



Attachment & Human Development

Publication details, including instructions for authors and
subscription information:

<http://www.tandfonline.com/loi/rahd20>

Maternal secure-base scripts and children's attachment security in an adopted sample

Manuela Veríssimo ^a & Fernanda Salvaterra ^b

^a Instituto Superior de Psicologia Aplicada, Lisbon, Portugal

^b Lisbon Department of Social Services, Portugal

Published online: 02 Feb 2007.

To cite this article: Manuela Veríssimo & Fernanda Salvaterra (2006) Maternal secure-base scripts and children's attachment security in an adopted sample, Attachment & Human Development, 8:3, 261-273, DOI: [10.1080/14616730600856149](https://doi.org/10.1080/14616730600856149)

To link to this article: <http://dx.doi.org/10.1080/14616730600856149>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

Maternal secure-base scripts and children's attachment security in an adopted sample

MANUELA VERÍSSIMO¹ & FERNANDA SALVATERRA²

¹*Instituto Superior de Psicologia Aplicada, Lisbon, Portugal, and* ²*Lisbon Department of Social Services, Portugal*

Abstract

Studies of families with adopted children are of special interest to attachment theorists because they afford opportunities to probe assumptions of attachment theory with regard to the developmental timing of interactions necessary to form primary attachments and also with regard to effects of shared genes on child attachment quality. In Bowlby's model, attachment-relevant behaviors and interactions are observable from the moment of birth, but for adoptive families, these interactions cannot begin until the child enters the family, sometimes several months or even years post-partum. Furthermore, because adoptive parents and adopted children do not usually share genes by common descent, any correspondence between attachment representations of the parent and secure base behavior of the child must arise as a consequence of dyadic interaction histories. The objectives of this study were to evaluate whether the child's age at the time of adoption or at the time of attachment assessment predicted child attachment security in adoptive families and also whether the adoptive mother's internal attachment representation predicted the child's attachment security. The participants were 106 mother–child dyads selected from the 406 adoptions carried out through the Lisbon Department of Adoption Services over a period of 3 years. The Attachment Behavior Q-Set (AQS; Waters, 1995) was used to assess secure base behavior and an attachment script representation task was used to assess the maternal attachment representations. Neither child's age at the time of adoption, nor age of the child at assessment significantly predicted the AQS security score; however, scores reflecting the presence and quality of maternal secure base scripts did predict AQS security. These findings support the notion that the transmission of attachment security across generations involves mutual exchanges and learning by the child and that the exchanges leading to secure attachment need not begin at birth. These results complement the findings and conceptual arguments offered by Bowlby and Ainsworth concerning the critical influence of maternal representations of attachment to the quality of attachment security in children.

Keywords: *Attachment, adoption, representations*

Adoption and attachment

Attitudes and beliefs about the costs and benefits of adopting non-biologically related children (for both the adoptive family and the adopted child) have shifted considerably over the past half century (e.g., Bohman, & Sigvardsson, 1990; Hodges & Tizard, 1989; Triseliotis & Hill, 1990; for an integrative discussion, see Brodzinsky, 1993). Although the earlier literature tended to highlight positive outcomes associated with adoptive placements, more recent research highlighted concerns (e.g., Smith & Brodzinsky, 1994). For example,

Correspondence: Manuela Veríssimo, Instituto Superior de Psicologia Aplicada, Rua Jardim do Tabaco, 34, 1100 Lisbon, Portugal.
E-mail: mveriss@ispa.pt

adopted individuals are more likely than biological, non-adopted children to seek mental health services as adolescents and adults (e.g., Mech, 1973; Zill, 1985) and Brodzinsky and Steiger (1991) reported that adopted children tended to be overrepresented in special education populations. A meta-analysis emphasizing the psychological difficulties for children and families associated with adoption was written by Wierzbicki (1993).

A more recent meta-analysis of adopted children's cognitive functioning (Van IJzendoorn, Juffer, & Klein Poelhuis, 2005) showed no difference between level of IQ in adopted and non-adopted children, however adopted children tended to have more learning problems and less success in school. Several studies also reveal a greater percentage of adopted children classified as disorganized in the Strange Situation Test (e.g., Dozier, Stoval, Albus, and Bates, 2001; Marcovitch et al., 1997). Studies of trans-racial and international adoptions have also raised questions and concerns about attachment formation (e.g., Chisholm, 1998; O'Connor, Rutter, & The English and Romanian Adoptees Study Team, 2000; Smyke, Dumitrescu, & Zeanah, 2002; Stams, Juffer, van IJzendoorn, & Hoksbergen, 2001; Zeanah, 2000). However, most of these studies focused on children adopted after their first year or from severely depriving environments, conditions that seem likely to increase the incidence of insecure attachment relationships.

Even though much of the current literature concerning outcomes associated with adoption emphasize difficulties, it is important to recognize that results of other studies suggest that the experience of adoption per se, for infants without risky histories, need not undermine attachment formation (e.g., Dozier, Stoval, Albus, & Bates, 2001; Juffer & Rosenboom, 1997; Singer, Brodzinsky, Ramsay, Steir, & Waters, 1985). For these children, the distribution of early attachments (as secure or insecure using the Ainsworth criteria; Ainsworth, Blehar, Waters, & Wall, 1978) does not differ markedly from the distribution expected in non-clinical, middle-class samples. Indeed, in some studies of adopted children that suffered some type of privation the distributions of attachment classifications does not differ from middle-class, non-clinical distributions (e.g., Chisholm, Carter, Ames, & Morison, 1995; O'Connor, Bredenkamp, Rutter, & The English and Romanian Adoptees Study Team, 1999). O'Connor et al. (1999) reported that, at age 4 years, children showed almost no attachment disorder behaviors even when their early months had been characterized as severely depriving.

These results suggest that the range of less adaptive or maladaptive outcomes distinguishing adolescents and adults who were adopted as infants or young children (e.g., Stams, Juffer, Rispen, & Hoksbergen, 2000) did not arise, necessarily, from a failure to form and maintain an attachment with their adopted parents. There remain, however, a number of outstanding questions about attachment formation and maintenance because most of the families studied by attachment researchers negotiated and completed the adoption while the child was in early infancy and most child/caregiver dyads had multiple opportunities to engage in the sorts of pre-verbal interactions identified by Ainsworth (e.g., Ainsworth et al., 1978) as supporting the first sensorimotor models of a secure base (i.e., attachment) relationship. For a variety of reasons, many children are adopted after infancy and after the onset of language and there may be some associated attachment "costs" when relationships are first constructed as linguistic and mental models, without a pre-language, sensorimotor foundation. Thus, adoption studies afford an important opportunity to study the limits or flexible boundaries of the attachment system, when children in a sample are adopted at different age periods. In the present sample, the range of ages at time of adoption was relatively broad (from <1 to 47 months of age), and we are able to examine explicitly whether earlier or later adoptions within this age range differentiate between children enjoying secure vs. insecure attachments.

Attachment representation and organization of child's secure base

Attachment theory proposes that the establishment of healthy emotional bonds to another individual is essential to development during infancy/childhood and is also of enduring importance for mental health across the life span. Children's early attachment relationships are fundamental influences on their development. Drawing on concepts from psychoanalysis, ethology, and the developmental psychology, Bowlby (1973, 1969/1982) formulated the framework of the theory that a continuous, affect-laden relationship with a primary caregiver promotes the child's survival and wellbeing. According to Bowlby, the infant's relationship with the caregiver begins as a set of innate signals that attract the adult to the baby and motivate interaction. With development a true affectionate bond develops, supported by emerging cognitive and emotional capacities as well as by the history of consistent, sensitive, care. This enduring, affective bond enables the young child to use the internal representation of the attachment figure as a secure base across distance and time.

In Bowlby's (e.g., 1973, 1980; Bretherton, 1985) framework, the internal (mental) representation of this parent-child bond becomes a foundational facet of personality. He referred to the internal representation as a working model that included expectations about the availability of attachment figures, the likelihood of receiving support from them during times of stress, and the quality of interaction with those figures. The internal working model is believed to be a critical influence on future intimate relationships during childhood, adolescence, and adult life because it serves as the individual's primary template or frame for initiating and maintaining those future relationships, perhaps especially relationships with the individual's own offspring (e.g., Schaffer, 1996; Sroufe, 1996; Sroufe, Egeland, Carlson, & Collins, 2005; Zimmerman, 2004). To the extent that a caregiver's mental representation of attachment informs and guides transactions with offspring (not necessarily at the level of conscious awareness), it is expected that the internal model of the caregiver will be transmitted (at least in part) as a sensorimotor model to the infant (and presumably, with development, as a mental model in its own right). Support for this expectation has been reported, but primarily in samples of biologically related parents and children (e.g., Main, Kaplan, & Cassidy, 1985; Posada, Waters, Crowell, & Lay, 1995; Steele, Steele, & Fonagy, 1996; Tini, Corcoran, Rodrigues-Doolabh, & Waters, 2003).

Using the Adult Attachment Interview (Main et al., 1985) to index attachment representations for adoptive mothers and the Strange Situation test (Ainsworth et al., 1978) as the index of attachment quality for children, Dozier et al. (2001) found a concordance rate of 72% between mothers and their adopted children. The second central purpose of the present study was to test the replicability of Dozier et al.'s basic finding of concordance and to extend the results to families from another culture (Portuguese) using a different set of measures.

Although Bowlby could be confident concerning the content of attachment representations, he was constrained in his characterizations of the structure of that content. This was due, in large part, to the state of construct development cognitive psychology in the 1960s and 1970s, which remained (at least as far as infancy and childhood was concerned) under the influence of Piaget's constructivist views on intellectual development. Bowlby borrowed from both Piagetian and from adult cognitive psychology when he described the structure of mental models, and his language for structure changed as the vocabularies in these theoretical frameworks shifted. Like Bowlby himself, the earliest measures of adult attachment representations focused on content and the styles with which adults presented that content when probed, rather than its underlying cognitive structure (e.g., Main & Goldwyn, 1998; Main et al., 1985). The research programs inspired by these measures of

content and style have been very generative, however, one result of the successes enjoyed by this research program has been to insulate the study of attachment representation from advances in understanding cognitive structures (see Bretherton, 1985, for a counter-example).

Recently, Bretherton (e.g., 1999) and Waters (e.g., Waters, Rodrigues, & Ridgeway, 1998) have explored the concept of “scripts” as a means to better understand the structure and functionality of internal working models. Scripts are created as a result of the repetition of experiences of similar nature given that a particular experience is like the existing script, allowing the individual to foresee with greater or less success what will happen beyond the immediate context (Nelson, 1986; Nelson & Hudson, 1988; Oppenheim & Waters, 1995). Waters and Rodrigues-Doolabh (e.g., 2001) designed a procedure to evaluate the organization of secure base knowledge and behavior using stories produced by adults in response to a set of word-prompt lists. Waters et al. (1998) suggested that an adult representation of attachment relationships could be characterized as a script composed of causal-temporal propositions relating to the “secure base phenomenon.” They argued that familiarity with and access to this script should reflect the experience of a balance between attachment and exploratory behaviors during infancy and early childhood, which serves as the base for co-construction of internal working models in early childhood. For adults, Waters and Rodrigues-Doolabh (2001) suggest that the secure base script is elaborated in the following sequence: constructive interaction between the members of the attached dyad; an obstacle to the continuation of the interaction is encountered; a signal that aid is necessary from one or both members; detection of the partner’s signal; effective aid is offered and accepted; receiver feels the aid is reassuring; resolution or return to the constructive engagement (see Waters & Waters, 2006).

Several studies using the attachment script representation measure described by Waters and Rodrigues-Doolabh (2004) attest to its utility and validity. Tini et al. (2003) demonstrated that maternal secure base behavior is associated with the classifications of their children in the Strange Situation. Vaughn, B. E., Coppola, G., et al. (in press) demonstrated that mothers from different cultural groups produced detailed and explicit secure base narratives, when presented with the same sets of suggestive words as in the American samples. Furthermore, Vaughn, Veríssimo, Coppola, Bost, Shin, McBride, et al. (2006) reported that scores for the attachment script measure are stable over a 12+ month interval for mothers. In another study, Veríssimo, Monteiro, Vaughn, Santos and Waters (2005) found a positive association between the quality of maternal secure base scripts and the secure base behavior, scored from the Attachment Q-set (Waters, 1995) of their children in a Portuguese sample. The utility and validity of the attachment script representation, plus the fact that the measure has proven valid in samples of Portuguese mothers, made the measure the most reasonable choice among measures of adult attachment representation for the present study of adoptive families in Portugal.

Although the practice of legal adoption of non-biologically related children has a relatively long history in the USA and in some northern European countries, adoption was not legalized in Portugal until 1966 and it was not until 1980 that the Portuguese social security system began organizing and supervising the adoption process. In 1993, international adoptions became legal, but these still are not common in Portugal, representing approximately no more of 5% of all adoptions every year. The vast majority of trans-national adoptions are children from former Portuguese colonies (e.g., Mozambique or Cape Verde). The practice of adoption is now accepted in Portugal as an important alternative to institutional rearing of children and both policy makers and the mass media have focused on reducing the lengthy process presently required for couples to become adoptive parents.

In Portugal the prospective adoptive parents are evaluated after they applied for adoption in the Social Security Adoption Services. They are evaluated on at least three occasions with psychologists and social workers, one of which is a home visit. After a long waiting period for the adoption (depending of the characteristics of the child they wish to adopt), when the child is placed in their home there is a period (minimum of 6 months) during which the family is supported by two professionals (a psychologist and a social worker) that help the family to deal with the child and provide information about the importance of their attitudes and behavior towards the child. After 6 to 9 months the adoption is certified by a court, at which time the adoption service normally ceases contact with the family, unless the parents ask for help or are receiving some kind of systematic psychological consultations as family therapy, child psychotherapy, or educational counselling. In Portugal, there are no special post-adoption services, the problems of adopted children are treated in the general mental health services.

Because the practice of adoption is relatively recent in Portugal, it seems relevant to study attachment processes and outcomes in this cultural milieu to determine whether socio-cultural factors may interact with interpersonal/interactive factors to influence the assembly of attachment relationships. The first objective of the present study is to evaluate whether the age of the child at the date of adoption predicts the quality of the child's attachment established with the adoptive family. The second objective is to evaluate the relation between the attachment representation of the adoptive mother and the attachment security of the adopted child. To find a direct relation between scripts of attachment of the mother and the quality of attachment in a sample of parents and children with different genetic information allows the researchers to better understand the mechanisms by which the parents transmit the basis for the construction of their own internal working model to their children.

Method

Participants

The participants were 106 mother–child dyads selected from the 406 adoptions carried out through the Lisbon Department of Adoption Services over a period of 3 years. The selection criteria were age of the adopted child and parent response. The children (62 female and 44 male) were between 3 weeks and 47 months of age when they were adopted ($M=9.01$ and $SD=11.94$). All children were between 10 and 69 months of age ($M=37.8$ and $SD=16.35$) at the time of assessment with the AQS. When the children were adopted, the mothers were between 25 and 49 years of age ($M=35.92$ and $SD=4.84$) and the fathers were between 28 and 50 years of age ($M=38.22$ and $SD=4.64$). Mothers' level of education ranged from 4 to 22 years in school ($M=12.95$ and $SD=4.34$) and the fathers' ranged from 4 to 19 years in school ($M=12.58$ and $SD=4.18$). When the children were observed for the AQS, the time elapsed since adoption ranged from 6 and 69 months ($M=29.06$ and $SD=16.79$). All of the adopted children were born in Portugal, the majority of the children were of Caucasian origin ($n=81$), 23 were of African origin, and two of gypsy ethnicity. The adoptive parents consisted of 100 Caucasians, one African, and five were mixed with respect to ethnicity/race. For the most part, adoptions were intra-racial (81 cases), 20 were inter-racial and five were mixed (parent or child mixed race).

The main factor for adopting is the inability to reproduce biologically. The most prevalent obstacle to producing a biological child is infertility (85.6%), followed by health concerns relating to pregnancy and childbirth (6.7%), solidarity (4.8%), death of biological child (1.9%), and lack of a partner (1%). We do not have comprehensive information about the

life story of the adopted children prior to their adoption, however, with the exception of the children adopted at birth, the majority of the children were adopted from Portuguese institutions, five children were in foster families and one was living with the biological parents.

Instruments

Attachment Behavior Q-Set (AQS) version 3.0 of Waters (1995). The AQS assesses the quality of the secure base behavior of the child in an ecologically valid context. Like the majority of the Q-sorts, the AQS items are sorted using a fixed distribution. Observers distribute the 90 items across nine categories that vary from *extremely uncharacteristic* to *extremely characteristic*. Items more characteristic of the child are placed in the higher categories (7–9), and items less characteristic are placed in the lower categories (1–3). Items that are neither characteristic, nor uncharacteristic or items that cannot be observed in the time frame of the observation are placed in the center of the distribution (categories 4–6). The AQS includes many behaviors that are relevant for the characterization of the child's use of the parent as a secure base, however, it is the organization of these behaviors, presented in the Q-sort profile that indicates the degree to which the secure base behavior is present in the description of a child while he interacts with the mother. To derive a score for attachment security (or *secure base behavior score*) for a given child, the profile of scores given by an observer (or aggregate of observers when more than one rater provides a Q-sort description) is correlated with the profile for the hypothetically “extremely secure child” provided by Waters (1995). The resulting correlation coefficient is the child's “score” for attachment security.

Validity of the AQS was demonstrated in a recent meta-analysis by van IJzendoorn, Vereijken, Bakermans-Kranenburg, and Rikensen-Walraven (2004). They suggested that the AQS is as valid an attachment measure as the strange situation or Adult Attachment Interview. They also noted that the AQS has some advantages in relation to the strange situation because the age range over which it can be used is broader and observations tend to be less intrusive. Posada and Waters et al. (1995) confirmed the validity of the AQS in several cultures, showing that the criteria of ideal child is similar across cultures and that in all cultures, there was significant convergence between “ideal” children and the “secure” child. Finally previous studies in Portugal supported the validity of the AQS for the Portuguese culture (Veríssimo et al., 2006).

Attachment script representation. Four sets of word-prompts were developed in order to guide the production of stories relevant to important scenarios from the attachment viewpoint. The stories are: *Baby's Morning*, *Doctor's Office*, *Jane and Bob's Camping Trip*, and *Sue's Accident*. Two additional word-prompt lists are considered neutral: *Trip to the Park* and *Afternoon Shopping* (see Waters & Waters, 2006). Only those stories expected to prime the secure base script were scored for this report. A single score summarizing both presence and quality of the secure base script is given for each of the attachment-relevant narratives, with the average of these being the subject's scriptedness score for secure base knowledge. Low scores (below 4 on the 7-point scale) indicate the general 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, or locates the present interaction in the context of the ongoing relationship (see Waters & Waters, 2006). A fully bi-lingual Portuguese/English speaker (the first author) trained in the protocol administration and coding by Harriet Waters translated the original English version of the six story outlines and the standard set of instructions for a previous project (Vaughn et al., 2006). The Portuguese version was administered, during pilot testing, and after to a group of 58 biological mothers. In the previous project, the intraclass correlations ranged from .68 to .83 with over 90% of scores being within one scale point. Spearman-Brown reliability estimates for individual stories ranged from .82 to .93.

Procedure

AQS Observations. Mother–child dyads were seen in their homes by two observers for a total of 2–3 hours. Mothers were encouraged to go about their usual activities and to treat the home visitor as they would a visiting friend or neighbor. When it seemed opportune during conversation with the mother, the observer would ask questions concerning items that could not be observed (e.g., item 10 refers to the behavior of the child when he goes to bed) and of items that had not been observed during the visit (e.g., item 47 refers to the acceptance of the child, when playing, of loud sounds if the mother smiles or signals in another way that the sounds are not threatening). The observers had been trained over a period of 6 weeks before initiating the observations, having compared and discussed the items upon completion of the Q-sort of a hypothetically most secure child. Observers were trained to an agreement level at or above .70 (Q-correlation between sorts) prior to starting observations of study participants. Each observer completed a Q-sort description of the child behavior after the home visits.

Maternal narratives. The mothers responded to six sets of word-prompts (see Waters & Waters, 2006), presented one at a time by a research staff member. For each story, a set of words organized in three columns was presented. Standard instructions were given to the mothers (Waters & Rodrigues-Doolabh, 2004). The sets of word-prompts were presented in six different orders with each order being used an approximately equal number of times. The word-prompt lists referring to mother–child interactions were always presented as one block and those referring to adult relationships as another block, that is, the mothers told all stories from one block before being presented with a word-prompt list from the other block. The maternal narratives were collected during the home visit. Upon completion of the observational period, the mothers were asked to accompany one observer to another part of the house in order to complete the narratives while the second observer played with the child. The majority of the mothers completed the task in 15–20 minutes. The stories were audio-recorded and later transcribed for coding.

Results

Quality of attachment

Waters (1995) provided Q-sort criterion scores for attachment Security and for dependency. Security criterion and dependence values for this sample were 0.39, $SD = 0.16$, and 0.01, $SD = 0.21$, respectively. Comparing these results with data from biological mothers in Portugal did not result in a significant difference for the security score, $F(1, 164) = 3.2$, $p < 0.05$. A significant difference was found for dependence, however when age was

controlled the difference was no longer significant, $F(1, 164) = 0.78, p > 0.05$. The adoptive children in this sample are not significantly different from their biological child counterparts (Veríssimo et al., 2005). Additional tests revealed a significant sex difference for security, favoring girls ($M = 0.36, SD = 0.15$ for boys and $M = 0.43, SD = 0.15$ for girls), $F(1, 105) = 5.57, p < 0.05$. There were no significant differences in the ethnicity of the child or of the mother. No difference was found comparing the intra-racial adoptions with the interracial, unlike the findings reported by Singer et al. (1985).

Relation between the security criterion and the descriptive variables. Correlation analyses were used to determine whether any significant relations between demographic variables and the AQS scores could be found. No significant associations were obtained for the AQS Security scores. However, as shown in Table I, significant and positive correlations between AQS dependency and the mothers' and fathers' level of education were obtained. An additional partial correlation analysis controlling for the time elapsed since adoption suggested that this relation (between dependency and parent education) was largely accounted for by the time since adoption. As was previously stated, we expected that there would be a negative correlation between dependency and age (older children would be characterized as less dependent). However, the most interesting result was that there was no correlation between age at the time of adoption and the degree of security ($R = -0.12, p > 0.05$). In order to explore this result an interaction "age at adoption \times time since adoption" interaction term was entered on a regression analyses. Including this interaction term did not increase the overall regression and beta for the interaction term did not reach significance ($\beta = 0.13, p > 0.05$).

Maternal attachment script representations

Two investigators read and coded each story using a scale of 7 points defined by Waters and Rodrigues-Doolabh (2004). Of the two investigators coding the narratives, one received intensive training from H. Waters. One member of the coding team was blind to all AQS data. The second was blind to half the sample but had participated in home visits for the other half of the sample. Scores provided by the privileged rater were not used in the composite scores for primary analyses. Scores for the raters were averaged (see exception above) for each story. The correlations between the raters varied from .75 and .86. Scores for each story were aggregated (average of the two raters). An average was taken for the mother-child stores (*Baby's Morning, Doctor's Office*), yielding a score for this theme, as well as for the adult-adult stories. An overall score was obtained through the calculation of the average over all the stories. The correlation between the composite score for the

Table I. Correlations between the AQS scores and descriptive variables.

	Security	Dependence
Fathers' Level of Education	0.18	0.29*
Mothers' Level of Education	0.19	0.21*
Father's Age	0.07	0.17
Mother's Age	0.08	0.14
Child's Age	-0.06	-0.47**
Age at the time of adoption	0.08	0.07

* $p < 0.05$; ** $p < 0.01$.

mother–child stories and the composite score for the adult–adult stories was 0.69. The results are consistent with those presented in Rodrigues-Doolabh, Zevallos, Turan, and Green (2003) and Veríssimo et al. (2005).

In a more descriptive analysis, we sought to evaluate the relation between the demographic variables and the values obtained from the scripts. The correlations between the mother's age and education level with maternal attachment script scores were not significant and a *t*-test did not reveal any significant differences as far as the sex of the child for the script scores.

Maternal attachment representations and child security of attachment. The AQS security criterion score was significantly correlated with the composite score of the mother–child narratives, with the adult–adult narratives, as well as with the total composite score. The scores are presented in Table II. Mothers whose stories showed evidence of the use of the secure base script tend to have children with higher scores for security on the AQS (Waters, 1995). The AQS dependency score was not significantly correlated with maternal script scores.

Discussion

The first objective of this study was to evaluate whether the age of the child at the date of adoption or the time in family since adoption was a significant correlate of child attachment security established with the adoptive mother. In this sample, neither age-related variable was associated significantly with the child's attachment security score from the AQS. These data are in accord with the few studies carried out on the topic of adopted children. For example, Chisholm (1998) evaluated the quality of attachment in adopted children from Romania and found some differences when the children were 2.5 years of age, but these had disappeared when the children were 4.5. As in past studies, the quality of attachment was evaluated using the Q-sort methodology, but this was completed by the mothers, in contrast to the present study, which was done unrelated observers. Dozier et al. (2001) used the Strange Situation test (Ainsworth et al., 1978) in a sample of children between 12 and 24 months of age and did not find a significant relation between age of adoption and quality of attachment. Our study included a broader range of ages and a larger sample, and yet we did not find a significant relation between these timing variables and attachment security. Taken together, these findings suggest that the quality of attachment does not depend critically on having a continuous relationship from birth (although this may be preferred by parents and children). Furthermore, contrasts between this adopted sample and another sample of biologically related children from this culture (Veríssimo et al., 2005) did not reveal a significant difference for the AQS security score. Although we did not collect data on maternal sensitivity, these findings are consistent with Ainsworth's (e.g., Ainsworth et al., 1978) arguments that the quality of attachment is a product of interactive exchanges characterized by sensitivity and cooperativeness on the part of the adult.

Table II. Correlations between the scores of the Maternal Narratives and secure base behavior of the children at home.

Criterion of Security	
Mother–Child Stories	0.33**
Adult–Adult Stories	0.36**
Composite Score Attachment	0.38**

***p* < 0.01.

We did find a significant difference between boys and girls for attachment security from the AQS. This is an intriguing result. Previous studies in Portugal with biological dyads did not reveal any sex differences, however, in the adoptive sample, parents expressed a preference for female children (i.e., only 9.7% said they would prefer a male, whereas 28% claimed to prefer female children and 68.3% did not express a preference). It is plausible that the sex preferences of adoptive parents may have influenced their level of investment in the adopted child, and this could explain the observed sex difference for security. This speculative hypothesis should be tested in future samples.

Although our results suggesting that adoptive status, per se, does not appear to be a threat to attachment formation in this sample, a number of previous studies have documented negative impacts, especially for children adopted trans-nationally who have suffered a history of abuse or deprivation prior to adoption. One outcome emphasized in prior studies is the “D” or disorganizes/disoriented attachment classification (from the Strange Situation test). We are not able to detect children of this attachment type using the AQS nor do we have detailed information about children’s histories prior to their adoption. There are, however, reasons to believe that these are not causes for concern. Firstly, the average security score for the adoptive sample does not differ from scores for non-adopted children in this culture. If there were a large number of “hidden” disorganized/disoriented children in the sample of adopted children, we would have expected differing means (e.g., Waters & Valenzuela, 1999). Secondly, an effort to create institutions that care not only for the physical but also emotional aspects of the child development has been initiated in Portugal for over a decade and this makes it less likely that the adopted children were severely deprived (or at least not as severely as, say, Romanian orphans). We are satisfied that the results we obtained are valid estimates of attachment quality for adopted children from this culture.

Our second objective was to extend the results of Tini et al. (2003) and Veríssimo et al. (2005) to samples of adopted children and, in this way, contribute to the understanding of how maternal attachment representations contribute to the establishment of the attachment relationship with her child. The results indicate that the quality of maternal attachment script representations predicts attachment security for children; that is, the mothers who have access to and use the secure base script in the formation of stories prompted by the Waters and Rodrigues-Doolabh (2004) lists are used by their children as a secure base. These results support a basic assumption of attachment theory concerning transmission of attachment across generations; the internal working model of the mother is a critical factor influencing the quality of childrearing/interaction with which she engages her children. It is, of course, these interactions and childrearing episodes that determine the child’s quality of attachment (e.g., Bretherton, 1985; Main et al., 1985; Posada, Waters, et al., 1995; Steele et al., 1996; Tini et al., 2003). Our results are even more compelling given the fact that the mothers and children do not share genetic information by common descent. They point out the importance of the mother’s representation of attachment as a formative influence on the organization of caregiving/parental behaviors and the ways in which they shape the present relationship with their child. Our data suggest that most adopted children benefit from these transactions and are able to establish secure bonds with their adoptive mothers that, in theory, promote harmonious family interactions and normal development.

Acknowledgements

The authors would like to thank all the mothers and children that participated in this study. The authors would like to thank Professor António J. Santos for discussions and comments

on the manuscript. The authors would also like to thank the following psychologists, Ana Marques, Ana Rita Santarém, and Alexandra Sousa, for their assistance in collecting data. The study reported here was supported in part by FCT (POCTI, Plurianual, UIPCDE).

References

- Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment*. Hillsdale, NJ: Erlbaum.
- Bohman, M., & Sigvardsson, S. (1990). Outcome in adoption: Lessons from longitudinal studies. In D. Brodzinsky & M. Schechter (Eds.), *The psychology of adoption* (pp. 232–266). New York: Oxford University Press.
- Bowlby, J. (1973). *Attachment and loss. Vol. 2: Separation: Anxiety and anger*. New York: Basic Books.
- Bowlby, J. (1980). *Attachment and loss. Vol. 3: Loss: Sadness and depression*. New York: Basic Books.
- Bowlby, J. (1982). *Attachment and loss. Vol. 1: Attachment* (2nd ed.). New York: Basic Books (Original work published 1969).
- Bretherton, I. (1985). Attachment theory: Retrospect and prospect. In I. Bretherton & E. Waters (Eds.), *Growing points of attachment theory and research. Monographs of the Society for Research in Child Development*, 50(1–2), 3–39.
- Bretherton, I. (1999). Updating the “internal working model” construct: Some reflections. *Attachment & Human Development*, 3, 343–357.
- Brodzinsky, D. M. (1993). Long-term outcomes in adoption. *The Future of Children*, 3, 3–24.
- Brodzinsky, D. M., & Steiger, C. (1991). Prevalence of adoptees among special education populations. *Journal of Learning Disabilities*, 24, 484–489.
- Chisholm, V. (1998). A three year follow-up of attachment and indiscriminate friendliness in children adopted from Romanian orphanages. *Child Development*, 69, 1092–1106.
- Chisholm, K., Carter, M. C., Ames, E. W., & Morison, S. J. (1995). Attachment security and indiscriminately friendly behavior in children adopted from Romanian orphanages. *Development and Psychopathology*, 7, 283–294.
- Dozier, M., Stoval, K. C., Albus, K. E., & Bates, B. (2001). Attachment for infants in foster care: The role of caregiver state of mind. *Child Development*, 72, 1467–1477.
- Hodges, J., & Tizard, B. (1989). IQ and behavioral adjustment of ex-institutional adolescents. *Journal of Child Psychology and Psychiatry*, 30, 53–75.
- Juffer, F., & Rosenboom, L. G. (1997). Infant–mother attachment of internationally adopted children in the Netherlands. *International Journal of Behavioral Development*, 20, 93–107.
- Main, M., & Goldwyn, R. (1998). Adult attachment scoring and classification system. Unpublished manuscript, University of California at Berkeley.
- Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood, and adulthood: A move to the representational level. In I. Bretherton & E. Waters (Eds.), *Growing points of attachment theory and research. Monographs of the Society for Research in Child Development*, 50(1–2), 66–104.
- Marcovitch, S., Goldberg, S., Gold, A., Washington, J., Wasson, C., Krekewich, K., et al. (1997). Determinants of behavioural problems in Romanian children adopted in Ontario. *International Journal of Behavioural Development*, 20, 17–31.
- Mech, E. V. (1973). Adoption: A policy perspective. In B. Caldwell & H. N. Ricciuiti (Eds.), *Review of child development research* (Vol. 3, pp. 75–107). Chicago: University of Chicago Press.
- Nelson, K. (1986). *Event knowledge: Structure and function in development*. Hillsdale, NJ: Erlbaum.
- Nelson, K., & Hudson, J. (1988). Scripts and memory: Functional relationships in development. In F. E. Weinert & M. Perlmutter (Eds.), *Memory development: Universal changes and individual differences* (pp. 87–105). Hillsdale, NJ: Erlbaum.
- O'Connor, T., Bredenkamp, D., Rutter, M., & The English and Romanian Adoptees Study Team. (1999). Attachment disturbances and disorders in children exposed to early severe deprivation. *Infant Mental Health Journal*, 20, 10–29.
- O'Connor, T. G., Rutter, M., & The English and Romanian Adoptees Study Team. (2000). Attachment disorder behavior following early severe deprivation: Extension and longitudinal follow-up. *Journal of the American Academy of Child and Adolescent Psychiatry*, 39, 703–712.
- Oppenheim, D., & Waters, H. S. (1995). Narrative processes and attachment representations: Issues of development and assessment. In E. Waters, B. E. Vaughn, G. Posada, & K. Kondo-Ikemura (Eds.), *Caregiving, cultural, and cognitive perspectives on secure-base behavior and working models: New growing points of attachment theory and research. Monographs of the Society for Research in Child Development*, 60(Nos. 2–3, Serial No. 244), 197–215.

- Posada, G., Goa, Y., Wu, F., Posada, R., Tascon, M., Schoelmerich, A., et al. (1995). The secure-base phenomenon across cultures: Children's behaviour, mother's preferences and experts concepts. In E. Waters, B. E. Vaughn, G. Posada, & K. Kondo-Ikemura (Eds.), *Caregiving, cultural, and cognitive perspectives on secure-base behavior and working models: New growing points of attachment theory and research. Monographs of the Society for Research in Child Development*, 60(2–3), 27–47.
- Posada, G., Waters, E., Crowell, J. A., & Lay, K. (1995). Is it easier to use a secure mother as a secure base? Attachment Q-Sort correlates of adult attachment interview. In E. Waters, B. E. Vaughn, G. Posada, & K. Kondo-Ikemura (Eds.), *Caregiving, cultural, and cognitive perspectives on secure-base behavior and working models: New growing points of attachment theory and research. Monographs of the Society for Research in Child Development*, 60(2–3), 133–145.
- Rodrigues-Doolabh, L., Zevallos, A., Turan, B., & Green, K. (2003, March). Attachment scripts across cultures: Further evidence for a universal secure base script. In H. Waters & E. Waters (Chairs), *Script-like representations of secure base experience: Evidence of cross-age, Cross-cultural, and behavioral links*. Poster symposium presented at the Biennial Meetings of the Society for Research in Child Development, Tampa, FL.
- Schaffer, H. R. (1996). *Social development*. Oxford: Blackwell.
- Singer, L., Brodzinsky, D., Ramsay, D., Steir, M., & Waters, E. (1985). Mother–infant attachment in adoptive families. *Child Development*, 56, 1543–1551.
- Smith, D. W., & Brodzinsky, D. M. (1994). Stress and coping in adopted children: A developmental study. *Journal of Clinical Child Psychology*, 23, 91–99.
- Smyke, A. T., Dumitrescu, A., & Zeanah, C. H. (2002). Attachment disturbances in young children. I: The continuum of caretaking casualty. *Journal of the American Academy of Child and Adolescent Psychiatry*, 41, 972–982.
- Sroufe, L. A. (1996). *Emotional development*. Cambridge: Cambridge University Press.
- Sroufe, L. A., Egeland, B., Carlson, E., & Collins, W. A. (2005). *The development of the person: The Minnesota study of risk and adaptation from birth to adulthood*. New York: Guilford Publications.
- Stams, G. J. J. M., Juffer, F., Rispens, J., & Hoksbergen, R. A. (2000). The development and adjustment of 7-year-old children adopted in infancy. *Journal of Child Psychology and Psychiatry*, 41, 1025–1037.
- Stams, G. J. J. M., Juffer, F., van IJzendoorn, M. H., & Hoksbergen, R. A. C. (2001). Attachment-based intervention in adoptive families in infancy and children's development at age 7: Two follow-up studies. *British Journal of Developmental Psychology*, 19, 159–180.
- Steele, H., Steele, M., & Fonagy, P. (1996). Associations among attachment classification of mothers, fathers, and their infants. *Child Development*, 67, 541–555.
- Tini, M., Corcoran, D., Rodrigues-Doolabh, L., & Waters, E. (2003, March). Maternal attachment scripts and infant secure base behavior. In H. Waters & E. Waters (Chairs), *Script-like representations of secure base experience: Evidence of cross-age, cross-cultural, and behavioral links*. Poster symposium presented at the Biennial Meetings of the Society for Research in Child Development, Tampa, FL.
- Triseliotis, J., & Hill, M. (1990). Contrasting adoption, foster care, and residential rearing. In D. Brodzinsky & M. Schechter (Eds.), *The psychology of adoption* (pp. 178–210). New York: Oxford University Press.
- Van IJzendoorn, M. H., Juffer, F., & Klein Poelhuis, C. W. (2005). Adoption and cognitive development. A meta-analytic comparison of adopted and nonadopted children's IQ and school performance. *Psychological Bulletin*, 131, 301–316.
- Van IJzendoorn, M. H., Vereijken, C. M. J. L., Bakermans-Kranenburg, M. J., & Rikensen-Walraven, J. M. (2004). Assessing attachment security with the attachment Q-sort: Meta-analytic evidence for the validity of the observer AQS. *Child Development*, 75, 1188–1213.
- Vaughn, B., & Waters, E. (1990). Attachment behaviour at home and in the laboratory: Q-sort observations and strange situation classification of one-years-old. *Child Development*, 61, 1965–1973.
- Vaughn, B. E., Copolla, G., Veríssimo, M., Monteiro, L., Santos, A. J., Posada, R., et al. (in press). Coordination between the organization of maternal secure base scripts and children's secure base behavior at home in three socio-cultural groups. *International Journal of Behavioural Development*.
- Vaughn, B. E., Veríssimo, M., Coppola, G., Bost, K. K., Shin, N., McBride, B., Krzysik, L., & Korth, B. (2006). Maternal attachment script representations: Longitudinal stability and associations with stylistic features of maternal narratives. *Attachment & Human Development*, 8, 199–208.
- Veríssimo, M., Monteiro, L., Vaughn, B. E., Santos, A. J., & Waters, H. (2005). Coordenação entre o Modelo Interno Dinâmico da Mãe e o comportamento de base segura dos seus filhos. *Análise Psicológica*, N 2, Serie XXIII, 85–97.
- Waters, E. (1995). The attachment Q-set (Version 3). In E. Waters, B. Vaughn, G. Posada, & K. Kondo-Ikemura (Eds.), *Caregiving, cultural, and cognitive perspectives on secure-base behavior and working models: New growing points of attachment theory and research. Monographs of the Society for Research in Child Development*, 60(2–3, Serial No. 244), 234–246 (Original work published 1987).

- Waters, H. S., & Waters, E. (2006). The attachment working models concept: Among other things, we build script-like representations of secure base experiences. *Attachment & Human Development*, 8, 185–197.
- Waters, E., & Valenzuela, M. (1999). Explaining disorganized attachment: Clues from research on mile-to-moderately undernourished children in Chile. In J. Solomon & C. George (Orgs.), *Attachment disorganization* (pp. 265–290). New York: Guilford Press.
- Waters, H. S., & Rodrigues-Doolabh, L. (2001, April). Are attachment scripts the building blocks of attachment representations? Narrative assessment of representations and the AAI. In H. Waters & E. Waters (Chairs), *Narrative measures of attachment for adults*. Poster symposium presented at the Biennial Meetings of the Society for Research in Child Development, Minneapolis, MN.
- Waters, H., & Rodrigues-Doolabh, L. (2004). Manual for decoding secure base narratives. Unpublished manuscript, State University of New York at Stony Brook.
- Waters, H. S., Rodrigues, L. M., & Ridgeway, D. (1998). Cognitive underpinnings of narrative attachment assessment. *Journal of Experimental Child Psychology*, 71, 211–234.
- Wierzbicki, M. (1993). Psychological adjustment of adoptees: A meta-analysis. *Journal of Clinical Child Psychology*, 22, 447–454.
- Zeneah, C. H. (2000). Disturbances of attachment in young children adopted from institutions. *Journal of Developmental and Behavioral Pediatrics*, 21, 230–236.
- Zill, N. (1985, April). *Behavior and learning problems among adopted children: Findings from a US national study of child health*. Paper presented at the meetings of the Society for Research in Child Development, Toronto.
- Zimmermann, P. (2004). Attachment representations and characteristics of friendship relations during adolescence. *Journal of Experimental Child Psychology*, 88, 83–101.