

Secure base representations for both fathers and mothers predict children's secure base behavior in a sample of Portuguese families

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Relations between fathers' and mothers' representations of attachment (independently assessed using an attachment script representation task) and children's secure base behavior (assessed using the Attachment Q-sort; AQS) were studied in 56 Portuguese families (mean age of child = 31.9 months). Each parent's secure base script representation score predicted AQS security scores for the child with that parent at approximately equivalent degrees of association. However, both parental secure base script scores and AQS security scores were positively correlated across parents. A hierarchical regression predicting AQS security with father from both parent's scriptedness scores and from the AQS score with mother showed a unique, significant influence of father's scriptedness score and the AQS score with mother, but mother's scriptedness score did not uniquely add to the prediction. Difficult temperament was ruled out as a mediator of the cross-parent association for AQS security scores.

Keywords: attachment; secure base script representation; Attachment Q-sort; fathers; mothers

Introduction

The notion that attachments are secure base relationships is a core feature of attachment theory (Waters & Cummings, 2000). Ainsworth (e.g., Ainsworth, Blehar, Waters, & Wall, 1978) initially described the "secure base phenomenon" in terms of a balance between exploratory and attachment (i.e., proximity, contact) behaviors that she observed in her studies of infants in Uganda and in Baltimore. She suggested that observation of secure base behavior over time and contexts was the best criterion for determining that an infant had become attached to a specific caregiver. Later, Bowlby (e.g., 1990) characterized the attachment figure(s) as serving as the "secure base" for children's exploration. He used the analogy of an expeditionary force moving away from a secure fortress, confident in the belief that the base would be available and capable of providing protection and other supports in the event that the expedition required assistance or safe haven in the course of exploration. In his view, the child's confidence in the secure base makes possible more lengthy, expansive, and profitable excursions away from the base as the child develops.

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The child's initial secure base relationship(s) with primary caregiver(s) are assembled over the course of the first few years of life and are based on the unique history of behavioral transactions that characterize the child and his/her major caregiver(s). Ainsworth (e.g., Ainsworth et al., 1978) showed that individual differences in the organization of infants' secure base behavior (i.e., the sensori-motor representation of the relationship) were critically dependent on features of mother-child interactions, including sensitivity to infant signals, cooperation with ongoing infant behaviors, accessibility to the baby, and acceptance of the caregiving role and infant needs. As the child grows, the secure base relationship expands and is modified, in part as a function of the ongoing quality of transactions within the attached dyad and in part due to the developmental changes in cognition, affect, and behavior characterizing human growth. One consequence of the repeated experiences of sensitivity, cooperation, etc., in conjunction with developmental changes, is the assembly of mental models descriptive of the secure base relationship and of its elements (Bowlby, 1973, 1980, 1982). Bowlby argued that these mental representations made the secure base portable in that the child may continue to feel safe and supported when the caregiver is not physically present. Furthermore, because these mental models of attachment are based largely on felt experience and the organization of secure base behavior with reference to the attachment figure, rather than on language or rationalized cognitions of the self or the caregiver (e.g., Sroufe & Waters, 1977), they tend to function implicitly and outside the central focus of attention and consciousness.

Bowlby (e.g., 1973) appealed to the concepts of cognitive psychology in his exposition of internal models of secure base relationships but, as Waters, Crowell, Elliot, Corcoran, and Treboux (2002) discuss, he allowed that his characterization of these models was a "work in progress" because cognitive psychology itself was evolving rapidly in the final quarter of the last century. As it turned out, Bowlby's confidence in cognitive psychology was well founded and concepts from this sub-discipline have enriched current understandings of his internal working models construct (see Bretherton & Munholland, 1999, for a detailed review). Recently, H. Waters and associates (e.g., Waters & Waters, 2006; Waters, Rodrigues, & Ridgeway, 1998; see Bretherton, 1987, for an earlier consideration of attachment scripts) have suggested that one central building block of mental models of attachment is an organized knowledge structure or "script" that captures the essence of the secure base phenomenon. Like all script-like representations of knowledge (e.g., Nelson, 1986; Schank & Abelson, 1977; Sirigu, Zalla, & Pillon, 1995), the secure base script summarizes experiences relevant to the secure base phenomenon in a fixed temporal-causal sequence. Furthermore, like other sorts of scripts (e.g., Bargh, 1996; Nelson, 1986), secure base scripts can be expected to motivate behavior in attachment-relevant circumstances and can serve as organizers for attachment-related narratives.

Waters and Waters (2006) describe several key elements of the secure base script: (1) an attached dyad (parent/child, adult/adult) are constructively occupied; (2) they are interrupted by an event or by another person and one member of the dyad becomes distressed; (3) the distressed dyad member signals for help and the signal is detected by the other dyad member; (4) appropriate assistance is offered and the offer is accepted; (5) the assistance is effective in overcoming the disruption of activity; (6) assistance includes effective comforting and affect regulation; (7) the dyad returns to (or starts new) constructive engagement. They further suggested that children acquire this script in the context of day-to-day activation of the attachment behavior system when the child is with a parent (or other major caregiver). When the caregiver has been sensitive, cooperative, available, and accepting of the child in these situations, the child experiences a coherent

secure base transaction that supports the construction of a secure base script with expectations that the attachment figure will be willing and able to protect and comfort the child as needed. However, when the caregiver does not provide (or is inconsistent in provision of) secure base support, the child has no basis in experience for constructing the secure base script and will have different (or inconsistent) expectations for the outcomes of events that heighten activation of the attachment behavior system.

In conjunction with their argument that the secure base script is a core element of the mental representation of attachment, H. Waters and associates (Waters & Waters, 2006; Waters, Rodrigues-Doolabh, Wais, Zevallos, & Apetroaia, under review) have also designed the attachment script representation task to probe for the presence of the secure base script for adults. This measure assesses whether an informant shows evidence of using the secure base script in the process of creating and telling stories based on a series of word-prompt lists (e.g., Vaughn, Waters, Coppola, Cassidy, Bost, & Verissimo, 2006; Waters & Waters, 2006; Waters et al., 1998). The stories elicited by the word-prompt lists are individually scored for secure base “scriptedness” using a set of rules developed by Waters and Rodrigues-Doolabh (2004) that reference both the presence (or absence) of the secure base script and the quality (e.g., completeness, richness of description) of the script in a specific story. The final score is the average scriptedness score across four stories intended to prime the secure base script. This task and scoring protocol yields highly reliable scores for mothers across a range of socio-cultural groups (e.g., Vaughn et al., 2007; Waters & Waters, 2006; Waters et al., under review). A modified version of the word-prompt list task also has been shown to yield reliable scores in a sample of female and male adolescents (Dykas, Woodhouse, Cassidy, & Waters, 2006). Furthermore, Vaughn, Verissimo, et al. (2006) showed that the scriptedness scores for mothers showed significant stability across a period of 12 months.

Validity data for the scriptedness scores include significant correlations with the coherence scale from the AAI (e.g., Coppola, Vaughn, Cassibba, & Costantini, 2006; Waters & Rodrigues-Doolabh, 2001), significant associations with classifications from the AAI in an adolescent sample (Dykas et al., 2006), correspondence between maternal secure base script scores and infant Strange Situation classifications (e.g., Tini, Corcoran, Rodrigues-Doolabh, & Waters, 2003), and significant correlations between the scriptedness scores for mothers and Attachment Q-sort security scores (Vaughn et al., 2007; Verissimo & Salvaterra, 2006). In a study of associations among attachment variables and mother-child reminiscences concerning emotionally charged events in the child's life, Bost et al. (2006) found that the mother's scriptedness score was positively associated with child participation and with the use of emotion words by both mother and child. These results are consistent with the notion that the secure base script includes awareness and regulation of affect (Waters & Waters, 2006).

The studies reviewed above indicate that the Attachment Script Representation is a reliable and valid assessment of secure base knowledge structures for both females and males. Elliott, Tini, Fetten, and Saunders (2003) reported that scriptedness scores for adult males showed similar patterns for internal consistency and similar associations with AAI coherence scales to those of adult females. Comparable results with respect to reliability were obtained in samples of male and female adolescents (Dykas et al. 2006; Elliott et al., 2003). Dykas et al. (2006) found no sex differences in means of averaged scriptedness scores for their male and female adolescents. To date, however, studies focused on the relations between secure base scripts and child attachment measures have been reported only for mother-child dyads. The present study extends the literature on the secure base script measure to non-maternal attachment figure (i.e., fathers), with our expectation being

that fathers' secure base representation should predict their children's secure base behavior when the children are in the fathers' care. In addition, because both fathers and mothers were included in the present sample, it is possible to address cross-parent questions that were not possible in prior studies. Are the secure base scriptedness scores for husbands and wives similar? Do scriptedness scores for husband/wife pairs overlap to a significant degree? Do they predict child secure base organization with each parent at similar magnitudes? Does the secure base relationship with the mother influence the attachment with the father?

The question of cross-parent convergence regarding attachments with children has been addressed in several studies but has not been fully resolved. Main and Weston (1981) suggested that these relationships were distinct (i.e., not significantly overlapping) and depended uniquely on the quality of interactions with each parent (see Cox, Owen, Henderson, & Margand, 1992). Other investigators have, however, reported significant cross-parent convergence with respect to infant attachment (e.g., Caldera, 2004; Steele, Steele, & Fonagy, 1996), and Fox, Kimmerly, and Shafer (1991) conducted a meta-analysis of studies in which mothers and fathers were both assessed with a given infant suggesting a modest but significant cross-parent concordance (which they attributed to child temperament attributes common across both attachments). It is useful to note that child attachments across parents could also converge if the parents themselves were similar in terms of attachment organization (e.g., van IJzendoorn & Bakermans-Kranenberg, 1996). Categorical attachment assessments (for example, from the Adult Attachment Interview; George, Kaplan, & Main, 1996) for mothers and fathers tend not to show significant cross-parent convergence (e.g., Steele et al., 1996), but continuous measures (e.g., coherence of transcript) from the Adult Attachment Interview (AAI) do sometimes yield modest but significant cross-spouse correlations (e.g., Crowell, Treboux, Gao, Fyffe, Pan, & Waters, 2002). The secure base scriptedness score is a continuous rather than a discrete measure and should be more sensitive to possible convergences across spouses (if they exist) than categorical attachment classifications of adult attachment. In the event that spouses do converge with respect to secure base script representations, we are able to test the joint contribution of mothers' and fathers' scores to the prediction of attachment security (see Steele et al., 1996, for a comparable analysis using categorical measures).

The Steele et al. (1996) report is illustrative because they considered multiple models in their attempts to explain their finding of significant overlap between mother–infant and father–infant attachment relationships. They ruled out the possibility that the overlap was a consequence of similarities between maternal and paternal attachment representations but their data did not allow them to decide between a model implying an intrinsic child factor (perhaps temperamental) and a different model assuming an influence of the maternal representation of attachment on the father–child attachment. The present study provides an opportunity to consider the results reported by Steele et al. (1996) in a new sample using continuous measures of adult attachment representation (i.e., Attachment Script Representation; Waters & Waters, 2006) and child attachment security (Attachment Q-sort; Waters, 1995). The Attachment Q-sort (AQS) is especially useful for this study because it can be used simultaneously to characterize the organization of secure base behavior as a profile score (i.e., “security”) and to examine subsets of items relevant to the secure base phenomenon (e.g., proximity, contact, interaction quality, see Posada et al., 1995). Similarities and differences in patterns of association for the subscales with reference to security with fathers and mothers or with reference to parental secure base scriptedness scores could provide clues to different pathways to secure base behavior organization for each parent. Finding such differences could be useful, given that the

interaction basis for attachment security for infants (i.e., sensitivity to communicative signals) has been found to differ for fathers and mothers (van IJzendoorn & De Wolff, 1997).

Our data come from a larger study of attachment relationships and their associations with child characteristics (e.g., temperament, peer social competence). For the sub-sample included here, complete data for attachment and for child characteristics were obtained from both mothers and fathers. In addition and following Steele et al. (1996), we are able to assess cross-parent associations for child attachment security (from the AQS) and to test models that include potential maternal and/or child influences on father-child attachment security. The available data also afford possibilities of examining the discriminant validity of the attachment script scores by testing their relation to non-attachment measures (i.e., temperament dimensions, behavioral traits, peer competence) that are salient for parents. Finding that the parental script scores predict child secure base behavior but do not predict temperament attributes or peer competence would suggest the fidelity of the script representation measure as measure of attachment (i.e., all good things don't necessarily go together).

Method

Participants

Participants were 56 mother/child and father/child dyads. The children attended private daycare programs in suburbs of Lisbon that were affiliated with the larger project. When the AQS observations were completed, children were between 29–38 months of age ($M = 31.91$; $SD = 2.56$) and 29 were female. All families were European and in all but two families both parents lived in the household. For the cases in which the father was not in the home, a close father-child relationship was reported by both parents. Age of entry into daycare ranged from 4 to 30 months ($M = 8.67$; $SD = 6.59$) and children spent between 3–10 hours ($M = 7.56$; $SD = 1.53$) in non-parental care each weekday. The range of mothers' ages was 26–48 years ($M = 34.95$; $SD = 4.33$) and fathers' ages ranged from 28–63 years ($M = 37.48$; $SD = 6.08$). Mothers' education level varied between 7–23 years ($M = 15.46$; $SD = 3.34$) and fathers between 7–23 years ($M = 14.77$; $SD = 3.17$). Fifty-one mothers and 55 fathers worked outside the home. All families were "middle class" by the standards of the local community.

Procedures

Home visits

Mother-child and father-child dyads were observed during separate visits, each lasting between 2–3 hours. During visits with the mother, the father was asked not be present (and mothers were asked to absent themselves during the father/child visit). Home visits were counter-balanced (thus, for approximately half the families, fathers were observed first). The average interval between the visits was a month. About 82% of visits with the mothers and 64% of the visits with the fathers were completed during the week, after the parents picked up the children from school; the remaining visits were done on weekends. The parents were told that the purpose of the visit was to better understand the child and the parent in their daily routine and experiences, for which reason they were asked to keep their daily activities unaltered as much as possible, in spite of the observers' presence. No other special restrictions were enforced during dyadic observations.

Two observers were present for all home visits. The observers behaved as social visitors in the home, not intervening in family routines but participating in play if invited by the child. They talked informally with the parent but tried not to interfere with child–parent interactions. When it was opportune and in the sequence of the conversation with the parent, observers asked questions concerning Attachment Q-set items that could not be observed (e.g., item 10 refers to the child’s behavior when he/she goes to bed) and about items they may not have observed during the visit (e.g., item 45 refers to the child’s liking to sing and dance to music). The attachment script representation task was presented at the conclusion of a home visit for both mothers and fathers. The same set of word-prompt outlines (Waters & Rodrigues-Doolabh, 2004) was used for each parent. The Social Competence and Behavior Evaluation (LaFreniere & Dumas, 1996) and the Child Characteristics Questionnaire (Bates, Freeland, & Lounsbury, 1979) were given to the parent at the end of the visit. Most parents completed the questionnaires at that time. For those who were not able to complete the questionnaires immediately, they were left with daycare providers and collected by a member of the research team during the following week.

Instruments

Attachment script representation task

This measure (Waters & Rodrigues-Doolabh, 2004) primes the secure base script (described above) using word-list prompts that form the outline of a story. The lists are presented one at a time to the respondent. Each outline consists of three columns of four words. The respondent is instructed to read down each column from left to right to get a sense of the story outline. The instructions also include an explanation that the stories will be audio taped and that the respondent can stop a story and start over from the beginning if she/he chooses to do so. Four lists are intended to prime secure base themes. Two of the secure base word-prompt outlines explicitly concern parent–child content (e.g., *Baby’s Morning*, *Doctor’s Office*) and two are designed to elicit stories relevant to adult relationships (e.g., *Jane and Bob’s Camping Trip*, *Sue’s Accident*). As respondents are handed the word-list prompts, they are told that their story should focus on “parent–child” or “adult relationships.” In this study, six different orders for the word-prompt outlines were used, with the constraint that the three parent–child word-prompt lists were presented as a cluster and the adult–adult lists were presented as a cluster (i.e., a mother/father responded to all prompt-lists in one cluster before being presented with a prompt list from the other cluster). Each order was used approximately equally often and parents in a single family were given the lists in different orders. This task was completed in 15–20 minutes. Audio recordings of the stories were transcribed for later scoring.

Each of the four stories prompted by the secure-base word lists is scored on the basis of the presence (or absence) of the secure base script and the richness and detail concerning the relationship between characters in the story. A single score summarizing both presence and quality of the secure base script is given, with the average of these across the four stories being the subject’s “scriptedness” score for secure base knowledge. Low scores (i.e., 1–3 on the 7-point scale) indicate the absence of a secure base script in the narratives and are considered to be “insecure” with respect to attachment. The lowest scores are reserved for stories that both do not include the secure base script and introduce unusual content into the stories (e.g., a child who has been injured soothes the parent who is upset about the injury). Higher scores (4 or above on the 7-point scale) indicate the presence of the

secure base script and are considered to be “secure.” The highest scores are assigned when the secure base script is elaborated, shows evidence of awareness of the partner’s emotional state, reformulates the meaning of the obstacle/conflict in a favorable way, and/or locates the present interaction in the context of the ongoing relationship. The remaining two stories are not relevant to the secure base script and are not scored for secure base content. Prior research with Portuguese samples (Vaughn et al., 2007; Verissimo, Monteiro, Vaughn, Santos, & Waters, 2005) suggests that this task is a reliable and valid indicator of adult secure base knowledge for Portuguese mothers.

Four raters read and scored each story transcript using the 7-point scale designed by H. Waters and Rodrigues-Doolabh (2004). Three raters had received intensive training in decoding the transcripts from H. Waters. The fourth was trained by one of the other raters and achieved an average intraclass correlation of .88 with the other raters. One of the four raters had participated in AQS observations for half of the sample. For purposes of assessing rater reliability, scores for this rater were included in analyses, however, we deleted her scores from the child’s average cross-rater scores for those children she had observed and had completed the AQS. Stories for a single word-prompt list (e.g., Baby’s Morning) were grouped together and scored in the same session. Different stories were scored on subsequent days to minimize the possibility that raters might recognize stories from a single participant. Raters were not informed whether the stories had been obtained from mothers or fathers. Rater agreement was calculated as the intraclass correlations across rater-pairs. For mothers, the intraclass correlations ranged from .64–.85 with over 85% of scores being within one scale point. For the father stories, intraclass correlations ranged from .74–.96, with over 87% of scores being within one scale point. Spearman-Brown reliability estimates story groups ranged from .83–.95 for both mothers and fathers. The final score for each story was the average across raters. An overall score was calculated by averaging scores over all the stories. Cronbach’s alpha’s for the overall scores were .84 for mothers and .86 for fathers. The values are consistent with those reported by Rodrigues-Doolabh, Zevallos, Turan, and Green (2003) and by Verissimo et al. (2006) in a Portuguese sample. The similar alpha values also suggest that the word-prompt lists are equally reliable for fathers and mothers.

Attachment Behavior Q-Set

The AQS (Waters, 1995) assesses the organization of secure base behavior in the presence of primary or secondary caregivers, in ecologically valid contexts (Vaughn & Waters, 1990). Secure base behavior of the child is characterized in terms of its organization in these contexts (Posada et al., 1995). The AQS provides a detailed description of the child’s attachment behavior and has been used to document both changes and continuities in the development of attachment relationships (Verissimo, Blicharsky, Strayer, & Santos, 1995). Furthermore, the AQS is particularly useful when multiple assessments are planned (as in our case because both mothers and fathers are assessed within a short period) because most children do not become sensitized to the observers (as can happen when Strange Situation tests are repeated over a short period) during the home observations (van IJzendoorn, Vereijken, Bakermans-Kranenburg, & Riksen-Walraven, 2004; Waters & Deane, 1985). Previous studies with Portuguese samples supported the utility and validity of the AQS in the Portuguese culture (Verissimo et al., 2005, 2006).

Observers complete the AQS by distributing the 90 items into 9 categories, according to a fixed distribution. After a sufficiently lengthy period of observation (a minimum of 2 hours), the observer sorts the items into categories that vary from “extremely

characteristic” to “extremely uncharacteristic” for the observed child. Placement of an item in the distribution is determined by the salience/relevance of the item as observed (or reported by the caregiver) rather than by frequency or visibility *per se* (so, for example, determining that the child uses the mother as a base of exploration may take 60–90 minutes for a 3 to 5 year old but, if observed, this item would be placed high in the distribution even though only a single cycle or two might be seen). Items that are more characteristic of the child are placed in the higher categories (9–7) and items least characteristic (the ones that are not like the child) are placed in the lower categories (1–3). Items that are neither characteristic nor uncharacteristic or items that are not observed in the period of the observation should be placed in the center of the distribution (categories 6–4). For scoring, the Q-description of the observed child is compared to a “criterion sort” described by Waters (1995). The criterion Q-sort was constructed by asking attachment experts to describe the “hypothetically most secure preschool child” using the AQS items, with the average item scores across experts serving as the final “criterion” for attachment security. Individual cases are evaluated in relation to this criterion by correlating the vector of item scores derived from the sort of an observed child with the vector of criterion item scores. This value indexes the similarity of the “observed child” to the idealized hypothetical child and ranges (in principle) from -1.0 to 1.0 . In practice, scores below $-.25$ or above $.80$ are rare.

Different teams of observers completed home visits for mothers and fathers. At the end of the observation period, the home visitors independently sorted the AQS items as described above. Observers were trained over a period of several weeks before initiating formal observations for the project. As a part of their training, each observer discussed items and completed an “Ideal Child” Q-Sort with the Project Coordinator. After training, inter-observer agreement (Q-correlation) was between $.60$ and $.89$. Rater agreements during actual data collection were $.72$ for the mothers and $.73$ for the fathers. The Q-sort for the child was a composite (average) of the two Q-descriptions provided by each observer.

AQS subscales

Posada and Waters (1995) identified subsets of items from the AQS that were face valid indicators of secure base behavior and sociability and arranged these items into four Q-sort subscales (*Smooth Interaction with Caregiver*, *Proximity to the Caregiver*, *Physical Contact with the Caregiver* and *Interaction with Other Adults*). In the present sample, Cronbach’s alpha’s for the scales ranged from $.78$ – $.90$ (median = $.85$) for the AQS with mother, and from $.78$ – $.92$ (median $.85$) for the AQS with father. These values demonstrate the acceptable levels of reliability for the scales with both parental figures and are comparable to those reported by Posada and Waters (1995).

Parent reports

Child Characteristics Questionnaire

This 32-item instrument is an age appropriate adaptation of the Infant Characteristics Questionnaire (CCQ; Bates et al., 1979) for use with preschool age children. The items probe a parent’s perceptions of her/his child’s temperament. Bates and associates have used factor analysis to describe the dimensional structure of the items at 6, 13, and 24 months, with a common “difficulty” factor emerging at all age periods. Subsidiary

factors across ages were moderately similar but did not necessarily cover the same item contents across all age periods studied. For our purposes, we derived scores for the first common factor (*Difficulty*) and used this in subsequent analyses. The reliabilities (Cronbach's alpha) for the *Difficulty* scale were .81 and .78 for fathers and mothers, respectively.

The Social Competence and Behavior Evaluation Scale

The SCBE (LaFreniere & Dumas, 1996) is a 30-item instrument that assesses social competence, aggression, and withdrawal in young children. LaFreniere and Dumas (1996) reported that all 30 items had primary loadings on three orthogonal factors representing these domains. For this study, we derived scores for each of the three domains and used these in our analyses. Cronbach alphas for the three scales ranged from .73 to .75 in the present sample for both mothers' and fathers' reports.

Results

Preliminary analyses tested relations between demographic characteristics (i.e., age, years of education, employment status, number of months child was enrolled in daycare prior to assessment, sex of child) of the sample and total secure base script scores for the parents. No analysis yielded a significant association for fathers or for mothers. We also tested for the differences of stylistic aspects of the maternal and paternal storytelling (i.e., story length in words, number of word prompts used when telling the stories) and for relations between stylistic variables and the scriptedness scores. No differences between father and mother were found in tests on story length or number of word prompts used in the stories. We also tested for relations between the demographic indicators and AQS security scores. In no instance were the AQS scores for the child with father or child with mother associated significantly with these variables.

We present the substantive results in two sections. First, we examine differences and similarities between parents for the attachment measures (scriptedness scores and AQS security and scale scores) to determine that the two measures are providing qualitatively and quantitatively similar (or different) characterizations of attachment for and with both parents. Second, we test whether the parental secure base scripts are the primary influences on AQS security scores for the child with each parent. These analyses parallel those presented by Steele et al. (1996) and examine different models of influence on the AQS security outcomes. Because we use continuous variables, rather than the categorical variables available to Steele et al., we modeled relations among the attachment variables using regression techniques.

Similarities and differences across parents for attachment measures

Secure base script scores

Paired-sample *t*-tests compared means for fathers and mothers for the secure base script scores. The test on total scores (average for 4 stories) yielded a significant difference, $t(55) = 3.42, p < .001$ (means 3.32 vs. 3.81 for fathers and mothers, respectively). Follow-up tests for the adult-child and adult-adult story sets yielded the same pattern of results, $t_s(55) = 3.58$ and $2.35, p_s < .001$ and $.05$, respectively. In this sample, stories told by fathers tended to receive lower scriptedness scores than stories told by mothers.

Nevertheless, cross-parent correlations were significant, $r_s = .38, .28,$ and $.38, p_s < .02, .05,$ and $.02,$ for the total, adult–adult, and adult–child scores, respectively. That is, when a child’s father told stories that demonstrated access to the secure base script, her or his mother also tended to tell stories indicating access to the secure base script. A post-hoc analysis tested whether cross-parent correspondence might be related to parent education levels ($r = .46, p < .01$ for mother x father education level). Controlling for education had no meaningful effect in the cross-parent correlation for scriptedness (partial $r = .35, p < .05$). Finding significant correspondence across parents for attachment measures is uncommon in attachment research with families but is not without precedent (see Crowell et al., 2002) and this correspondence may help in explaining cross-parent convergence for child security scores.

AQS security scores

The AQS security scores with fathers ranged between $-.04$ and $.79$, with an average of $.41$ ($SD = 0.20$). Scores when children were seen with their mothers ranged between $-.12$ and $.79$, with an average of $.45$ ($SD = 0.21$). These values are within the range of typical values identified by van IJzendoorn et al. (2004) in their meta-analysis of studies using the AQS in non-clinical samples. A repeated measures ANOVA grouped by child gender tested differences between the AQS scores for fathers vs. mothers. Neither main effects of parent (within subject), child gender, nor their interaction reached significance. These results are consistent with the literature on child attachments to both parents (e.g., Caldera, 2004; Frosch, Manglesdorf, & McHale, 2000; Main & Weston, 1981). The two AQS scores were themselves significantly correlated, $r(53) = .35, p < .05$. Thus, there was moderate consistency in child behavior across visits with each parent. This finding of moderate dependency between the security scores across parents is consistent with results reported by Steele et al. (1996).

AQS scale scores

The four Posada and Waters (1995) sub-scale scores were examined to determine whether the full range of content relevant to secure base behavior was similar or different for mothers and fathers. Results of mean difference contrasts and cross-parent correlations are presented in Table 1. Repeated measures ANOVAs with child gender as a between subjects factor tested mean differences. The scales referencing *Proximity* and *Physical Contact* were scored higher for mothers than for fathers, indicating that items in these scales were more salient when the child was observed with her/his mother than when observed with her/his father. No main effects or interactions with child gender were

Table 1. Averages and standard deviations of the AQS scales for mothers and fathers.

Scales	Father Mean (SD)	Mother Mean (SD)	F-value (1, 110)	$r_{(\text{father} \times \text{mother})}$
Smooth interaction	6.32 (1.02)	6.44 (1.22)	.30	.29*
Proximity	5.08 (1.09)	5.63 (1.14)	6.63**	.49**
Physical contact	6.13 (1.28)	6.59 (1.11)	4.12*	.19
Interaction with other adults	5.78 (1.57)	5.76 (1.38)	.03	.48**

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

significant. Correlations for scores from the child with father and child with mother are also presented in Table 1. Significant associations between the mother and father scores were found for *Smooth Interaction*, *Proximity*, and *Interaction with Other Adults*. The only scale for which father and mother scores were not significantly associated was *Physical Contact*. Thus, even though children tended to stay in closer proximity to with their mothers than their fathers in the separate visits, they tended to show self-similarity with respect to proximity, interaction quality, and sociability with non-family adults across visits.

Pearson correlations tested relations between the scale scores and the AQS security scores for fathers and mothers. Results of these analyses are presented in Table 2. AQS security with father was significantly associated with all three secure base variables (range of significant r s = .48 to .85). For mothers, all four scale scores showed significant associations with the security criterion score (range of r s = .25 to .87). Tests on the level of the correlation coefficients for fathers and mothers (r to z transformation) did not yield any significant differences between the two parents. A post-hoc power analysis indicated that the sample size would have to be over 225 families to detect even the largest difference between mother and father correlation values as significant. Comparison of the scale \times AQS correlations within parent indicated that the relation with *Smooth Interaction* was significantly greater for both fathers and mothers than any of the other sub-scale correlations, p s < .001, for both fathers and mothers. These findings are largely in accord with the assumptions of attachment theory and the discussion of the scales by Posada and Waters (1995). They suggest that by 30–36 months of age, security is more strongly related to the harmony of dyadic interaction than to maintenance of proximity or physical contact *per se* (although both elements of secure base behavior are significant, even in the non-threatening home environment). Taken together, the analyses of mean differences and the substructure of secure base behavior suggest that children in this sample organized secure base behavior in quite similar manners with their both of their parents.

Adult influences on child attachment security

Replication analyses of Steele et al. (1996)

Steele et al. (1996) found that attachment representations for each parent were associated with child attachment classifications with the parent and that child attachments across parents showed significant overlap. Parent AAI classifications were not significantly related. They reasoned that the overlap for child attachment classifications might be due to some intrinsic child attribute (perhaps temperament) or to the influence of the mother on the child's attachment with the father. Both models were supported in analyses and they could not decide between them. Our data reproduce three of the four main effects reported by Steele et al. (see Table 3). Mother and father scriptedness scores were significantly

Table 2. Correlations between the security scores for mothers and fathers and the AQS scales.

	Smooth interaction	Proximity	Physical contact	Interaction with other adults
Security score /father	.85**	.48**	.49**	.07
Security score /mother	.87**	.40**	.39**	.25*

* p < .05; ** p < .01.

correlated with the corresponding child AQS scores and the AQS security scores were significantly correlated across parents. However, maternal scriptedness did not have a significant association with the child's AQS with father (nor was the relation between father scriptedness and child's AQS with mother significant). Contrary to Steele et al., the scriptedness scores for fathers and mothers were also significantly correlated ($r = .38$, $p < 0.05$). To determine whether the similarity for AQS scores was due to some intrinsic child attribute and/or to an influence of the mother's representation on the child's secure base organization with the father, a hierarchical regression was computed for the AQS with father. Father scriptedness scores were entered at the first step with the maternal scriptedness score and the child's AQS score with mother entered at the second step. Results are presented in Table 4. The first step of the regression reproduces the zero-order correlation and is significant. At the second step of the regression there was a significant increase in R^2 ($\Delta = .09$) but only the AQS security score with mother had a unique, significant effect. The maternal attachment representation did not have a significant influence on the child's AQS security with the father.

Table 3. Child characteristics predicted by fathers' and mothers' secure base scriptedness scores.

	Father scriptedness	Mother scriptedness	AQS with father	AQS with mother
AQS security with father	.32*	.22	–	.35*
AQS security with mother	.17	.30*	.35*	–
Temperamental difficulty	.01	.02	.11	.00
Aggression	–.11	–.02	–.10	–.08
Withdrawal	.10	.10	.05	.22
Social competence	.00	.05	.22	.11

* $p < .05$.

Table 4. Hierarchical regression analysis predicting child attachment quality with father.

	R	R^2	ΔR^2	β
Step 1 Father scriptedness	.33	.11	.11	.33*
Step 2 Mother scriptedness + AQS mother	.45	.20	.09	.12.30*

* $p < .05$.

Steele et al. (1996) suggested that the temperament may be the intrinsic child factor driving similarity of attachment classification across parents. Table 3 also presents correlations between the attachment variables and the temperamental difficulty, aggression, withdrawal, and social competence scores from the CCQ and SCBE questionnaires. None of these scores have a significant association with the parent scriptedness scores or with the AQS security score, which suggests that temperamental (and other salient dimensions) do not account for the cross parent AQS security correlation in this sample, either as a main effect or as a mediator.

Discussion

Because no data for the Attachment Script Representation (Waters & Rodrigues-Doolabh, 2004) have been published to date for fathers, our data served as an opportunity to explore the psychometric attributes of this measure with a sample of fathers and to

examine whether the instrument is used by fathers in the same manner that we have found it used by mothers (e.g., Vaughn et al., 2007; Verissimo & Salvaterra, 2006). The data also afford the opportunity to consider previously reported findings regarding similarities of child attachment assessments across parents (i.e., Steele et al., 1996).

Psychometric and cross-parent comparisons

In terms of the psychometric properties of the total and subscores (i.e., parent-child, adult-adult) for secure base scriptedness, fathers in this sample created stories that yielded reliability (Cronbach's alpha) estimates that were comparable to those of mothers in this sample and from other studies (e.g., Vaughn et al., 2007). Alphas for the father data were also in the same range as for adult males reported by Elliott et al. (2003). These results suggest that the word-prompts used elicit stories from fathers that are as reliable as stories elicited from mothers. Furthermore, parental scriptedness scores were significantly correlated. Despite the fact that the scores for secure base scriptedness were equally reliable for fathers and mothers and correlated with each other, fathers' stories received modestly (but significantly) lower scores compared to the scores for mothers' stories.

Why fathers' scores were lower is not clear and it is not a typical finding that attachment representations differ across sub-samples of mothers and fathers from the same study (e.g., Steele et al., 1996, did not find significant differences in the distributions of AAI classifications in their sample of mothers and fathers). There are no previously published findings for parents using the scriptedness scores, but Dykas et al. (2006) did not find significant male vs. female differences in their adolescent sample and the means for males and females (not spouses) in the Elliott et al. (2003) report were not significantly different (H. S. Waters, personal communication, February 2008). We note that the majority of studies of mothers and fathers with a single child have used categorical measures (e.g., AAI classifications) rather than continuous measures, and statistical procedures used for such data may be less sensitive to small differences in means. We found no differences in structural features of stories told by fathers and mothers (e.g., number of words per story was not significantly different and parents used the prompt words from the lists at about the same frequency). We explored the possibility that rater differences inadvertently might have led to the observed differences in parent scores but this does not seem plausible because raters were unaware of whether they were rating stories elicited from fathers or from mothers. In a small post-hoc study, 80 transcripts were presented to naïve raters (10 raters who had no connection with the study sample) and they were charged with identifying which ones had been elicited from women and which ones from men. The response rate was at chance levels. At this point, we cannot rationalize the differences in scores between mothers and fathers. However, notes made by observers after the visit suggested that fathers, more than mothers, found both the observation component and the attachment script representation task somewhat discomfiting. That is, fathers, more than mothers, seemed less comfortable being observed and assessed and they may have been more invested in "getting through with the task" than in producing the best story they could from the word-prompts. Testing this possibility will require additional data collection.

The finding that cross-parent scriptedness scores were significantly correlated is also curious. However, as noted above in the results, this sort of finding is not without precedent using other adult attachment measures and it is not precluded by any assumptions from attachment theory. We are inclined to treat the observed congruence as a happy coincidence (for the parents).

Analyses of the AQS data indicated that children organized secure base behavior around both fathers and mothers. The obtained security scores were within the ranges of scores expectable in non-clinical samples (van IJzendoorn et al., 2004) and did not differ significantly across parents. On average, children treated both of their parents as “secure base” figures and AQS scores were consistent with the notion that the majority of attachments were secure. Some significant between-parent differences were obtained in tests of the sub-scale scores (Posada & Waters, 1995). When observed with their mothers, children received higher scores on the Proximity and Physical Contact sub-scales than they did when observed with fathers. In Q-methodology, this implies that the item content represented on the Proximity and Physical Contact sub-scales was more salient when children were observed with their mothers. This could mean that other content from the Q-set was more salient for fathers or it could mean that proximity and physical contact was observed more frequently when children were observed with mothers. Interestingly, only a handful (7) of the 90 Q-items showed mean differences for fathers and mothers and, of these, only 1 was placed more extremely for fathers than for mothers (child accepts and enjoys loud sounds or being bounced around in play, if parent smiles and shows that it is supposed to be fun). We do not make much of individual item differences, but this specific difference is clearly consistent with cultural stereotypes of fathers being more playful with their children (than mothers).

More to the point, the secure base behavior sub-scale scores showed similar patterns of correlation with security for both mothers and fathers (see Table 2). For both mothers and fathers, the strongest subscale correlate was *Smooth Interaction*, with *Proximity* and *Physical Contact* having significant (but significantly reduced in comparison with *Smooth Interaction*) associations as well. The Q-method does not require or presume this pattern of correlations of the subscales with the criterion score and Posada et al. (1995) suggest that a somewhat different pattern (with *Proximity* and *Physical Contact* having correlations of higher magnitude) would characterize the secure base behavior of infants/toddlers. These data suggest that the young children in this sample organized their secure base behavior with their mothers and fathers in a similar manner.

We also tested the discriminant validity of scriptedness scores by showing that parental scripts did not have significant associations with salient descriptive dimensions (e.g., temperamental difficulty, social competence with peers) that have been identified in previous published reports as outcome variables sometimes associated with the AQS security score (e.g., Bost, Vaughn, Washington, Cielinski, & Bradbard, 1998; Vaughn, Stevenson-Hinde, Waters, Kotsaftis, Levever, Trudel, et al., 1992). Finding that the scriptedness scores predict the AQS security scores but do not also predict dimensions of temperament and social competence suggests the fidelity of the scriptedness scores with respect to the attachment construct (see Waters, Corcoran, & Anafarta, 2005, for a more detailed discussion of construct fidelity).

Replication analyses

Steele et al. (1996) tested hypotheses that parent classifications from the AAI would predict infant classifications from the Strange Situation. In our data, secure base scriptedness in parent narratives predicted the child’s attachment security as characterized by the Attachment Q-set. These results are consistent with a large literature relating adult attachment organization to child attachment security (van IJzendoorn, 1995) and serves as

additional evidence (see also Vaughn et al., 2007; Veríssimo & Salvaterra, 2006) for the validity of the Attachment Script Representation measure. As with Steele et al., we found that child attachment security was similar across parents and we attempted to probe the sources of this dependency. We also found (and contrary to Steele et al.) that the secure base scriptedness scores were correlated across parents. Consequently, in our analyses examining influences on the child's attachment with the father, we included the father's secure base scriptedness score (first step) and both the maternal secure base scriptedness and the AQS security score (second step) in the regression. As in Steele et al.'s analyses, the father influence remained significant and the child's AQS security score with mother also added significantly to the prediction, however, the maternal scriptedness score did not contribute significantly to prediction.

This result constitutes a partial replication (and partial non-replication) of the results reported by Steele et al., who found that both the child's attachment with mother and the maternal AAI classifications were associated with the child's attachment with father. We note that Steele et al. (1996) tested different models in reaching their conclusion that both child and maternal factors contributed to the child's attachment classification with the father, whereas our analysis used both variables in the same prediction equation. We did attempt analyses that separated the two predictors, but the results did not change (i.e., maternal scriptedness did not add to the prediction of child's AQS with father when entered separately on the second step of the hierarchical regression but the child's AQS score with mother did remain a significant predictor when entered separately). We were able to eliminate difficult temperament as a candidate variable that might account for the cross-parent correlations insofar as the temperamental difficulty score from the Child Characteristics Questionnaire was not a significant correlate of the AQS security scores for either fathers or mothers and so could not mediate their relation. Nor were the dimensions derived from the SCBE (LaFreniere & Dumas, 1996) related to AQS security. If, as Steele et al. suggest, there is some child attribute that is at the source of this cross-parent similarity for the AQS, it was not measured in this study.

Overall, our results suggest that the attachment script representation task (Waters & Rodrigues-Doolabh, 2004) is a generally valid assessment of adult attachment representation. This is not to say that secure base scripts exhaust the meaning of attachment representations, but that this script is a core feature of such representations. The findings further suggest that the attachment script measure is specific to attachments and is not a measure predictive of non-attachment phenomena. Our findings also are consistent with the notion that parental attachment representations will be predictive of child attachments with that parent, and not necessarily to attachment "in general," at least with children under 3 years of age.

Finally and in conclusion, we mention that the sample in which we examined these relations is not from North America or Northern Europe. Although European and a member of the EEU, Portuguese culture is distinct from the stereotypic "Western" culture in many ways. In their comprehensive meta-analysis of individualism and collectivism across cultures, Oyserman, Coon, and Kimmelmeier (2002) identified Portuguese culture as more collectivist and less individualistic than the North American dominant culture. Yet, despite differences in the interpersonal orientation typical of the culture, Bowlby's model of attachment formation and maintenance finds support in this group. We suggest that our findings are consistent with an interpretation of attachment that is not strongly or uniquely determined by cultural preferences. With respect to child-parent attachments, children tend to be more alike than different.

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