greater level of secure base scriptedness was generally related to more positive parenting and less negative parenting across parent-infant interaction contexts, as well as to a higher level of parental reflective functioning. This pattern was only evident, however, when secure base scriptedness was analyzed as a continuous variable, and not when it was evaluated as a categorical variable. These results are consistent with those reported in a handful of existing studies in middle-class samples showing that secure base scriptedness is positively associated with more sensitive and supportive parenting behavior with young children in free play contexts and during co-construction and reminiscing conversations (Bost et al., 2006; Coppola et al., 2006; Guttman-Steinmetz et al., 2003). However, unlike past studies, the strength of associations was reduced (in some cases to non-significance) after controlling for family income and maternal age, suggesting that other family-level variables may play an additional important role in understanding parenting in the context of parental attachment scripts.

Relationship-specific script scores were also considered separately in all analyses. Importantly, findings revealed clear and consistent associations between parent-child secure base scriptedness and maternal behavior across contexts, as well as to maternal reflective functioning. However, our findings failed to find such associations with romantic partner scriptedness. These differences were apparent when scripts were considered dimensionally (with one exception for the PDI), as well as categorically. Furthermore, with a few exceptions, significant associations between the parent-child script scores (as dimensional and categorical variables) and parenting outcomes remained after controlling for income and maternal age. Thus, findings strongly suggest that, at least in this more vulnerable sample, maternal behavior may be driven more by relationship-specific scripts rather than more generalized scripts or representations of relationships. In fact, these results are consistent

with script theory, which proposes more specific mechanisms of action within specific contexts by adulthood (Fivush, 2006), in contrast to the usual emphasis on the generalizability and stability of broad internal working models over time in many attachment studies (Bretherton & Munholland, 2008).

Indeed, one of the strengths of the ASA is its ability to address some of these conceptual questions about the organization of internal working models. As noted earlier, the consensus up to this point in the literature has been that attachment scripts are more generalized than specific, based on high correlations often found between parent-child scripts and romantic partner scripts (Bretherton & Munholland, 2008; Vaughn et al., 2007; Waters & Rodrigues-Doolabh, 2001; Waters & Waters, 2006; Wong et al., 2011). Yet, Waters and Waters (2006) themselves note that “two measures can be substantially correlated and yet share few, if any, of the same correlates” (p. 192). We would like to provide a few speculations about why attachment scripts may operate at a more relationship-specific level (yet are still related under a more generalized level of representation) in order to help understand the unique pattern of findings in this study.

One possible reason for our findings may be that more specific relationship scripts may be needed, or relied upon more, to elicit relevant behaviors (in this case parent-child scripts to motivate parent behaviors toward the child) in more vulnerable samples. Some emerging research suggests that individuals who have lower levels of secure base scriptedness need to exert greater cognitive control in order to attend to task-relevant behavior in the face of attachment-relevant emotional stimuli, resulting in less efficient behavioral performance (Warren et al., 2010), quite possibly because less secure individuals are more emotionally dysregulated when exposed to attachment-relevant stimuli (Groh & Roisman, 2009). Likewise, trauma, by definition, is emotionally dysregulating and interferes with cognitive functioning. Thus, it may be that mothers in our sample, in the context of interacting with their infant and discussing their infant (emotionally-arousing for most mothers and clearly attachment-relevant) felt more emotionally dysregulated and needed to exert more cognitive effort to attend to the task. If so, less secure mothers may have needed to retrieve a more specific context-relevant script rather than being able to more effortlessly rely upon a generalized, abstract attachment script, helping to explain some of the specific associations found.

This raises another important point; it seems quite possible that the *ease* with which one can *flexibly* retrieve needed scripts in order to behave adaptively and efficiently in different contexts with different people may depend on level of security, in addition to general maturation and accumulation of experience (Fivush, 2006). Therefore, it is not just about whether or not a secure base script is “there” based on past experience, waiting to be retrieved when needed, but also how easily and flexibly a person may utilize different scripts, ranging from very specific “mini-event” interpersonal scripts to more generalized relationship scripts, to fit certain situations. Future research investigating attachment scripts may benefit from further examination of how scripts are retrieved and utilized in terms of specificity and flexibility.



Another possible reason for our findings may have to do with the timing of the script assessment in the present study, which was 16 months after giving birth. At this time, mothers' caregiving systems may be activated more easily and more frequently than when their child is older, because toddlers' dependency is still fairly pervasive. Most mothers are also highly motivated to provide care and protection to their child during the transition to parenthood (George & Solomon, 2008). It is possible, therefore, that the parent-child script stories tap more strongly into the cognitive underpinnings of mothers' caregiving representations at this time, rather than their attachment representations, as has been assumed in past studies based on correlations between attachment scripts and AAI scale scores (Coppola et al., 2006; Waters & Rodrigues-Doolabh, 2001). Although Bakermans-Kranenburg (2006) briefly acknowledged that secure base scripts as assessed by the ASA may reflect scripts related to *caregiving* among parents, most of the attachment script literature has not discussed the possibility that the script stories may be tapping into different behavioral systems (attachment system, caregiving system, romantic/affiliative system). This oversight likely stems from the current consensus that the script assessment taps more generalized relationship scripts, based on the overwhelming use of the total ASA script score in past studies.

The results regarding associations with maternal reflective functioning in this study provide partial support for this possibility. Although all dimensional script scores were significantly related to reflective functioning via an interview assessing representations of the infant, only significant associations with total secure base scriptedness and parent-child scriptedness (but not romantic partner scriptedness) remained after covariates were considered. Furthermore, when mothers were grouped according to level of script security, there were only significant differences in reflective functioning for groups based on parent-child scripts; no differences were found between groups based on total script scores or romantic partner script scores. Because the representational interview (the PDI) assesses aspects of the caregiving system (not the mother's attachment system), it seems possible that the parent-child scripts assess caregiving representations among mothers who have recently given birth. Future research should further consider and examine the possibility that attachment scripts may be tapping into maternal representations from different behavioral systems with their own inherent set of motivations, goals, and level of security.

Several limitations of the present study should be noted. First, the attachment script assessment (and reflective functioning interview) were administered at the 16 month protocol point, whereas maternal behavior was assessed at 7 months. Thus, although our conceptual model proposes that attachment scripts drive maternal behavior, our measures were administered in the opposite order. However, at least one other study assessing maternal scripts and behavior has done this (Coppola et al., 2006), and there is evidence of strong stability of script scores over time (Vaughn et al., 2006). Therefore, we believe that mothers' script data reflect script knowledge that existed before maternal behavior was assessed with the infant. Also, for both the free play and teaching tasks, the second problematic parenting factor (made up of Anxiety and Negative Affect) failed to have adequate reliability, and therefore, could not be used. This may have been, in part, because the Anxiety scale had the lowest inter-rater reliability. However, these findings also suggest

that different types of ‘negative’ parenting do not necessarily co-occur, and it’s important to keep in mind that conclusions from the present study about negative parenting only represent a hostile-intrusive form of negative parenting. Although the strategy of oversampling for childhood maltreatment is a strength of the study because of the opportunity to assess associations within a unique, vulnerable sample, the generalizability of results is somewhat limited. Furthermore, although the present study examined important demographic characteristics in relation to study variables and found that broader contextual factors may alter the strength of associations between parents’ scripts and their parenting (unlike past studies with low-risk samples), it is important for future research to examine these variables within more economically disadvantaged samples. Indeed, associations between study constructs were generally in the small to moderate range, indicating that other important variables need to be identified.

Relatedly, although it was not the primary aim of this study, it was surprising that maternal trauma variables were unrelated to levels of secure base scriptedness. While no prior studies have examined these associations specifically, results are in contrast to what would be expected based on attachment theory and run counter to existing studies documenting relations between childhood trauma and insecurity on the AAI (Bailey, Moran, & Pederson, 2007; Lyons-Ruth, Yellin, Melnick, & Atwood, 2003). Similar to comments made above, one possible reason may be that associations between these experiences are more pronounced in the context of other important risks; demographically speaking, this sample was functioning fairly well and in the more normative range. Thus, it may be that trauma and script insecurity may be significantly related in a more disadvantaged sample. It is also possible that associations found in other studies were due to more extreme maltreatment experiences; in the present sample, childhood maltreatment *severity* was relatively low (average score on the CTQ total was 43.82, with a possible range of 25–125), even though most women had experienced one or more forms of maltreatment. Additionally, in past studies, trauma experiences have typically been assessed *during* the attachment assessment (AAI), with very few studies obtaining a separate measure of childhood trauma severity. Further, as noted above, if script stories were tapping the caregiving system in this sample of postpartum mothers, strength of associations with experiences more closely tied to one’s own attachment system may have been reduced. Clearly, more research is needed to better understand trauma experiences in relation to secure base scriptedness.

A number of important conclusions can be drawn from the current study. Our findings further support the use of the recently developed ASA as an important additional measure of attachment-oriented representations. The apparent ability of the measure to identify the cognitive components of the broad and abstract internal working model construct, as well as possibly the organization and structure of more relationship-specific attachment scripts (i.e., parent-child and romantic partner scripts), seems to be propelling a new wave of attachment research focused on a “level of greater specificity” in our understanding of working models (Waters & Waters, 2006, p. 193). Although the measure’s emphasis on cognitive content and structure is an advantage over other representational measures, its use may not be this limited. For instance, it is likely that script stories can also be analyzed for other important aspects of representational quality such as coherence, distortion, and ill-organization, based

on specific defensive processes outlined by Bowlby (1980) and others (Bretherton, 1990; George & Solomon, 2008). Also, even though the script assessment does not yield different categories based on *type* of attachment insecurity, its use in a more clinical sample appears feasible and useful.

More broadly, this research provides important support for the application of script theory to attachment relationships and for the probability that maternal secure base scripts are transmitted to the child very early on in life through aspects of communications and interactions with the child, as has been speculated and shown by others (Bost et al., 2006; Bowlby, 1973, Bretherton, 1990; Guttman-Steinmetz et al., 2003). Findings support the use of a number of existing, dyadic attachment-oriented interventions which aim to alter maternal representations and parental reflective functioning in order to improve parenting behavior and enhance the likelihood of child attachment security. Examples of such interventions include Child Parent Psychotherapy (Lieberman & Van Horn, 2005), Minding the Baby (Slade, Sadler et al., 2004), and Circle of Security (Powell, Cooper, Hoffman, & Marvin, 2009). More specific knowledge about a person's access to and utilization of relationship-specific scripts may provide another useful framework for guiding such interventions.

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**Table 1**

Associations among study variables and descriptive statistics

Variable	1	2	3	4	5	6	7	8
1. ASA Total	1.0							
2. ASA Mother-Child Total	.90*** (.90***)	1.0						
3. ASA Romantic Partner Total	.90*** (.91***)	.63*** (.63***)	1.0					
4. Free Play Positive	.27** (.21*)	.33*** (.26**)	.15 (.12)	1.0				
5. Free Play Negative	-.23* (-.15 <sup>+</sup> )	-.30** (-.20*)	-.12 (-.08)	-.81*** (-.82***)	1.0			
6. Teaching Task Positive	.17 <sup>+</sup> (.11)	.25** (.18 <sup>+</sup> )	.06 (.03)	.77*** (.77***)	-.60*** (-.63***)	1.0		
7. Teaching Task Negative	-.16 <sup>+</sup> (-.08)	-.24* (-.15)	-.05 (-.01)	-.69*** (-.69***)	.75*** (.72***)	-.80*** (-.83***)	1.0	
8. PDI Reflective Functioning Total	.24** (.20*)	.25** (.19*)	.19* (.17 <sup>+</sup> )	.33*** (.22*)	-.28** (-.18 <sup>+</sup> )	.21* (.13)	-.16 <sup>+</sup> (-.06)	1.0
<i>M</i>	3.33	3.26	3.41	3.45	1.74	3.21	2.08	4.40
<i>SD</i>	1.00	1.11	1.12	.62	.59	.76	.77	1.38
Range	1.13–5.75	1–5.75	1–6.50	1.75–4.58	1–3.63	1.46–4.54	1–4.25	1–8

Note: ASA = Attachment Script Assessment, PDI = Parent Development Interview. Values in parentheses are partial correlations, controlling for family income risk (defined as < \$20,000/year) and maternal age.

+ *p* .10.

\* *p* < .05.

\*\* *p* < .01.

\*\*\* *p* < .001.

**Table 2**  
Differences in maternal behavior and representations across high to low secure base script groups

Tasks	Free Play +	Free Play -	Teaching +	Teaching -	PDI RF Total
Groups	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
ASA Total					
Secure <sup>a</sup> ( <i>n</i> = 41)	3.55 (.55)	1.65 (.53)	3.31 (.70)	1.97 (.75)	4.85 (1.24)
Marginal <sup>b</sup> ( <i>n</i> = 37)	3.53 (.60)	1.67 (.55)	3.26 (.75)	2.05 (.70)	4.11 (1.26)
No/Atypical ( <i>n</i> = 37)	3.25 (.68)	1.90 (.67)	3.05 (.83)	2.24 (.84)	4.19 (1.52)
<i>F</i> -statistic	2.93 <sup>+</sup> (1.79)	2.25 (1.27)	1.32 (.61)	1.22 (.33)	3.67 <sup>*, a &gt; b</sup> (2.34 <sup>+, a &gt; b</sup> )
ASA Mother-Child Total					
Secure <sup>a</sup> ( <i>n</i> = 41)	3.61 (.55)	1.59 (.48)	3.37 (.70)	1.98 (.75)	4.90 (1.11)
Marginal <sup>b</sup> ( <i>n</i> = 35)	3.51 (.66)	1.69 (.64)	3.29 (.81)	1.92 (.75)	4.14 (1.50)
No/Atypical <sup>c</sup> ( <i>n</i> = 39)	3.21 (.59)	1.93 (.61)	2.97 (.74)	2.34 (.75)	4.10 (1.39)
<i>F</i> -statistic	4.84 <sup>*, a &gt; c</sup> (2.86 <sup>+, a &gt; c</sup> )	3.56 <sup>*, a &lt; c</sup> (1.56)	3.26 <sup>*, a &gt; c</sup> (1.92)	3.54 <sup>*, b &lt; c</sup> (2.31 <sup>+, b &lt; c</sup> )	4.52 <sup>*, a &gt; b, a &gt; c</sup> (2.98 <sup>+, a &gt; b, a &gt; c</sup> )
ASA Romantic Partner					
Secure ( <i>n</i> = 47)	3.51 (.58)	1.69 (.59)	3.20 (.70)	2.10 (.75)	4.64 (1.29)
Marginal ( <i>n</i> = 34)	3.52 (.59)	1.63 (.48)	3.39 (.78)	1.86 (.69)	4.47 (1.50)
No/Atypical ( <i>n</i> = 34)	3.28 (.69)	1.91 (.67)	3.04 (.81)	2.28 (.83)	4.00 (1.30)
<i>F</i> -statistic	1.73 (.60)	2.23 (.55)	1.02 (1.04)	2.65 <sup>+</sup> (1.41)	2.24 (1.20)

Note: ASA = Attachment Script Assessment, PDI-RF = Parent Development Interview Reflective Functioning; Secure Script Range = scores of 3.8+, Marginal/Event Focused = scores between 3.0 and 3.7, No/Atypical Script = scores below 3.0 (H. Waters, personal communication, November, 2013). Values in parentheses indicate results after controlling for family income risk (defined as < \$20,000/year) and maternal age.

<sup>+</sup> *p* .10.

\* *p* < .05.

\*\* *p* < .01.

\*\*\* *p* < .001. All listed paired contrasts are significant at *p* < .05.