

## Links between use of the secure base script and preschool children's knowledge about emotions

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The links between attachment security and multiple aspects of emotional development have been studied for several decades. Although these studies are valuable insofar some answers related to representations of attachment and emotion knowledge are still open. Preschool aged children ( $N=40$ ) participated in this study. We used the *Attachment Story Completion Task* as their attachment measure, with representations measured as access to and use of the Secure Base Script (SBS) to organize children's attachment relevant narratives. Emotional knowledge was assessed using the *Affect Knowledge Test*. Our main goal was to demonstrate that the SBS behaves like a typical measure of attachment representations with respect to its relations with children's emotion understanding. Results suggested that children with secure attachment histories tend to have a larger fund of emotion knowledge. The SBS measure behaved similarly to other measures of attachment security suggesting its validity as a measure of attachment representations during early childhood.

**Key words:** Attachment, Secure base script score, Emotional knowledge, Preschool.

### Introduction

The close tie between attachments as emotional bonds and that the presumption that attachment and emotion were inextricably linked in development was explicit in Bowlby's articulation of attachment theory from early on (e.g., Ainsworth, 1973; Bowlby, 1958, 1969/1982, 1977; Sroufe, 1996). Bowlby noted that the attached child experiences fear, sadness, and anxiety at the departure (or threat of loss) of the attachment figure and joy when reunited with her or him. It is not surprising, then, that attachment researchers have been studying the links between attachment security and multiple aspects of emotional development for several decades (e.g., Berlin & Cassidy, 2003; Brumariu, 2015; Hesse & Cicchetti, 1982; Thompson, Connell, & Bridges, 1988; Waters, Wippman, & Sroufe, 1979; Zimmerman, 1999). Although the preponderance of studies from the last 20 years or so have focused on the role of attachment in the infant/child's capacity to regulate emotion states (as well as thoughts and behaviors relevant to emotion states), there have also been a number of studies exploring the relation between attachment security and knowledge about emotions.

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For example, attachment security in the early years of life, assessed from either the Strange Situation Procedure (SSP; Ainsworth, Blehar, Waters, & Wall, 1978) or from the Attachment Q-set (AQS; Waters, 1995), has been found to be positively associated with aspects of children's emotional knowledge during childhood (e.g., Laible, 2004; Raikes & Thompson, 2008; Steele, Steele, & Croft, 2008; Steele, Steele, Croft, & Fonagy, 1999). Effects of attachment security also have been shown for the child's openness and readiness to discuss positive and negative emotion-laden events during early childhood (e.g., Ontai & Thompson, 2002; Waters et al., 2010).

De Rosnay and Harris (2002) extended these results to early childhood (age range 3 years 7 months to 6 years 4 months) using the Separation Anxiety Task (Klagsbrun & Bowlby, 1976) to index attachment security and a set of emotion understanding tasks devised by Harris for the study. They reported a positive and significant effect of attachment on their measure of emotion understanding, even after controlling for verbal IQ, age, and sex. In another study of preschool age children, Repacholi and Trapolini (2004) tested relations between attachment security, assessed using the Seattle version of the Separation Anxiety Test (Slough & Greenberg, 1990) and both understanding of the causes of emotion and differences in predicting the emotions of salient (i.e., "mother") vs. non-related adults in false belief tasks. The measure of attachment security was positively and significantly related to both reporting plausible causes of emotion states and to predicting emotion states of "mother" in the false belief task (but not the "other" adult). However, when age and verbal ability scores were partialled in the attachment x false belief task scores, the attachment score was no longer a predictor of performance on the false belief task. Grieg and Howe also studied preschool children using the *Attachment Story Completion Task* (ASCT; Bretherton, Ridgeway, & Cassidy, 1990) as their attachment measure and the emotion knowledge task (emotional states associated with prototypic events such as receiving a birthday present or losing a pet) described by Denham and Auerbach (1995) to index emotion understanding. The attachment measure was significantly associated with the emotion understanding measure and this relation remained significant in regressions that include SES and mental age covariates.

The positive relation between attachment security and emotion knowledge has been established (see Cooke, Stuart-Parrigon, Movahed-Abtahi, Koehn, & Kerns, 2016, for a meta-analysis), however, a definitive answer to why this relationship should exist is still open. Bretherton (1990) suggested that secure attachment relationships are characterized by open communication between the child and caregiver and this openness is present in emotion arousing situations. As such, a securely attached child should have more opportunities to create mental structures for explaining both her/his experiences of positive and negative emotions and their causes in everyday life and these may also explain the experiences of emotion and their causes in others. These coherent mental structures for emotion would also be available for incorporation into working models of the self and others (Bowlby, 1980). Thus, differences in the quality of parent-child relationships may influence the development of children's emotional understanding (Harris, 1999; Kochanska, 2001).

Several studies examining parent-child conversations about events eliciting negative emotions have been reported (e.g., Brown & Dunn, 1996; Denham, 1994; Halberstadt, Denham, & Dunsmore, 2001; Ontai & Thompson, 2002) and they all find that securely attached children tend to have more frequent conversations that include events arousing positive and negative emotions, compared to children with insecure attachments to their mothers, and that their mothers tend to be more clear and coherent about providing rationales for the child's emotional experience in these events than are the mothers with insecurely attached children. These kinds of results suggest that parents who openly discuss emotional experiences with their children are helping their children create more elaborate mental representations about emotional meanings. Halberstadt et al. (2001) reported that these children were more socially skilled in the classroom and had more positive relationships with peers. In general these children were characterized as being better adjusted to the classroom group than were children who had been identified as insecurely attached to their mothers.

Cassidy (1994) offered a related but somewhat different explanation for emotional expression based on the behavioral tactics insecure children may use when faced with a threat to safety. She suggested that because the attachment relationships of securely attached children are characterized by flexibility and openness, they have many opportunities for the child to express and process his/her emotional experiences, both positive and negative. By way of comparison, for children whose relationships are insecure, it is more likely that the child would experience neglect, incompetence, or rejection by the attachment figure when she/he is threatened or distressed, motivating her/him to modulate negative emotional expression inappropriately for the context (e.g., by either suppressing or amplifying the emotion signal), and possibly to restrict expression of positive emotions. In this view, modulation of emotional expression was thought of as a tactic for maintaining proximity and/or contact with the attachment figure in dangerous contexts, or when the child was otherwise distressed.

Although these studies are valuable insofar as they document differing socialization experiences with respect to emotional expressiveness and emotion understanding that are coordinated with assessments of attachment security, they do not specify precisely what it is that mental representations of attachment are “representing” and how those representations may facilitate the acquisition of emotion knowledge. Following Waters and Waters (2006), we suggest that the secure base script (SBS) – a cognitively grounded measure of attachment security – lies at the core of mental representations of attachment. We hypothesize that children who articulate a more elaborated and ordered story reflecting their use of the secure base script in their story narrations elicited by the ASCT story stems will have a greater fund of emotion knowledge and in particular a better understanding of the causes underlying the experience of basic emotions (e.g., happy, sad, angry/mad, fear) than will children who do not use the secure base script (as an implicit temporal/causal framework) when organizing their ASCT narratives.

## Method

### *Participants*

Participants were 40 preschool children’s (19 boys and 21 girls), ages range 48 to 60 ( $M=51.60$ ;  $SD=3.84$ ). The children attended one private daycare preschool in suburbs of Lisbon. All the participating children were Caucasian and both parents lived in the household. All families were “middle class” by the standards of the local community.

### *Procedures*

Participating children were interviewed with the *Attachment Story Completion Task* (Bretherton et al., 1990) and the Affect Knowledge Test (Maló-Machado, Veríssimo, Denham, 2012; adapted from Denham, 1986) at their child-care facility during the winter academic term (between January and March). The verbal section of the Wechsler Preschool and Primary Scale of Intelligence – (WPPSI-R, 1989; Portuguese version of Seabra-Santos et al., 2003) was also collected individually in the same period.

### *Measures*

*Attachment Story Completion Task (ASCT)*. The ASCT (Bretherton et al., 1990) was used to assess children’s attachment representations. A series of story-stems were presented to the child to elicit narratives regarding attachment behaviors toward caregivers. Story stems were presented

using dolls and household props, including a mother, father, child, sibling, kitchen equipment, living room and bedroom furniture, etc. The child doll was the same sex as the child being assessed. The assessments took place in a quiet area outside the classroom. The interviewer invited the child to play the story completion game together, the interviewer beginning each story and then asked the child to freely continue and finish the story, illustrating behaviors, emotions and interactions between characters. Same non-directive questions were used to facilitate the child's narrative production such as "Does anything else happen in the story?" or "What are they doing?" The child was first presented with a story stem about a birthday party with a pleasant but non-attachment related theme, this was intended as a warm-up story and was not scored. The child was then presented with five primary attachment-related stories-stems (for this study only 3 – monster, separation and reunion stories – were used and coded for SBS content).

All stories were rated by two independent trained coders who were blind to any other information about the child. Coders assigned a single score on a 7-point scale for secure base scriptedness based on a modification of Waters, Rodrigues, and Ridgeway (1998) coding system and a global score was given to the three stories (Vaughn, Posada, Veríssimo, Lu, & Nichols, 2019). As mentioned, these summary scores of the three stories could range from 1 (odd/deviant stories that include failure of the attachment figure to protect the child, and/or failure to recognize the attachment relevance of the events being represented in the narrative) to 7 (complete stories that clearly suggested a secure-base for exploration and a haven of safety when needed). Inter-observer reliability was assessed using intra-class correlations and ranged between .78 to .82 across observer pairs.

*Affect Knowledge Test.* Emotional knowledge was assessed using the Affect Knowledge Test (AKT; Maló-Machado et al., 2012; adapted from Denham, 1986). This test uses puppets with four felt detachable faces that represent happy, sad, angry, and fearful expressions. Two types of emotion knowledge are assessed by this test, namely, recognition of emotion expression and understanding of emotion-eliciting situations. For the recognition subtest, children have to verbally name the emotion on the felt faces (Nomination (naming the feeling), in response to the question "how does this one feel?") and then identify, by pointing one of the felt faces, for each emotion (Recognition, in response to the question, "Can you show me the sad face?"). Understanding of emotion-eliciting situations is composed with 20 vignettes which are enacted, using the puppets, by the experimenter. The first 8 vignettes depict stereotypical emotion knowledge, by showing the same emotion that most people would feel, and the last 12 vignettes depict non-stereotypical emotion knowledge, having situations where the experimenter enacts a different emotion from the emotion each child's mother had reported on a previous questionnaire that their child would probably feel under the circumstances depicted in the vignette. Children received three points for correct identification of emotion, two points for the correct valence, and one point for incorrect answers.

*Verbal Intelligence.* The verbal section of the Wechsler Preschool and Primary Scale of Intelligence – (WPPSI-R, 1989; Portuguese version of Seabra-Santos et al., 2003) was used to assess children's vocabulary and verbal comprehension.

## Results

First, we present the descriptive results and associations between our variables. Contrary to previous studies (see Maia, Veríssimo, Ferreira, Antunes, & Silva, 2012; van IJzendoorn & Bakermans-Kranenburg, 2010) no sex differences were found in this sample [ $F(1,39)=3,07, p=0.09$ ] for SBS, and the correlation between SBS values and IQ was not significant ( $r=.18; p>0.05$ ).

No sex difference was found for Nomination [ $F(1,39)=3.05, p=0.09$ ], for Recognition [ $F(1,39)=.65, p=0.42$ ], and for stereotypical causes of emotions [ $F(1,39)=1.18, p=0.28$ ]. However, the sex difference was significant for non-stereotypical causes of emotions [ $F(1,39)=4.1, p=0.05$ ] and for total emotional understanding [ $F(1,39)=4.24, p<0.05$ ]. Girls demonstrated better understanding of non-stereotypical causes. No association between verbal IQ and measures of Emotional Knowledge, namely Nomination ( $r=.11; p>0.05$ ), Recognition ( $r=.05; p>0.05$ ), stereotypical causes of emotions ( $r=.21; p>0.05$ ), non-stereotypical causes of emotions ( $r=.23; p>0.05$ ) and total emotion knowledge ( $r=.23; p>0.05$ ) were significant.

#### *Secure base script and emotional knowledge*

The correlations between SBS and the Nominations, Recognition, and understanding stereotypical emotion causes were not significant ( $r_s=.21, .13, \text{ and } .11$ , respectively, all  $p_s>.05$ ). However, we found significant correlations between non-stereotypical causes of emotions ( $r=.39; p>0.05$ ) and SBS and Total emotion knowledge ( $r=.41; p<0.05$ ) with SBS.

Finally, because we had identified some sex differences for certain of the emotion understanding measures a partial correlation controlling for sex was computed. Even controlling for sex, significant correlations between the SBS score and non-stereotypical causes of emotions and Total emotion knowledge remained significant,  $r_s=.34$  and  $.35, p_s<.05$ , respectively.

## **Discussion**

In this study, the associations between SBS and the scales for emotion recognition, nomination and stereotypical emotion causes were not significant. We suspect that this is due to a ceiling effect for the two labeling aspects of the emotion knowledge task because most children were able to volunteer the appropriate emotion label when asked and nearly all were able to point to the puppet face displaying the four basic emotion states. This had the effect of reducing between-participant variability in these (nomination:  $M=2.6, SD=0.46$ ; for recognition:  $M=2.9, SD=0.12$ , stereotypical emotion causes:  $M=2.9, SD=0.10$ ; non-stereotypical causes of emotions:  $M=2.15, SD=1.59$ ). Had we tested a younger sample, it may have been possible to observe attachment effects on emotion labeling, as has been reported in other studies. However, we did find a significant association between use of the SBS in story narrations and knowledge of non-stereotypical emotion causes. This is a cognitively complicated task, requiring the child to decenter from his/her own likely emotional response in order to receive a full score for the vignette. There was considerable variability for this scale and a significant association with the SBS score was observed. Girls received higher scores for understanding non-stereotypical causes of emotions, which may be explained by the fact that mothers tend to talk about emotions and feelings more frequently with girls than boys (Fivush, Haden, & Reese, 2006; Laible, 2004). However, partial correlation analyses controlling for sex of child did not meaningfully attenuate the relation between the SBS score and the understanding of emotion causes (non-stereotyped).

Although the production of children's narratives may be influenced by their linguistic and cognitive abilities (e.g., Oppenheim & Waters, 1995) for the sample of children used in this study verbal ability was not a significant correlate of either the SBS or the emotional knowledge scores.

The results of this study are consistent with previously reported findings and with the hypothesis of this study that children with secure attachment histories, as indexed by their mental representations of attachment-relevant information, tend to have a larger fund of knowledge about emotional life than do children who do not use the secure base script as the framework for their



narratives. The fact that the SBS measure behaves in a manner similar to other measures of attachment security (e.g., Raikes & Thompson, 2008; Steele et al., 2008; Steele et al., 1999) suggests its validity as a measure of attachment representations during early childhood (Vaughn, Posada, Verissimo, Lu, & Nichols, 2019).

Developmental scientists generally agree that variability in family contexts is a critically important factor influencing many aspects of children's emotional experiences and their emotion knowledge (e.g., Brown & Dunn, 1996; Sroufe, Egeland, Carlson, & Collins, 2005), as well as the quality of their attachment relationships (Ainsworth et al., 1978; De Rosnay & Harris, 2002; Denham, 1998). Attachment theory presumes that these domains are intertwined such that children who routinely experience the caregiver's warmth, nurturance, and protection when needed or desired will co-construct a secure attachment relationship with the caregiver. Moreover, this relationship will likely be characterized by shared discussions of emotional experiences in open and supportive ways (Bowlby, 1982/1969; Bretherton, 1990), during toddlerhood and early childhood. These discussions provide a means for the child to acquire a broad fund of information about emotions (e.g., labels for emotional states and rationales for their causes during transactions with social and physical aspects of the world). It seems plausible to suggest that parents who engage in these discussions also monitor their child's emotion states and react to changes in her/his emotion states contingently and appropriately. Parents may also influence the development of children's emotional competencies through their own emotional expressiveness and by modeling emotional reactions that the child may internalize and imitate (Denham, 1998, 2007; Denham, Zoller, & Couchoud, 1994). The data reported here are consistent with these assumptions from attachment theory, although we did not directly address parental behavior or the nature of parent-child discussions concerning emotion.

Our primary purpose in this report was to demonstrate that the SBS behaves like a typical measure of attachment representations with respect to its relations with child emotion understanding. However, the findings are somewhat limited by the fact that both the attachment and emotion knowledge domains were assessed concomitantly, so we are unable to claim that use of the SBS in narratives is a contributor to child emotion understanding. It will be important in future research to use a longitudinal research design that allows for testing whether attachment security has a predictive relation to subsequent emotion knowledge and also predicts *changes* in the quality of emotion knowledge when earlier assessments of emotion knowledge are controlled in regression analyses. Finding that changes are predictable would strengthen arguments about the primacy of attachment in the relation between the two domains. Of course, we also recognize that attachment is an affective bond and that emotional experiences cannot be dissociated from the attachment relationship. But, it is not clear whether or how experiencing emotion states might be related to understanding of those states and/or the proximal leading to emotion states. It will be useful in future research to also assess aspects of children's emotional expressiveness, as well as their knowledge about emotion states and causes (e.g., Denham, Ferrier, Howarth, Herndon, & Bassett, 2016), to determine whether attachment measures are more strongly associated with one or another aspect of emotion development and whether this changes with the age of the child. It will also be useful to obtain more information from actual conversations between mothers and their children that focus on emotion-relevant experiences to learn how parents structure such conversations and whether these language structures bear a resemblance to the SBS.

It is also true that the SBS measure, as it is used in early childhood, does not consider the possibility that a child may have multiple attachment figures, each with a unique relationship that may not be concordant for security. The notion that children form a network of attachment relationships emerged from studies that paired the child with multiple caregivers, for the most part, fathers and mothers, but also including non-family caregivers with various degrees of familiarity with the infant (e.g., Goossens & van IJzendoorn, 1990; Sagi-Schwartz et al., 1985; van IJzendoorn, Sagi, & Lambermon, 1992). The studies of multiple attachments and their

relation(s) to both attachment working models and to adaptive functioning that may be associated with different working models have been debated for nearly three decades and are not yet resolved (e.g., Dagan & Sagi-Schwartz, 2018).

It is not clear that the ASCT or the SBS scoring protocols used in this study could be useful in such a resolution. As currently structured, the ASCT does not elicit stories that are explicitly focused on mother, father or other caregivers. In many stories both parents are present in the story-stem and in some story-stems a relative (e.g., grandmother, aunt) also are included. Moreover, in the protocol used here, a single SBS score is assigned after evaluating the child's responses to three stories that include both parents. There is also evidence from a taxometric analysis (Waters, Bosmans, Vandevivere, Dujardin, & Waters, 2015) that the Attachment Script Assessment for adults and adolescents yields scores suggesting a single latent continuous dimension underlying responses to different attachment figures (i.e., a single script representation for secure base use and support, regardless of attachment figure). That said, however, it may be that separate representations for different attachment figures are maintained for some time during childhood and more studies are needed to understand whether these jointly or independently affect subsequent socio-affective outcomes, including the acquisition of emotion knowledge. In future studies, it would be interesting to study child communication about emotions with each parent, to better understand the ways in which different attachment figures might help shape the child's emotion understanding, thereby helping to broaden and build the child's emotional competencies (Denham, 2007).

To conclude, this study was designed to establish the relation between children's mental representation of a central function of the attachment system (i.e., secure base use and support knowledge organized as a secure base script) and their emotion understanding. Although evidence from this study supports the motivating hypotheses, we are not claiming that our findings suggest that attachment security fully accounts for emotional development or even emotion understanding. Rather, they add to the abundance of work demonstrating the relation between attachment measures and emotional life during early childhood. The results support the utility of the SBS concept and the ASCT scoring protocol used here and further suggest that future research will profit by including such measures in studies of social/emotional adaptation and development during early childhood.

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#### **Associações entre o uso do script de base segura e o conhecimento das emoções em crianças de idade pré-escolar**

As associações entre a segurança da vinculação e múltiplos aspetos do desenvolvimento emocional têm sido estudadas durante várias décadas. Embora estes estudos sejam válidos, algumas respostas relacionadas com as representações de vinculação e o conhecimento emocional continuam em aberto. Participaram neste estudo crianças de idade pré-escolar ( $N=40$ ). Utilizámos o *Attachment Story Completion Task* como medida de vinculação das crianças, com as representações a serem avaliadas enquanto acesso e uso do script de base segura (SBS) para organizar as narrativas de vinculação das crianças. O conhecimento emocional foi avaliado com recurso ao *Teste do Conhecimento das Emoções*. O nosso principal objetivo era demonstrar que o SBS se comporta como uma típica medida das representações de vinculação, no que diz respeito à sua associação com a compreensão das emoções por parte das crianças. Os resultados sugerem que as crianças com histórias de vinculação segura tendem a ter uma maior base de conhecimento emocional. A medida de SBS comportou-se de forma semelhante a outras medidas de segurança de vinculação, sugerindo a sua validade enquanto medida de representações de vinculação durante a infância.

**Palavras-chave:** Vinculação, Cotação de script de base segura, Conhecimento emocional, Pré-escolar.

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