

8-2004

Relation Between Children's Attachment Representations and Secure Base Behavior

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RELATION BETWEEN CHILDREN'S ATTACHMENT REPRESENTATIONS
AND SECURE BASE BEHAVIOR

A Thesis
Submitted to the Faculty
of
Purdue University
by
Patricia S. Bárrig J6

In Partial Fulfillment of the
Requirements for the Degree
of
Master of Science

August 2004

This paper is dedicated to my family; my dad Ricardo, who is not longer with me, my mom Susana, my sisters Jessica and Claudia, my brothers Ricardo, Gustavo and Fernando, my niece Estefanía, my nephew Nicolás, and my granny Irma

ACKNOWLEDGMENTS

I gratefully thank my whole committee, Drs. German Posada, Karen Diamond and William Graziano for their advice and guidance. My endless gratitude is for Ted Wachs and Carol Czaja for their affection and guidance in this adventure.

I truly appreciate Garene Kaloustian for all her help and support throughout this process. Thanks also to all my colleagues and friends in CDFS Department that helped me to meet this goal in such wonderful and thoughtful ways.

A special thank you is for the research team, graduate and undergraduate students, that worked hard to collect the data, and to all the children and their families that gave their time and trust in this project. I could not have done this study without them.

A final thank you is for my “compañero” Mike Appelhans for his help, support and love.

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ABSTRACT

Bárrig J6, Patricia S. M.S., Purdue University, August, 2004. Relation between Children's Attachment Representations and Secure Base Behavior. Major Professor: German Posada.

The aim of this study was to test the hypothesis that there is a relation between preschool children's forming attachment representations and the organization of their secure base behavior. Subjects were recruited from Greater Lafayette, Indiana. Participants were 50 children 36 to 67 months of age. Each child was presented an attachment story completion task to make up stories regarding attachment events. In addition, information about their secure base behavior was collected through live observation at home and park. Attachment representations were assessed on the extent of scriptedness and elaboration of the secure base phenomenon shown in the stories. A correlational model was used to examine the relationship between secure base behavior and cognitive aspects of attachment representations. It was hypothesized that more secure children will display more scripted and elaborated attachment representations. In addition, it was suggested that specific domains of the secure base phenomenon such as smooth interactions with mother and other adults, proximity and physical contact with the mother will also be positively correlated with scriptedness and content elaboration. A modest and significant correlation was found between secure base behavior and scriptedness but not with content elaboration. Smooth interaction with mother and with

other adults seemed to be important for the organization of the secure base scripts but not for elaboration. Age of the child was positively related with scriptedness. Significant differences between boys and girls were found being girls more scripted in their stories than boys. It seemed that some contextual factors such as birth order position or the specific setting of assessment may be accounting for differences in secure base behavior scores. Both contextual and methodological issues were discussed. Limitations of the study and implications for future research were also included.

INTRODUCTION

Parent-child attachment relationships play a central role in children's development. These attachment relationships with the mother, father, older siblings, relatives or even family friends are important for the children's welfare and social emotional development (Thompson, 2000). Research indicates that security in the child-mother attachment relationship is significantly associated with important social outcomes in childhood such as social competence (e.g., Bost, Vaughn, Washington, Cielinski, & Bradbard, 1998; Pastor, 1981). Some of the issues studied by attachment theorists include questions such as how early experiences in close relationships affect social and personality development, or what internal and external factors mediate continuity and change in socio-personality functioning early in life (Thompson, 2000). Understanding the development of child-mother relationships will clarify the possible ways in which these relationships contribute to the individual's social and emotional development.

Bowlby (1969/1982, 1973) stated that internal working models or attachment representations are constructed from the experienced interaction patterns with the primary attachment figure and that they influence the individual's expectations about the caregiver as a secure base from which to explore and the individual's secure base behavior (Bretherton & Munholland, 1999). There have been some attempts to examine internal working models of self and attachment figures through representational

assessments in children (Bretherton, Ridgeway, & Cassidy, 1990; Cassidy, 1988; Main, Kaplan, & Cassidy, 1985; Waters, Rodrigues & Ridgeway, 1998).

The methodologies used and the results among these studies vary. Most of the research that has addressed the link between attachment representations and secure base behavior has been conducted during later childhood. The relation between these constructs seems to be positive (Page, 2001). However very little has been said about the organization of attachment-related representations and their association with secure base behavior. Moreover, the way the secure base phenomenon is organized in preschool children has not been tested in depth. This study contributes to a better understanding of the relation between children's representations of attachment relationships and children's secure base behavior. I was interested in investigating the relations among these attachment constructs during early childhood when it is developmentally advantageous to assess attachment at a representational level (Bretherton et al., 1990).

It is suggested that attachment representations are organized as scripts based on children's repeated experiences and interactions with the primary caregiver (Bretherton et al., 1990; Waters et al., 1998). Script theory provides a novel frame to understand the underlying cognitive structure of representations of attachment-related events via verbal recounting. This study tested for the concurrent association between preschool children's representations of attachment relationships and their secure base behavior, and helped to illustrate and determine the relation between representation and behavior in a US Midwest population. It is important to note that the present study was based on a larger study conducted by German Posada, where maternal sensitivity and mother's

representations are also taken into account in order to determine the intergenerational transmission of attachment representation and secure base behavior.

LITERATURE REVIEW

Attachment Theory

Bowlby (1958, 1969/1982) defined attachment as an emotional and affectional bond that an individual forms to another person, such as a main caregiver or a partner, and that endures in time and binds them together in space. Specifically, the strong bond between the mother and the child is a result of a biologically based propensity for proximity that arose through the process of natural selection (Cassidy, 1999). People are continually renegotiating the balance between their connections to others and their independence and autonomy as they encounter each new developmental phase (Cicchetti, Cummings, Greenberg, & Marvin, 1990).

Bowlby described how attachment develops in terms of an emerging preference for one or a few figures, the onset of secure base behavior, and a change in the representation of attachment figures during the childhood transition from sensorimotor to representational thought (Waters, Kondo-Ikemura, Posada, & Richters, 1991). When a child is born, he or she is not attached to the mother; there are orientation and signals towards any person around him or her. In the last phase of the development of attachment, from 24-30 months of age and beyond, a goal-corrected partnership is formed. In this phase the child begins to take into account needs and motivations of the attachment figure and can wait longer than before for the expected behavior from this figure (Bowlby, 1969/1982; Waters & Cummings, 2000; Waters et al., 1991).

Secure base concept. Central to attachment theory is the notion of secure base behavior. In observing child-mother interactions, Ainsworth (1967) noticed that in addition to seeking proximity, infants use their caregiver as a base from which to explore. “The hallmark of the secure-base phenomenon is the apparently purposeful balance between proximity seeking and exploration at different times and across contexts” (Posada et al., 1995, p. 27). In this sense, the term “secure attachment” refers both to skillful secure base use over time and contexts and to confidence in a caregiver’s availability and responsiveness (Waters & Cummings, 2000).

According to Bretherton and Munholland (1999), as long as an attached child feels at ease, the mother or attachment figure functions as a secure base of operations whose presence fosters exploration, play, or other social behaviors. This function of physical and psychological protection is based on the mutually responsive quality of interactions between an attached child and his or her attachment figure. Current child-mother interactions, the history of previous interactions and the context in which the attachment relationship develops determine the organization of a child’s secure base behavior.

In order to assess secure base behavior beyond infancy and to be able to observe the mother-child interaction in natural settings, some methodological efforts have been made. For example, the Attachment Q-sort (AQS) developed by Waters and Deane (1985) is the most widely used alternative to the Strange Situation laboratory procedure developed by Ainsworth and Wittig in 1969 (Bretherton, 1992). In the Strange Situation procedure infants are classified in three main groups, B or Secure, and both A or Avoidant and C or Ambivalent as the insecure groups (Thompson, 1998). On the other

hand, the AQS uses a different classification system where the child is described and compared to a criterion sort of the ideal secure child; higher scores meaning higher security description and lower scores meaning lower security description. The AQS provides an economical methodology to assess one to five year-old children's security, to define the behavioral referents of the secure base concept, and to stimulate interest in normative secure base behavior and individual differences in attachment security beyond infancy.

Children's attachment representations. Bowlby (1969/1982, 1973) proposed that children after infancy construct mental models about attachment relationships based on their experiences with their attachment figures. Children learn about their attachment relationships through daily interactions and this knowledge is kept in what is called mental representations about attachment. Even though they are considered stable, these constructs are open to change with experience (Bowlby, 1969/1982; Bretherton, 1991; Thompson, 1998). In fact, many believe that experiences inconsistent with mental representations of children would produce change (Bowlby, 1973; Bretherton et al., 1990; Schank, 1982). Representations of early experience seem to play an important role in attachment relationships after infancy (Waters & Cummings, 2000), when the use of language and signals become increasingly important.

Specifically, Bowlby called these representations "internal working models," a metaphor used by Kenneth Craik (1943), one of the pioneers of "artificial intelligence." He used this term to describe the ability to construct and use mental models to evaluate the environment, and thus decide upon alternatives of actions through more flexible and adaptative behaviors (Bretherton & Munholland, 1999). An internal working model

guides the interactions of both the child and the mother, it serves to regulate, interpret, and predict both the attachment figure's and the self's attachment behavior, thoughts, and feelings (Bowlby, 1969/1982; Bretherton & Munholland, 1999). It also reflects and communicates about past and future attachment situations and relationships, facilitating "the creation of joint plans for proximity regulation and the resolution of relationship conflicts" (Bretherton & Munholland, 1999, p. 90).

In their study of security in infancy, childhood and adulthood, Main et al. (1985) identified stability in attachment organization, (security at one year of age was related to representations at six year of age) and suggested that children's individual differences in attachment style can be seen as differences in the internal working models of the self in relation to attachment. These attachment representations embrace emotions and feelings, and also attention, memory and cognitive processes. Both affective and cognitive components are formed out of generalized event representations. Moreover, the events out of which internal working models in attachment relationships are formed are attachment relevant events that may change over the course of the partner's absence and that can be altered only in response to changes in concrete experiences (Main et al., 1985). This means that they are not considered as templates but rather as structured processes serving to get, or limit access to, information.

The development and use of the Adult Attachment Interview (AAI) by Main and colleagues, suggest that the correspondence between the parents' attachment representations of early experiences with the care they provide to their children is meant to foster children's secure base behavior (Thompson, 1998). It seems then that individual's childhood experiences with primary caregivers form a strong influence for

later relationships (Bowlby, 1969/1982, Main et al., 1985; Waters & Cummings, 2000). That is why the study of early relationships that individuals have with their parents or primary caregivers, specifically, the attachment representations that are formed in these interactions, has relevance for understanding the processes involved in the development of attachment relationships.

Assessments of children's attachment representations. Representational processes cannot be seen through direct observation (Main et al., 1985). Current attachment assessments of internal working models for children are based on the notion that each individual constructs a mental representation of experience with attachment figures and are focusing more on children's narrative, language, and cognitive skills (Oppenheim & Waters, 1995).

According to Pederson and Moran (1995), one of Bowlby's most important insights concerned relevance of caregivers' verbal communications about early attachment experiences and related emotions as profoundly significant for later adjustment. Bowlby's ideas about the importance of child-mother communication in attachment development are reflected in recent trends in assessment, particularly in the use of interviews and both mothers and children's narratives to assess attachment status. Underlying these assessments is the notion that internal working models determine key characteristics of children's attachment-related narratives, which are supposed to reflect mothers and children's attachment representations. However, empirical work on this issue is scant and plagued with some methodological limitations.

The narrative assessments used with children range from interpreting presented pictures or three-dimensional enactments, (Cassidy, 1990; Klagsbrun & Bowlby, 1976;

Main et al., 1985), to more open-ended procedures such as completing story stems (Bretherton et al., 1990; Cassidy, 1988). According to Oppenheim and Waters (1995), these narrative assessments suggest that there is a period where narrative assessments and descriptions of secure base behavior in preschool children can be used concurrently, and that early attachment representations involve temporal-causal elements. However, children's narratives are not consistently organized by explicit causal links until later in childhood. It seems that individual differences of consistency in mother-child interaction might have an effect on the coherence and elaboration of the individual's narratives. That is why it is important to discover what leads the child to abstract this consistency from his or her interactions (Oppenheim & Waters, 1995).

A New Approach to Assess Attachment Representations

Research on infant memory gives evidence to support the idea that even infants may register daily events in their interactions with the main caregiver as generalized episodes that include actions, sensations, goals and emotions of self and other in a temporal, physical and causal relationship (Bauer, Wenner, & Kroupina, 2002; Farrant & Reese, 2000). This information can be seen through pretend play and verbalizations in toddlers for example, and is organized as event schemas or scripts (Bretherton, 1991; Bretherton et al., 1990; Page & Bretherton, 2003; Waters et al., 1998).

The new approach to assessing attachment representations in children is based on the idea that these event schemas or scripts guide representational processes, and that they contain information about repeated similar events in an individual's life (Bretherton et al., 1990). According to this author, toddlers' pretend play and verbalizations about emotion, show that information about daily events in their interactions with the caregiver is available

in a schematic form. For example, when a two-year-old child plays separation-reunion situations with dolls, he or she may be showing his or her working model of actual experiences with parents (Bretherton et al., 1990).

Event representation and script theory. Schank and Abelson (1977) introduced the concepts of scripts, plans and goals to handle story-level understanding. They defined a script as “a predetermined, stereotyped sequence of actions that defines a well-known situation . . . a structure that describes appropriate sequences of events in a particular context.” (p. 41) Specifically, scripts define the actors, actions and props that are needed to reach that goal within specified circumstances, like for example going out for dinner or a birthday party (Farrar & Goodman, 1992; Nelson, 1986).

In later work, Schank (1982) stated that all memory is episodic, which means that it is organized around personal experiences rather than semantic categories. Research suggest that events are understood in terms of scripts, plans and other knowledge structures as well as relevant previous experiences (Farrar & Goodman, 1992; Fivush, Kuebli, & Clubb, 1992; Schank, 1986). Although most people use the same script, most people don't reach the same outcome.

Since scripts are learned and are the result of experience in a particular context, adults are the ones that guide and direct this learning in their interactions and conversations with their children who learn the script even as they act within the scripted event (McGuigan & Salmon, 2004; Nelson, 1993; Nelson, 1996; Nelson & Fivush, 2000). According to Nelson (1986, 1993), partial knowledge of the script supported by the knowledge of others is sufficient to guide action and interaction and to lead to more complete acquisition (Nelson, 1986, 1993).

Children's scripts. For Nelson (1986, 1993), children's scripts should show an invariant sequential structure and they should be oriented towards a goal. Moreover, children's verbalizations should show a general form and should include slots for variables, indicated by the use of general terms for things that may vary from one occasion to another such as foods (apple or cookie) or games (peek-a-boo or Lego's). Also, children of different ages participating in the same event may have different perspectives on that event because of different degrees of experience with it and also due to differences in language abilities (Farrant & Reese, 2000; Fivush et al., 1992; Slackman, Hudson, & Fivush, 1986).

Since scripts are based on shared social experiences, children should show a high degree of commonality across those who share similar experiences. Furthermore, since the scripts may reflect the underlying cognitive structure of representations, they should be consistent from one time to another for a given child. This means that the same sequence of events should be expected to be found on each occasion (Fivush et al., 1992). Even though not all children are supposed to fulfill this assumption, the presence in some degree of consistency of a script over time is expected (Nelson & Gruendel, 1986). In general, young children seem to have well-organized knowledge about familiar daily events in life. This knowledge is accessible to verbal recounting and it reflects certain basic characteristics of the script model (Bretherton, 1993; Nelson & Gruendel, 1986). If aided by props, preschool children can capably describe these routine events (Bretherton, 1993; Oppenheim, 1990).

Secure base scripts. Waters et al. (1998) have proposed that secure base scripts are the central features of mental representation organization in that they presumably reflect the typical experiences in the particular domain of attachment relationships. These

scripts consist of “specific cognitively based characteristics that would have to be scored for presence or absence in secure children’s story completions” (Waters et al., 1998; p. 213). According to Waters et al. the balance between proximity seeking and exploration can be summarized in terms of a prototypic secure base script.

Based on Ainsworth’s work on child-mother interaction, those authors defined the key components of the secure base script as the child exploring away from the caregiver, child maintaining contact or returning when necessary, some difficulty or threat arising, caregiver approaching or child seeking proximity, dealing with the difficulty, and the caregiver enabling the child to return to exploration. Children participating in secure attachment relationship with their mothers would then have a clearly scripted narrative illustrating the secure base phenomenon based on their own experiences.

Waters and colleagues (1998) extended the analysis of Bretherton, Ridgeway, and Cassidy’s data (1990) where secure base scriptedness scored from story completions were related to secure base behavior. The narrative techniques used with children at age 37 and 54 months in this new analysis revealed that secure children are able to produce more coherent and more elaborate attachment relevant narratives (Page, 2001). In their study, Waters and colleagues point to important associations between children’s narratives about attachment, scriptedness and both concurrent and earlier observational assessments of attachment behavior. These types of narrative measures provide a new perspective on attachment relationships.

The secure base narrative or secure base script technique thus pursues relevant script-based features in children’s story productions and gives information about key cognitive features underlying attachment representations leading to a more detailed,

cognitively based understanding of attachment internal working models. This is lacking in research about internal working models of attachment in children.

Taking a script-based perspective in studying the formation of attachment representations may allow researchers to look into the organizational features of such representations. In addition, it permits study of their developmental progression; for instance, content elaboration is viewed as an important feature of scripts in that coherent and well-developed representations allow individuals to produce narratives richer in detail and actions. Experience and developmental level can increase the number of actions per script while coherence is assumed to be a defining feature of secure narratives (Farrant & Reese, 2000; Fivush & Vasudeva, 2002; Waters et al., 1998).

Bowlby stated that attachment representations lead the individual to expectations about the caregiver as a secure base from which to explore, however the organization of these attachment representations has not been tested in depth. In this sense, I planned to make theoretical contributions studying an issue that is not well known at this point. An issue of significance was to investigate the relations among attachment constructs such as representations and secure base behavior during early childhood since most of the previous studies have been done during later childhood. Assessing these two aspects of attachment at an age where language and symbolic representation of reality start to be dominant will permit us to get both behavioral and cognitive information about attachment organization.

The research question of this study was: Are children's secure base behaviors during interactions related to children's attachment representations? Specifically, I was interested if children's security scores and specific aspects of child secure base behavior,

such as smooth interactions with mother and other adults, physical contact, and proximity to the mother, were significantly related to cognitive characteristics, such as scriptedness and content elaboration, of children's attachment representations. It was hypothesized that the more secure children were described in their interactions with their mother, the more scripted and elaborated children's representations of the attachment relationships will be. Moreover, it was expected that children more smooth in their interactions with the mother and other adults and children displaying more proximity and physical contact with the mother, will show more scripted and elaborated attachment representations. In addition, verbal ability was not expected to be related to scriptedness, content elaboration or secure base behavior.

METHOD

Participants

The sample was drawn from Greater Lafayette in Tippecanoe County, Indiana, which includes the cities of Lafayette and West Lafayette. Subjects were 50 children 36-67 months of age ($M = 51.2$ months, $SD = 8.68$), 24 girls and 26 boys. Children were predominantly Caucasian (78%) while the rest was African-American (6%), Mexican-American (4%), Asian-Korean (2%), Asian-Indian (2%), Hispanic (2%), Greek (2%) or Mix (4%). All but two children came from intact families, 46% were the oldest born child of the family, and the majority (80%) had at least one sibling or more.

Mothers' and fathers' respective mean ages were 34 (range 23-47) and 36 (range 25-60). All mothers but two completed high school and 76% had a bachelor's degree or more. Even though all of them reported to be the child's main caregiver, 28% reported to share caregiving responsibilities with their husbands. All fathers but one completed high school and 73.5% had a bachelor's degree or more. The average approximate family yearly income was \$74,000 and the median was \$70,000 (range 10,000-190,000).

Procedures

A research assistant distributed flyers in local preschool and child care centers containing a brief description of the study and including the project phone number, email and address. After potential subjects were identified, the research assistant invited the families by phone or email and waited until they made evident their interest in

participating in the study. After agreeing to participate in the study, the research assistant scheduled the first visit.

Two visits per family were conducted, one at the park or playground, and one at home. The order of the visits, either home or park, depended upon the preference of the family and weather conditions. After signing the consent form and completing a brief demographic form (Appendix A), the research observers started the observations. The visits lasted about 2½ hour each. In the visit at the park, the research observers went to the house and stayed there for 15 to 20 minutes. When ready, mother, child and the observers went to the park chosen by the mother and stayed there for about one hour. Mothers were instructed to go about their activities as usual. After 1 hour, mother, child, and observers went back to the house for about 35 to 40 minutes to continue the observation of mother-child interactions. In the visit at home mothers were also instructed to go about their usual daily activities. One hour into the visit, mothers and children were asked to respond separately to a set of attachment related scenarios sitting next to a table, and were administered the Peabody Picture Vocabulary Test, third edition, (PPVT-III) after finishing the stories. After each visit, two observers described the child's behavior using "The attachment Q-set" and independently filled out the respective observation form for the participant for the day.

Information collected includes demographics for the family, descriptions of child secure-base behavior during child-mother interactions at home and at the park, child narratives about attachment related events and children's verbal ability. Upon completing participation, families received \$20 and two small toys for the child.

Measures

Attachment Q-Set. Children's secure-base behavior was described with The Attachment Q-Set, version 3.0 (AQS, Waters, 1995; Appendix B). The AQS evaluates attachment security (i.e., organization of secure base behavior) and has been validated in various studies (e.g., Posada et al., 1999; Vaughn & Waters, 1990). The AQS consists of 90 items that describe a child's behavior relevant to the use of mother as a secure base. The AQS was completed after each home/playground visit by two observers who sorted the items along a continuum from "least characteristic" to "most characteristic" using a distribution of 9 piles with 10 items each. The score of an item corresponds to the number of the pile in which it was placed. Interobserver reliability for child behavior at home and park was obtained in 43 and 36 cases respectively. Mean interobserver reliability based on the agreement between the descriptions for home and park was .76 (range .51 to .90) and .76 respectively (range .55 to .92). After each visit and once reliability was computed, items discrepant by more than three points were discussed and revised by the two observers as appropriate. A global child's security score was obtained by correlating her or his averaged revised description with a criterion sort of the theoretically secure child. The correlation index obtained, yielding a score from -1 to 1, with 1 representing a secure attachment and indicating how similar a child's behavior is to behavior regarding the optimal use of the mother as a secure-base. Even though there was a significant relationship between observations at the home and at the park, $r(50) = .41, p < .01$, scores for each visit were used separately in the analyses.

In addition to the security scores at home and at park, children were also scored on four scales conceptually related to the construct of using the mother as a secure base

and drawn from the AQS. These items included behavior central to the secure base phenomenon, child behavior when interacting with the mother, and child behavior when interacting with other adults mediated by the mother (Posada, Waters, Crowell, & Lay, 1995; Appendix C):

1. Smooth interactions with mother (SIM, 17 items, internal consistency = .93): this scale refers to the child's emotional tone when interacting with the mother and his or her readiness to interact with her. Some other items concern issues of compliance (i.e. sharing with mother or following mother's suggestions readily).

2. Proximity to mother (PM, 13 items, internal consistency = .89): this scale refers to the child going back to mother, keeping track of her location, and staying near to or far from her. In addition refers the child goes back to the mother when upset, bored, and when needing help.

3. Physical contact with mother (PCM, 7 items, internal consistency = .75): this scale refers to the child's enjoyment of physical contact with his or her mother. Some items are concerned with the child being comforted by contact with the mother.

4. Interactions with other adults (IOA, 13 items, internal consistency = .90): this scale refers to the child's readiness to interact, to share, and to enjoy interactions with adult visitors. Other items involve interactions with other adults mediated by the mother's encouragement and support.

Attachment story completion task. Children's attachment representations were assessed through narratives regarding attachment events and were obtained by presenting children with an attachment story completion task (Bretherton et al., 1990; Waters et al., 1998; Appendix D). Children used small dolls and props to complete stories regarding

situations that were presumed to elicit attachment issues such as fear, pain, disobedience, separation, and reunion (Altman, Monk, Jones, & Sosa, 1993; Bretherton et al., 1990). Four doll-play scenarios and story stems to be completed were used and presented one at a time in the following order: Spilled Juice, Hurt Knee, Monster in the Bedroom, and Separation-Reunion.

The story stems were accompanied by a culturally appropriate doll set that included a mother, a father, a younger brother or sister, and an older sibling, and were enacted in a three-dimensional display. The child in the enactment was the younger doll figure. The two child dolls were always of the same sex as the participant. The story stems task began with a warm-up story, "The birthday party" to ensure that the child understood the procedure. After presenting children with the story stems, they were asked to show and tell what happened next in each story. Children's responses were videotaped for latter scoring and codification. Both children's verbalizations and behaviors regarding the story actions were included in the protocols.

As Waters and colleagues (1998), I did not considered the fourth story used in Bretherton and colleagues study (1990) in our analyses. The reason is that this story, called Separation-Reunion, is made up of two parts. The first part involves a child-parent separation and the second deals with the child-parent reunion. Due to the two-part nature of the story, it was considered to be more difficult to score. This story was omitted from the present study on that basis (Waters et al., 1998).

The story stems used in this study are as follows:

- a) Spilled Juice: While the family is seated at the dinner table, the younger child accidentally spills juice on the table, and the mother remarks about it. Here, an attachment figure is seen in authority relation to the child.
- b) Hurt Knee: While the family is taking a walk in the park, the younger child climbs a rock, falls off, hurts a knee, and cries. Here, pain is used as an elicitor of attachment and protective behavior.
- c) Monster in the Bedroom: After the child is asked to go upstairs to bed, the child cries out about a monster in the bedroom. Here, fear is used as an elicitor of attachment and protective behavior.

Empirical support for the reliability and validity of the story stems was first reported by Bretherton and colleagues (1990) who found that security scores of the stories were significantly related to the Strange Situation scores of the participants, $r(29) = .33, p < .05$. Moreover, story security scores were also significantly correlated with the scores of the Attachment Q-Set, $r(29) = .61, p < .001$ and with the scores of the Separation-Reunion procedure, $r(28) = .49, p < .01$. In an analysis of the same data, Waters and colleagues (1998) reported that the story stems scores based on their prototypic scriptedness at both 37 and 54 months, were significantly correlated with the Attachment Q-Set scores obtained when children were 25 months, $r(24) = .39, p < .03$ and $r(24) = .41, p < .02$ respectively. These authors used the 25-month-olds' Q-sort data because the correlation with the story stems scores were stronger than at 37 months of age.

The procedure was videotaped for later transcription and it lasted around 15-25 minutes. Both, children's verbalizations and enactments were taken into account. Each story was scored on scriptedness using a 6-point scale, in which 1 = least scripted and 6 = most scripted, and on content elaboration counting the number of idea units. An idea unit was defined as a distinct idea given by the child. Enactments produced by the child were considered as idea units only when they were not reiterated by a verbalization (Waters et al., 1998). Using this scoring system, two coders, blind to children's security assessment, scored the scriptedness and content elaboration for the three stories of each child.

Agreement on scriptedness across the two coders was $\alpha = .83, .76,$ and $.92$ for the Spilled Juice, Hurt Knee and Monster in Bedroom stories respectively. Agreement on content elaboration $\alpha = .93, .96,$ and $.95$ for the Spilled Juice, Hurt Knee and Monster in Bedroom stories respectively. When looking at the ratios of agreements (same score or different by 1 point only) over the total (agreements and disagreements) on scriptedness, the proportions were $.86, .82$ and $.90$ for the Spilled Juice, Hurt Knee and Monster in Bedroom stories respectively. The proportions of agreements over the total on elaboration were $.68, .50$ and $.68$ for the Spilled Juice, Hurt Knee and Monster in Bedroom stories respectively.

Correlations between each story in both scriptedness and content elaboration were moderate and significant (see Table 1). The scores for scriptedness and content elaboration of each of the stories were used in combination to get a composite score for scriptedness and content elaboration for each child. Although the relationship between the scriptedness composite and content elaboration composite was significant, $r(50) = .28, p < .05,$ composite scores for each variable were used separately in the analyses.

Table 1

Correlations and Internal Reliabilities of Scriptedness and Content Elaboration across the three Story Stems

| | Scriptedness | Elaboration |
|---------------------------------------|--------------|-------------|
| Spilled Juice & Hurt Knee | .41** | .71*** |
| Hurt Knee & Monster in Bedroom | .49*** | .63*** |
| Monster in Bedroom & Spilled Juice | .51*** | .45** |
| Cronbach α for averaged scores | .72 | .80 |

** $p < .01$. *** $p < .001$.

Peabody Picture Vocabulary Test. The Peabody Picture Vocabulary Test, third edition (PPVT-III), forms A and B, was administered to assess children's verbal ability. The procedure of this test consists of presenting several words and asking the child to point to the picture that best tells the meaning of each word. This was important to rule out the alternative that verbal skills may account for differences in participants' narrative production. The PPVT-III has been widely used and many empirical reports support its validity and reliability (Dunn & Dunn, 1997). Standardized scores were used in analyses.

Potential covariates. Based on parent report we also obtained measures of parental educational level, number and age of children and adults living at home, child's birth order position, and approximate yearly income.

RESULTS

Preliminary Analyses

In order to determine whether the main variables were normally distributed and if there were unusual observations, I looked at the univariate statistics of each variable, and the stem-and-leaf and the schematic plots as well. Overall, these variables appeared to be quite symmetric and normally distributed (see Table 2).

Table 2

The Univariate Statistics for Scriptedness, Content Elaboration, Secure Base Behavior, and Verbal Ability

| Variable | <i>N</i> | <i>M</i> | <i>SD</i> | Min | Max |
|----------------|----------|----------|-----------|------|------|
| Scriptedness | 50 | 3.41 | 1.15 | 1.33 | 5.58 |
| Elaboration | 50 | 9.99 | 6.11 | 1.17 | 27.3 |
| Security home | 50 | .399 | .213 | -.16 | .75 |
| Security park | 50 | .398 | .220 | -.23 | .71 |
| Verbal ability | 50 | 110.7 | 13.1 | 60 | 135 |

In addition, I looked at the univariate statistics, the stem-and-leaf and the schematic plots of the covariates to check for normality. Overall, these variables also appeared to be normally distributed (see Table 3).

Table 3

The Univariate Statistics for Age, Gender, Birth Order Position, Parents' Ages and Educational Levels, and Approximate Yearly Income

| Variable | <i>N</i> | <i>M</i> | <i>SD</i> | Min | Max |
|----------------|----------|----------|-----------|--------|---------|
| Age | 50 | 51.2 | 8.68 | 36 | 67 |
| Gender | 50 | 1.48 | .51 | 1 | 2 |
| Birth position | 50 | 1.86 | .95 | 1 | 4 |
| Mother's age | 50 | 33.68 | 5.70 | 23 | 47 |
| Mother's educ. | 50 | 16.34 | 2.65 | 9 | 21 |
| Father's age | 49 | 36.10 | 6.92 | 25 | 60 |
| Father's educ. | 49 | 16.86 | 3.47 | 10 | 26 |
| Yearly income | 46 | 74,374 | 39.8 | 10,000 | 190,000 |

Note. Parental educational levels and parent's ages were given in years, child's age in months, and approximate yearly income in US dollars.

First, correlational analyses between secure base behavior, scriptedness, content elaboration, and verbal ability and demographic covariates (age, gender, birth order position, parents' ages and educational level, and approximate yearly income) were conducted.

Secure base behavior at the park was significantly and negatively related to birth order position, $r(50) = -.29$, $p < .05$, but not to any of the other covariates. Secure base behavior at home was not significantly related to birth order position, $r(50) = -.19$, ns, or to any of the other covariates.

Scriptedness was significantly and positively related to age, $r(50) = .33$, $p < .05$. Even though gender differences have not been reported in Bretherton et al. (1990) or

Waters et al.'s (1998) studies, significant gender differences were found for scriptedness, $t(48) = -3.25, p < .01$, but not for content elaboration, secure base behavior or verbal ability. Girls ($M = 3.91, SD = 1.12$) tended to be significantly more scripted in their stories than boys ($M = 2.94, SD = .99$).

Content elaboration was not significantly related to any of the covariates. Verbal ability was unrelated to secure base behavior at home, $r(50) = .17, ns$; secure base behavior at the park, $r(50) = .10, ns$; scriptedness, $r(50) = .16, ns$; or content elaboration, $r(50) = .08, ns$. These findings suggested that cognitive aspects of attachment representations were independent of vocabulary.

Finally, neither mother and father ages nor parental educational level were significantly correlated with scriptedness, content elaboration, and secure base behavior or verbal ability of their child. Approximate yearly income was also not significantly correlated to any of these variables.

Relations between Scriptedness, Content Elaboration and Secure Base Behavior

Pearson correlations were conducted to test the relation between scriptedness, content elaboration and secure base behavior scores. Significance levels for these variables were set up according to one-tailed tests because of the specific hypotheses regarding the relationship between them.

The results showed a positive and significant correlation between scriptedness and secure base behavior at home, $r(50) = .31, p < .05$. However, the relationship between content elaboration and secure base behavior at home, was not significant, $r(50) = .11$. On the other hand, security scores at the park were not significantly correlated with either scriptedness $r(50) = .12, ns$; or content elaboration, $r(50) = -.02, ns$. These results

supported partially our first hypothesis where more secure children were expected to be more scripted and elaborated in their attachment representations. Given that secure base behavior at the park was not related to any of the aspects of attachment representations, only security scores at home were used in further analyses.

Given that content elaboration was not related to secure base behavior and that age was related to scriptedness, I decided to conduct correlations between secure base behavior at home and scriptedness with child's age and gender partialled out. The correlation between secure base behavior at home and scriptedness with child's age partialled out remained significant, with a partial correlation of .32, $p < .05$. The correlation between secure base behavior at home and scriptedness with child's gender partialled out remained significant as well, with a partial correlation of .40, $p < .01$. These results showed that the relation between the main variables was still significant and seems to be independent of age and gender.

Relations between Scriptedness and SIM, PM, PCM, and IOA scales

To understand the relationship between secure base behavior and scriptedness, particular domains of secure base behavior were analyzed in relation to scriptedness. Pearson correlations were conducted to test the relation between scriptedness and the four scales, SIM, PM, PCM, and IOA regarding specific aspects of secure base behavior described earlier. Again significance levels for these variables were set up according to one-tailed tests because of the specific hypotheses of this study.

As shown in Table 4, children with higher scores in scriptedness evidenced higher levels of smooth interactions with their mothers and interactions with other adults

facilitated by the mother. It seems that these particular aspects of secure base behavior in this sample led the association between security scores at home and scriptedness.

Table 4

Correlations between Scriptedness across the Four Scales

| Scales | Scriptedness |
|---------------------------------|--------------|
| Smooth interactions with mother | .26* |
| Proximity to the mother | .03 |
| Physical contact with mother | -.10 |
| Interactions with other adults | .38** |

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

Contributions of Age, Gender, Birth Order Position, and Secure Base Behavior on Scriptedness

In order to identify the unique contribution of secure base behavior to scriptedness, a regression analysis was conducted. Secure base behavior at home by itself explained 12% of the variance of scriptedness and was significantly different from zero, meaning that in fact secure base behavior at home has an effect on scriptedness.

A hierarchical multiple regression analysis was conducted to test the contributions of age, gender, birth order position, and secure base behavior (see Table 5).

Table 5

Summary of Hierarchical Regression Analysis for Variables Predicting Scriptedness (N=50)

| Variable | <i>B</i> | <i>SE B</i> | β |
|----------------------|----------|-------------|---------|
| Step 1 | | | |
| Age | .04 | .02 | .28* |
| Gender | .80 | .30 | .35** |
| Birth Order Position | -.13 | .16 | -.11 |
| Step 2 | | | |
| Age | .03 | .02 | .24* |
| Gender | .94 | .29 | .41** |
| Birth Order Position | -.03 | .16 | -.02 |
| Security Park Scores | .32 | .71 | .06 |
| Step 3 | | | |
| Age | .03 | .02 | .25* |
| Gender | .95 | .29 | .42** |
| Birth Order Position | -.06 | .16 | -.05 |
| Security Park Scores | -.45 | .73 | -.09 |
| Security Home Scores | 2.05 | .72 | .38** |

Note. $R^2 = .25$ for Step 1; $\Delta R^2 = .01$ for Step 2; $\Delta R^2 = .12$ for Step 3.

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

As is shown in Table 5, secure base behavior at home is a significant contributor to predict scriptedness; in fact it has an influence in scriptedness controlling for child's age, gender, birth order position and security park scores.

DISCUSSION

This study was designed to provide information about the relation between cognitive aspects of attachment representations such as scriptedness and content elaboration and secure base behavior in preschoolers. The results show a modest yet significant relation between secure base behavior, specifically at home, and scriptedness but not with content elaboration. These findings mean that attachment representations in secure children tend to be more highly scripted although not necessarily elaborated. This gives some information about the possible underlying mechanisms by which attachment representations are constructed and helps clarify how attachment knowledge is organized in a scripted-like fashion and how it derives from particular domains of the secure base phenomenon.

Specifically, aspects of secure base behavior regarding smooth interactions with the mother and other adults have been shown to be important to explain the association between representations and behavior in these children. This is consistent with the literature in that secure base scripts are assumed to form through everyday interactions and conversations with the mother. Moreover, positive interactions with the mother and using her as a secure base from which to explore facilitate flexible adaptation to form relationships with others.

As noted earlier, one of Bowlby's most important insights concerned the relevance of mother's verbal communications about attachment experiences and related

emotions as significant for attachment development. In this sense, even though I have not assessed maternal cognitive or behavioral components of attachment, it is easy to think that mothers whose attachment working models are consistent and sensitive, are likely to transmit this representational information to their children.

However, some of our results are not consistent with the findings of Waters et al. (1998) regarding content elaboration as a key feature of secure attachment representations. Research on autobiographical or event memory suggests that elaboration is shaped by the mother's interactive and conversational styles. For example, elaborative or narrative mothers will make stories of their experiences and invite their children to participate in them focusing on the where, when, how, and why rather than on who and what (Nelson, 1993).

On the other hand, elaborative mothers seem to relate more frequently what is on view to the child's own experience. It seems that children of elaborative mothers may remember significantly more than children of not too elaborative mothers. Moreover, in a recent study conducted by Fivush and Vasudeva (2002), maternal elaborative conversational style was related positively and significantly to the AQS scores of their children. However, the methodological and coding system used in this study was different from the one used in the current study and in Waters et al. (1998)' study. Fivush and Vasudeva defined and counted subject-verb propositions and coded only utterances in mother-child conversations and joint activities. Methodological limitations may be accounting for the lack of correspondence of these findings with my results. For example, it was somewhat difficult for the research coders to clearly identify distinctive idea units in the stories used in the analysis. Redefining the coding system for content elaboration

may lead to more precise information of this aspect. Even though I did not find any significant relation between this variable and the others, assessing content elaboration seems to be an important path to examine in order to obtain a more integrated picture of how cognitive aspects are transmitted to children.

Regarding the gender differences found in scriptedness, with girls as significantly more scripted than boys, some socialization differences may be leading to these results. According to Reese (1993), mothers are more likely to be verbal and emotionally open with daughters than with sons leading girls to have recall of more information about events than boys. It is argued that gender differences may be more evident in older children because as children get older, parents' differential socialization based on gender tends to increase. This idea is consistent with our findings in that age and gender of the child were significantly related to scriptedness.

Furthermore, research done by Farrant and Reese (2000) in autobiographical memory development suggests that mothers' memory question elaborations in conversations with their children have an influence on children's later memory elaborations and that mothers tend to be more elaborative with girls. In addition, these authors found that maternal reminiscing style and children's verbal memory were correlated with children's language abilities. However, not all their findings were explained by language abilities; they concluded that mother-child conversations of past events is more than just language skills and that reminiscing is social rather than linguistic. In this current study I did not find a significant relation between child's verbal ability and scriptedness or elaboration, meaning that to be more scripted or elaborated, or the way the child tells a story does not necessarily mean to be more verbal.

On the other hand, the fact that birth order position of the child was found as negatively related to secure scores at the park can be explained as a contextual outcome. Being the first child in the family may be a contextual factor that may influence changes in secure base behavior of that child. Almost half of the children that were first born child in the sample were also the only child in the family ($n = 10$). Maternal behavior toward the only child may differ from behavior of mothers with more than one child. Even though maternal behavior may vary after the birth of another child or with the presence of several children, the fact of being the oldest may have some effect in how the mother respond or behave toward the child.

Even though secure base behavior is expected to be similar among different natural settings, and thus the relationship between secure base behavior and scriptedness, differences in the relation between these variables and the particular context where it took place were found, having security scores at the park as not related. These findings may suggest that contextual characteristics may influence this relationship even though security scores at home and at the park were significantly correlated. For instance, it can be argued that at home the child knows better the limits and rules that should be followed while at the park the environment tends to elicit more exploration on the child's side not only with the setting but with other children or even adults.

In conclusion, this study has demonstrated that there is a significant relationship between an observational and a representational assessment of attachment relationships at home. This study supports the idea that narrative assessments are important to study scripts of attachment at a preschool age. Narrative forms organized as scripts may provide a particular type of relation and organization of experiences with the attachment

figure. In learning the narrative forms, children may also be learning how to make sense of their experiences with their mothers and others and how to evaluate these experiences in terms of personal and emotional significance.

Limitations of the Study

The development of both attachment and scripts assumes at least a dyadic relationship. The present study has focused only on the child's attachment representations and on child's secure base behavior in his or her interaction with the mother. Since it is through daily experiences and interactions with the mother or other caregivers that these representations of attachment are formed, maternal caregiving behavior and representations need to be taken into account to better understand how attachment representations are co-constructed. Furthermore, in order to describe the intergenerational transmission of attachment patterns, maternal behavior and representations must be included to see how they influence the organization of attachment behavior in their children.

In addition, this study has used a cross-sectional design thus limiting our findings to describe the relationship of attachment representations and secure base behavior at one point of children's life. Longitudinal data are needed in order to describe the actual development of attachment representations and to explore the consistencies and differences that experiences and changes in life may lead.

Another limitation of this study was that the sample size was small. Constraints regarding the time demanded for assessments and family schedules may have influenced the level of participation in the current study. However, due to the fact that attachment and representational processes are formed on a daily basis, observational studies need to

include as much time as they can in order to obtain a representative picture of these aspects in any sample.

Implications for Future Research

The script approach used in this project seems to be a productive way of thinking regarding the organization of information about attachment relationships. The findings of the current study although modest seem to follow a direction worth to explore further. With the inclusion of variables such as maternal attachment representations and behavior, future research will be able to get information of cognitive and behavioral aspects of attachment relationships. For instance, cognitive aspects of mothers' attachment representations may be associated with children's organization of attachment behavior via the quality of maternal caregiving behavior. In addition, mothers' attachment representations may be related to children's attachment representations via both maternal caregiving and children's attachment behavior.

On the other hand, methodological issues should be addressed. First of all, the validation and standardization of a coding system for content elaboration should be better defined. This is an aspect that needs to be clarified for future research. In addition, the inclusion of more scenarios in the attachment story completion task may lead to more information about attachment representations. For example, in addition to present stories where the child is the main character of the story, the mother should be considered as a character who also faces some sort of difficulty or obstacle. Then it will be seen how the child faces this situation and how the mother responds to the child and is able or not to go back to normal. Also, a story stem may include a story where the mother and an older sibling are sharing a joint activity and how the younger child deal with the situation.

In addition, repeated assessments should be conducted in order to describe mother-child interactions. Attachment relationships are formed on a daily basis, this means that conducting only two visits per family seem sometimes not to be enough to describe properly specificities of these interactions. More park visits for example should be interesting to conduct in order to make comparisons with results at home or at a laboratory and see if context has an influence on how attachment relationships are displayed and shaped.

Finally, the use of different assessments (observations, questionnaires, narrative assessments, or semi-structured tasks) may provide future research with stronger validation of the results, thus contributing and clarifying important aspects involving the organization of attachment and its relation to later outcomes.

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APPENDICES

Appendix A

Socio Demographic Form

Name of child: _____ ID No.: _____

Date of birth: ___/___/_____ Gender: _____

Birth order position: _____ Ethnicity: _____

Child's primary caregiver: _____

General Health (Illnesses year by year): _____

Separations from primary caregiver: _____

Daycare (name and months): _____

Name of mother: _____ Age: _____

Education (degree and years): _____

Occupation (past 3 years): _____ Ethnicity: _____

Name of father: _____ Age: _____

Education (degree and years): _____

Occupation (past 3 years): _____ Ethnicity: _____

Approximate family yearly income: \$ _____

Siblings (Name, date of birth, sex): _____

Extended family in residence: _____

Appendix B

The Attachment Q-Set

1. Child readily shares with mother or lets her hold things if she asks to.
Low: Refuses.
2. When child returns to mother after playing, he is sometimes fussy for no clear reason.
Low: Child is happy or affectionate when he returns to mother between or after play times.
3. When he is upset or injured, child will accept comforting from adults other than mother.
Low: Mother is the only one he allows to comfort him.
4. Child is careful and gentle with toys and pets.
5. Child is more interested in people than in things.
Low: More interested in things than people.
6. When child is near mother and sees something he wants to play with, he fusses or tries to drag mother over to it.
Low: Goes to what he wants without fussing or dragging mother along.
7. Child laughs and smiles easily with a lot of different people.
Low: Mother can get him to smile or laugh more easily than anyone else.
8. When child cries, he cries hard.
Low: Weeps, sobs, doesn't cry hard, or hard crying never lasts very long.
9. Child is lighthearted and playful most of the time.
Low: Child tends to be serious, sad, or annoyed a good deal of the time.
10. Child often cries or resists when mother takes him to bed for naps or at night.
11. Child often hugs or cuddles against mother, without her asking or inviting him to do so.
Low: Child doesn't hug or cuddle much, unless mother hugs him first or asks him to give her a hug.
12. Child quickly gets used to people or things that initially made him shy or frightened him.
Middle if never shy or afraid.

13. When the child is upset by mother's leaving, he continues to cry or even gets angry after she is gone.
Low: Cry stops right after mom leaves.
Middle if not upset by mom leaving.
14. When child finds something new to play with, he carries it to mother or shows it to her from across the room.
Low: Plays with the new object quietly or goes where he won't be interrupted.
15. Child is willing to talk to new people, show them toys, or show them what he can do, if mother asks him to.
16. Child prefers toys that are modeled after living things (e.g., dolls, stuffed animals).
Low: Prefers balls, blocks, pots and pans, etc.
17. Child quickly loses interest in new adults if they do anything that annoys him.
18. Child follows mother's suggestions readily, even when they are clearly suggestions rather than orders.
Low: Ignores or refuses unless ordered.
19. When mother tells child to bring or give her something, he obeys. (Do not count refusals that are playful or part of a game unless they clearly become disobedient.)
Low: Mother has to take the object or raise her voice to get it away from him.
20. Child ignores most bumps, falls, or startles.
Low: Cries after minor bumps, falls, or startles.
21. Child keeps track of mother's location when he plays around the house. Calls to her now and then. Notices her go from room to room. Notices if she changes activities.
Low: Doesn't keep track.
Middle if child isn't allowed or doesn't have room to play away from mom.
22. Child acts like an affectionate parent toward dolls, pets, or infants.
Low: Plays with them in other ways.
Middle if child doesn't play with or have dolls, pets, or infants around.
23. When mother sits with other family members or is affectionate with them, child tries to get mom's attention for himself.
Low: Lets her be affectionate with others. May join in but not in a jealous way.

24. When mother speaks firmly or raises her voice at him, child becomes upset, sorry, or ashamed about displeasing her. (Do not score high if child is simply upset by the raised voice or afraid of getting punished.)
25. Child is easy for mother to lose track of when he is playing out of her sight.
Low: Talks and calls when out of sight. Easy to find; easy to keep track of what he is playing with.
Middle if never plays out of sight.
26. Child cries when mother leaves him at home with babysitter, father, or grandparent.
Low: Doesn't cry with any of these.
27. Child laughs when mother teases him.
Low: Annoyed when mother teases him.
Middle if mother never teases child during play or conversations.
28. Child enjoys relaxing in mother's lap.
Low: Prefers to relax on the floor or on furniture.
Middle if child never sits still.
29. At times, child attends so deeply to something that he doesn't seem to hear when people speak to him.
Low: Even when deeply involved in play, child notices when people speak to him.
30. Child easily becomes angry with toys.
31. Child wants to be the center of mother's attention. If mom is busy or talking to someone, he interrupts.
Low: Doesn't notice or doesn't mind not being the center of mother's attention.
32. When mother says "No" or punishes him, child stops misbehaving (at least at that time). Doesn't have to be told twice.
33. Child sometimes signals mother (or gives the impression) that he wants to be put down, and then fusses or wants to be picked right back up.
Low: Always ready to go play by the time he signals mother to put him down.
34. When child is upset about mother leaving him, he sits right where he is and cries. Doesn't go after her.

Low: Actively goes after her if he is upset or crying.
Middle if never upset by her leaving.

35. Child is independent with mother. Prefers to play on his own; leaves mother easily when he wants to play.
Low: Prefers playing with or near mother.
Middle if not allowed or not enough room to play away from mother.
36. Child clearly shows a pattern of using mother as a base from which to explore. Moves out to play; returns or plays near her; moves out play again, etc.
Low: Always away unless retrieved, or always stays near.
37. Child is very active. Always moving around. Prefers active games to quiet ones.
38. Child is demanding and impatient with mother. Fusses and persists unless she does what he wants right away.
39. Child is often serious and business like when playing away from mother or alone with his toys.
Low: Often silly or laughing when playing away from mother or alone with his toys.
40. Child examines new objects or toys in great detail. Tries to use them in different ways or to take them apart.
Low: First look at new objects or toys is usually brief. (May return to them later however.)
41. When mother says to follow her, child does so. (Do not count refusals or delays that are playful or part of a game unless they clearly become disobedient.)
42. Child recognizes when mother is upset. Becomes quiet or upset himself. Tries to comfort her. Asks what is wrong, etc.
Low: Doesn't recognize; continues play; behaves toward her as if she were okay.
43. Child stays closer to mother or returns to her more often than the simple task of keeping track of her requires.
Low: Doesn't keep close track of mother's location or activities.
44. Child asks for and enjoys having mother hold, hug, and cuddle him.
Low: Not especially eager for this. Tolerates it but doesn't seek it, or wiggles to be put down.
45. Child enjoys dancing or singing along with music.
Low: Neither likes nor dislikes music.
46. Child walks and runs around without bumping, dropping, or stumbling.
Low: Bumps, drops, or stumbles happen throughout the day (even if no injuries result).

47. Child will accept and enjoy loud sounds or being bounced around in play, if mother smiles and shows that it is supposed to be fun.
Low: Child gets upset, even if mother indicates the sound or activity is safe or fun.
48. Child readily lets new adults hold or share things he has, if they ask to.
49. Runs to mother with a shy smile when new people visit the home.
Low: Even if he eventually warms up to visitors, child initially runs to mother with a fret or a cry.
Middle if child doesn't run to mother at all when visitors arrive.
50. Child's initial reaction when people visit the home is to ignore or avoid them, even if he eventually warms up to them.
51. Child enjoys climbing all over visitors when he plays with them.
Low: Doesn't seek close contact with visitors when he plays with them.
Middle if he won't play with visitors.
52. Child has trouble handling small objects or putting small things together.
Low: Very skillful with small objects, pencils, etc.
53. Child puts his arms around mother or puts his hand on her shoulder when she picks him up.
Low: Accepts being picked up but doesn't especially help or hold on.
54. Child acts like he expects mother to interfere with his activities when she is simply trying to help him with something.
Low: Accepts mother's help readily, unless she is in fact interfering.
55. Child copies a number of behaviors or ways of doing things from watching mother's behavior.
Low: Doesn't noticeably copy mother's behavior.
56. Child becomes shy or loses interest when an activity looks like it might be difficult.
Low: Thinks he can do difficult tasks.
57. Child is fearless.
Low: Child is cautious or fearful.
58. Child largely ignores adults who visit the home. Finds his own activities more interesting.
Low: Finds visitors quite interesting, even if he is a bit shy at first.

59. When child finishes with an activity or toy, he generally finds something else to do without returning to mother between activities.
Low: When finished with an activity or toy, he returns to mother for play, affection, or help finding more to do.
60. If mother reassures him by saying "It's ok" or "It won't hurt you," child will approach or play with things that initially made him cautious or afraid.
Middle if never cautious or afraid.
61. Plays roughly with mother. Bumps, scratches, or bites during active play. (Does not necessarily mean to hurt mom.)
Low: Plays active games without injuring mother.
Middle if play is never very active.
62. When child is in a happy mood, he is likely to stay that way all day.
Low: Happy moods are very changeable.
63. Even before trying thing himself, child tries to get someone to help him.
64. Child enjoys climbing all over mother when they play.
Low: Doesn't especially want a lot of close contact when they play.
65. Child is easily upset when mother makes him change from one activity to another. (Even if the new activity is something the child often enjoys.)
66. Child easily grows fond of adults who visit his home and are friendly to him.
Low: Doesn't grow fond of new people very easily.
67. When the family has visitors, child wants them to pay a lot of attention to him.
68. On the average, child is a more active type person than mother.
Low: On the average, child is less active type person than mother.
69. Rarely asks mother for help.
Low: Often asks mother for help.
Middle if child is too young to ask.
70. Child quickly greets his mother with a big smile when she enters the room. (Shows her a toy, gestures, or says "Hi, Mommy.")
Low: Doesn't greet mother unless she greets him first.
71. If held in mother's arms, child stops crying and quickly recovers after being frightened or upset.
72. If visitors laugh at or approve of something the child does, he repeats it again and again.

Low: Visitors' reactions don't influence child this way.

73. Child has a cuddly toy or security blanket that he carries around, takes to bed, or holds when upset. (Do not include bottle or pacifier if child is under two years old.)
Low: Can take such things or leave them, or has none at all.
74. When mother doesn't do what child wants right away, he behaves as if mom were not going to do it at all. (Fusses, gets angry, walks off to other activities, etc.)
Low: Waits a reasonable time, as if he expects mother will shortly do what he asked.
75. At home, child gets upset or cries when mother walks out of the room. (May or may not follow her.)
Low: Notices her leaving; may follow but doesn't get upset.
76. When given a choice, child would rather play with toys than with adults.
Low: Would rather play with adults than toys.
77. When mother asks child to do something, he readily understand what she wants. (May or may not obey.)
*Low: Sometimes puzzled or slow to understand what mother wants.
Middle if child is too young to understand.*
78. Child enjoys being hugged or held by people other than his parents and/or grandparents.
79. Child easily becomes angry at mother.
Low: Doesn't become angry at mother unless she is very intrusive or he is very tired.
80. Child uses mother's facial expression as a good source of information when something looks risky or threatening.
Low: Makes up his own mind without checking mother's expressions first.
81. Child cries as a way of getting mother to do what he wants.
Low: Mainly cries because of genuine discomfort (tired, sad, afraid, etc.).
82. Child spends most of his play time with just a few favorite toys or activities.
83. When child is bored, he goes to mother looking for something to do.
Low: Wanders around or just does nothing for a while, until something comes up.
84. Child makes at least some effort to be clean and tidy around the house.
Low: Spills and smears things on himself and on floors all the time.

85. Child is strongly attracted to new activities and new toys.
Low: New things do not attract him away from familiar toys or activities.
86. Child tries to get mother to imitate him, or quickly notices and enjoys it when mom imitates him on her own.
87. If mother laughs at or approves of something the child has done, he repeats it again and again.
Low: Child is not particularly influenced this way.
88. When something upsets the child, he stays where he is and cries.
Low: Goes to mother when he cries. Doesn't wait for mom to come.
89. Child's facial expressions are strong and clear when he is playing with something.
90. If mother moves very far, child follows along and continues his play in the area she has moved to. (Doesn't have to be called or carried along; doesn't stop play or get upset.)
Middle if child isn't allowed or doesn't have room to be very far away.

Appendix C

Derived Scales in the Attachment Q-Set

Smooth interactions with mother (17 items)

1. Child readily shares with mother or lets her hold things if she asks to.
Low: Refuses.
2. When child returns to mother after playing, he is sometimes fussy for no clear reason.
Low: Child is happy or affectionate when he returns to mother between or after play times.
6. When child is near mother and sees something he wants to play with, he fusses or tries to drag mother over to it.
Low: Goes to what he wants without fussing or dragging mother along.
9. Child is lighthearted and playful most of the time.
Low: Child tends to be serious, sad, or annoyed a good deal of the time.
18. Child follows mother's suggestions readily, even when they are clearly suggestions rather than orders.
Low: Ignores or refuses unless ordered.
19. When mother tells child to bring or give her something, he obeys. (Do not count refusals that are playful or part of a game unless they clearly become disobedient.)
Low: Mother has to take the object or raise her voice to get it away from him.
24. When mother speaks firmly or raises her voice at him, child becomes upset, sorry, or ashamed about displeasing her. (Do not score high if child is simply upset by the raised voice or afraid of getting punished).
32. When mother says "No" or punishes him, child stops misbehaving (at least at that time). Doesn't have to be told twice.
38. Child is demanding and impatient with mother. Fusses and persists unless she does what he wants right away.
41. When mother says to follow her, child does so. (Do not count refusals or delays that are playful or part of a game unless they clearly become disobedient).

54. Child acts like he expects mother to interfere with his activities when she is simply trying to help him with something.
Low: Accepts mother's help readily, unless she is in fact interfering.
62. When child is in a happy mood, he is likely to stay that way all day.
Low: Happy moods are very changeable.
65. Child is easily upset when mother makes him change from one activity to another. (Even if the new activity is something the child often enjoys).
70. Child quickly greets his mother with a big smile when she enters the room. (Shows her a toy, gestures, or says "Hi, Mommy.")
Low: Doesn't greet mother unless she greets him first.
74. When mother doesn't do what child wants right away, he behaves as if mom were not going to do it at all. (Fusses, gets angry, walks off to other activities, etc.)
Low: Waits a reasonable time, as if he expects mother will shortly do what he asked.
79. Child easily becomes angry at mother.
Low: Doesn't become angry at mother unless she is very intrusive or he is very tired.
81. Child cries as a way of getting mother to do what he wants.
Low: Mainly cries because of genuine discomfort (tired, sad, afraid, etc.).

Proximity to mother (13 items)

11. Child often hugs or cuddles against mother, without her asking or inviting him to do so.
Low: Child doesn't hug or cuddle much, unless mother hugs him first or asks him to give her a hug.
14. When child finds something new to play with, he carries it to mother or shows it to her from across the room.
Low: Plays with the new object quietly or goes where he won't be interrupted.
21. Child keeps track of mother's location when he plays around the house. Calls to her now and then. Notices her go from room to room. Notices if she changes activities.
Low: Doesn't keep track.
Middle if child isn't allowed or doesn't have room to play away from mom.

25. Child is easy for mother to lose track of when he is playing out of her sight.
Low: Talks and calls when out of sight. Easy to find; easy to keep track of what he is playing with.
Middle if never plays out of sight.
34. When child is upset about mother leaving him, he sits right where he is and cries. Doesn't go after her.
Low: Actively goes after her if he is upset or crying.
Middle if never upset by her leaving.
35. Child is independent with mother. Prefers to play on his own; leaves mother easily when he wants to play.
Low: Prefers playing with or near mother.
Middle if not allowed or not enough room to play away from mother.
36. Child clearly shows a pattern of using mother as a base from which to explore. Moves out to play; returns or plays near her; moves out play again, etc.
Low: Always away unless retrieved, or always stays near.
43. Child stays closer to mother or returns to her more often than the simple task of keeping track of her requires.
Low: Doesn't keep close track of mother's location or activities.
59. When child finishes with an activity or toy, he generally finds something else to do without returning to mother between activities.
Low: When finished with an activity or toy, he returns to mother for play, affection, or help finding more to do.
69. Rarely asks mother for help.
Low: Often asks mother for help.
Middle if child is too young to ask.
83. When child is bored, he goes to mother looking for something to do.
Low: Wanders around or just does nothing for a while, until something comes up.
88. When something upsets the child, he stays where he is and cries.
Low: Goes to mother when he cries. Doesn't wait for mom to come.
90. If mother moves very far, child follows along and continues his play in the area she has moved to. (Doesn't have to be called or carried along; doesn't stop play or get upset.)
Middle if child isn't allowed or doesn't have room to be very far away.

Physical contact with mother (7 items)

3. When he is upset or injured, child will accept comforting from adults other than mother.
Low: Mother is the only one he allows to comfort him
28. Child enjoys relaxing in mother's lap.
*Low: Prefers to relax on the floor or on furniture.
Middle if child never sits still.*
33. Child sometimes signals mother (or gives the impression) that he wants to be put down, and then fusses or wants to be picked right back up.
Low: Always ready to go play by the time he signals mother to put him down.
44. Child asks for and enjoys having mother hold, hug, and cuddle him.
Low: Not especially eager for this. Tolerates it but doesn't seek it, or wiggles to be put down.
53. Child puts his arms around mother or puts his hand on her shoulder when she picks him up.
Low: Accepts being picked up but doesn't especially help or hold on.
64. Child enjoys climbing all over mother when they play.
Low: Doesn't especially want a lot of close contact when they play.
71. If held in mother's arms, child stops crying and quickly recovers after being frightened or upset.

Interactions with other adults (13 items)

7. Child laughs and smiles easily with a lot of different people.
Low: Mother can get him to smile or laugh more easily than anyone else.
12. Child quickly gets used to people or things that initially made him shy or frightened him.
Middle if never shy or afraid
15. Child is willing to talk to new people, show them toys, or show them what he can do, if mother asks him to.
17. Child quickly loses interest in new adults if they do anything that annoys him.
48. Child readily lets new adults hold or share things he has, if they ask to.

50. Child's initial reaction when people visit the home is to ignore or avoid them, even if he eventually warms up to them.
51. Child enjoys climbing all over visitors when he plays with them.
Low: Doesn't seek close contact with visitors when he plays with them.
Middle if he won't play with visitors
58. Child largely ignores adults who visit the home. Finds his own activities more interesting.
Low: Finds visitors quite interesting, even if he is a bit shy at first.
60. If mother reassures him by saying "It's ok" or "It won't hurt you," child will approach or play with things that initially made him cautious or afraid.
Middle if never cautious or afraid.
66. Child easily grows fond of adults who visit his home and are friendly to him.
Low: Doesn't grow fond of new people very easily.
67. When the family has visitors, child wants them to pay a lot of attention to him.
76. When given a choice, child would rather play with toys than with adults.
Low: Would rather play with adults than toys.
78. Child enjoys being hugged or held by people other than his parents and/or grandparents.

Appendix D

Attachment Story Completion Task Story Stems

Spilled Juice Story

Researcher: Can you help me set the table for dinner? (Give child box with silverware and let her or him set the table.)

Researcher: Now put the family around the dinner table so they're ready to eat. Here is our family eating dinner and Bob (Jane) gets up and reaches over and spills his juice. (Make doll knock cup off toy table so cup is visible to subject.)

Mother: Oh Bob (Jane), you spilled your juice! (Reproachful tone of voice, but don't overdo; turn mom toward child and move her up and down while she's talking.)

Researcher: Show me and tell me what happens now.

Secure base script for Spilled Juice Story

Best: Clean up juice and get more juice plus comments about not doing that again, or won't do that again (latter comments optional) or child is punished (spanked or sent to room), but the contingency is identified (e.g., mustn't do that).

Middle: Clean up or get spanked, or sent to room.

Worse: Problem not dealt with, odd ending.

Hurt Knee Story

Researcher: O.K., Look what I got. (Set out piece of green felt and sponge rock.)

This is the park. Here is our family and they're walking in the park, and at this park there is this high, high rock.

Child: Look mommy and daddy. Watch me climb this high, high rock. (Make child climb rock, then fall off.) Boo-hoo, I've hurt my knee (crying voice).

Researcher: Show me and tell me what happens now.

Secure base script for Hurt Knee Story

Best: See you can climb and not get hurt (explanatory) plus band-aid (optional). Key is that someone tries but does not get hurt (mommy, daddy, whoever). It would also be viewed as a good ending if the child was shown that the older sibling can climb the rock because they are bigger, but the younger child should not climb.

Middle: Fix the knee (band-aid, hospital, cast) plus kiss (optional, but viewed as helping get things back to normal).

Worse: Problem is not dealt with, odd ending.

Monster in the Bedroom Story

(Place a toy bed at least 30 cm. away from the rest of the family.) *Researcher:*

Look what happens now, listen carefully.

Mother: (Face mother toward the child doll and move her slightly as she speaks.)

It's bedtime. Go up to your room and go to bed.

Father: Go up to bed now. (Same action as mother, deep voice.)

Child: O.K. mommy and daddy, I'm going. (Make child walk to bed.)

Researcher: Bobby (Jane) goes upstairs to his room, and he goes ...,

Child: Mommy! Daddy! There is a monster in my room! There is a monster in my room (alarmed tone of voice).

Researcher: Show me and tell me what happens now.

Secure base script for Monster in the Bedroom Story

Best: See there is no monster (explanatory) plus kisses, smiles, song or story, everything is fine (optional, but viewed as providing a back to normal ending as the child goes to sleep).

Middle: Get monster and/or tuck child in (kiss, story, etc.).

Worse: Problem not dealt with, odd ending.

Appendix E
IRB Approval Forms

PURDUE

UNIVERSITY

Office of Research Administration
610 Purdue Mall, Howde Hall Rm 307
West Lafayette, IN 47907-2040
(765) 494-5942; Fax (765) 494-8323
E-mail irb@purdue.edu

Committee on the Use of Human Research Subjects
Institutional Review Board

IRB APPROVAL FORM

Continuing Review

TO: German Posada, CDFS/CDFS

FROM: Committee on the Use of Human Research Subjects

RE: Continuing Review of your protocol Ref.# 02-295 Child-Mother Attachment Relationships:
Behavior and Representation

APPROVAL DATE: 4/15/2004

EXPIRATION DATE: 4/14/2005

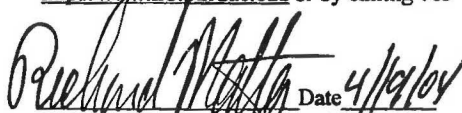
Continuing Review of your protocol, referenced above, was approved under the EXPEDITED review process. If written informed consent was submitted as part of your protocol, the IRB-stamped and dated "master" Consent Form(s), approved by the IRB for this protocol only, are attached. Please make copies from the attached "master" document(s) for subjects to sign upon agreeing to participate. The original signed Consent Form should be placed in your study files. A copy of the signed Consent Form should be given to the subject.

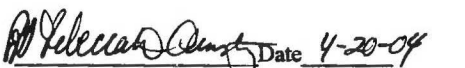
Any modification of this research protocol must be submitted to the Committee for review and approval prior to implementation. Reportable modifications include any revision that modifies the risk or burden to participants as well as study procedure changes, investigator or funding source changes, consent form changes, an increase in the number of subjects to be enrolled, or adding new materials (e.g., letters, advertisements, questionnaires).

You must promptly report any of the following to the Committee: (1) all serious and/or unexpected adverse experiences involving risks to subjects or others; and (2) any other unanticipated problems involving risks to subjects or others associated with this research.

Federal and University policy require that all research records be maintained for a period of no less than three (3) years following the termination of the project. If the project includes the use of protected health information, the retention requirement extends to no less than six (6) years.

Please include your protocol Ref.# and title in any future correspondence. Research investigators are expected to comply with Committee and University procedures and policies, and to be familiar with the University's Federal-Wide Assurance (FWA# 00001548), the Belmont Report, 45CFR46, and other applicable regulations prior to conducting the research. These documents and other information regarding research involving human subjects at Purdue University are available on the Committee's website <http://www.irb.purdue.edu> or by calling 765-494-5942.

 Date 4/19/04
Richard D. Mattes, Ph.D., Chair
Bruce A. Craig, Ph.D., Associate Chair
Darlene A. Sedlock, Ph.D., Associate Chair

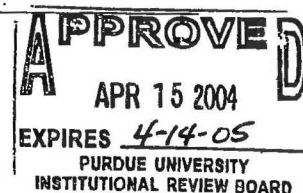
 Date 4-20-04
Rebecca D. Armstrong, D.V.M., Ph.D.
Assistant Vice Provost for Research Compliance

cc: W. Graziano
N/A

Research Project Number 02-295

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RESEARCH PARTICIPANT CONSENT FORM
 Child-Mother Interactions Project
 German Posada
 Purdue University
 Child Development & Family Studies

Purpose of Research

The purpose of this project is to study child-mother relationships in naturalistic settings: at home and playgrounds. We are particularly interested in how young children play and interact with their mothers in their natural environments. We are also interested in how children and mothers tell stories about relationships. Finally, we want to learn about mothers' opinions as to how the family handles issues related to child-rearing practices.

Specific Procedures to be Used

Participation in this study requires two separate home visits with researchers. The first visit is split and will take place at a park/playground and your home. We will ask you and your child to go with us to a nearby park/playground for 50-60 minutes. This part of the visit will be videotaped. The second visit will take place at your home. One hour into this visit, we will ask you and your child to tell us stories using some word sets, and also, you will be asked to define some words. You will also be asked to fill out some 5 separate questionnaires that concern you and your child. We will leave the questionnaires at the end of the first visit and will pick them up at the time of the second visit.

Duration of Participation

Each home visit will last about 2.5 hours. Filling out the questionnaires will take about one hour. The total participation time will be about 6 hours.

Benefits to the Individual

There are no benefits for participating in the study.

Risks to the Individual

Risks for participating in the study are no more than the participants would encounter in everyday life. It is possible that there may be some discomfort about some questions asked in the questionnaires, but you will be able to decline answering them if you choose so. If in the course of the study information is revealed concerning harm to self or others, or child abuse and neglect, it is required by law that this be reported to the proper authorities.

Compensation

Each child-mother dyad will be paid \$20.00 for their participation and children will also be given a complimentary toy.

Confidentiality

All information obtained will remain completely confidential. Any documentation with identifying information (i.e., your name) including tapes will be stored in a locked facility. All questionnaires and reports will be identified with a number. Only the principal investigator will have access to the file linking family names with identification numbers. Information obtained in this study will be reported in the form of group results; no names will be used in any report.

Voluntary Nature of Participation

Your participation in this project is completely voluntary. You may refuse to participate in the study or withdraw your participation at any time without any penalty.

Human Subject Statement:

If you have any questions about this research project, contact German Posada at (765) 494-1029. If there are concerns about the treatment of research participants, contact the Committee on the Use of Human Research Subjects at Purdue University, 1071 Hovde Hall Room 307, West Lafayette, IN 47907-1071. The phone number for the Committee's secretary is (765) 494-5942. The email address is irb@purdue.edu.

Date

Initials