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Secure Base Representations in Middle Childhood Across Two Western Cultures: Associations with Parental Attachment Representations and Maternal Reports of Behavior Problems

Theodore E. A. Waters,
Institute of Child Development, University of Minnesota

Department of Psychology, New York University – Abu Dhabi

Guy Bosmans,
Parenting and Special Education Research group, University of Leuven

Eva Vandevivere,
Department of Developmental, Personality and Social Psychology, University of Ghent

Adinda Dujardin, and
Parenting and Special Education Research group, University of Leuven

Harriet S. Waters
Department of Psychology, SUNY Stony Brook

Abstract

Recent work examining the content and organization of attachment representations suggests that one way in which we represent the attachment relationship is in the form of a cognitive script. That said, this work has largely focused on early childhood or adolescence/adulthood, leaving a large gap in our understanding of script-like attachment representations in the middle childhood period. We present two studies and provide three critical pieces of evidence regarding the presence of a script-like representation of the attachment relationship in middle childhood. We present evidence that a middle childhood attachment script assessment tapped a stable underlying script using samples drawn from two western cultures, the United States (Study 1) and Belgium (Study 2). We also found evidence suggestive of the intergenerational transmission of secure base script knowledge (Study 1) and relations between secure base script knowledge and symptoms of psychopathology in middle childhood (Study 2). The results from this investigation represent an important downward extension of the secure base script construct.

Keywords

attachment; secure base script; middle childhood; psychopathology

The measurement of attachment representations across the lifespan presents a significant challenge to developmental analysis of the importance of caregiving experience through

Correspondence should be sent to Theodore E. A. Waters, Department of Psychology, New York University – Abu Dhabi, Abu Dhabi, U.A.E. PO Box 129188. theo.waters@nyu.edu.

infancy, childhood and beyond. As infants grow into children, and extended separations from parents become normative, the validity of traditional separation-based paradigms comes into question (e.g. Posada, 2006). This normative shift in the nature of the parent-child relationship, paired with Bowlby's (1969/1982) emphasis on the development of an internalized mental representation of the attachment relationship (see also, Main, Kaplan, & Cassidy, 1985), has led attachment researchers to seek measures that tap into mental representations of the secure base relationship. Further, children's emerging self-reflective capabilities allow for the study of attachment representations in middle childhood at multiple levels of analysis (e.g. self-report, interview, cognitive processing) and allows researchers to test core hypotheses and seek replication across these diverse methodologies.

Work with the Adult Attachment Interview (AAI) by Main and colleagues (e.g. Main, Kaplan, & Cassidy, 1985) made it possible to assess attachment representations in adulthood through an in-depth autobiographical interview. However, the downward extension of such a cognitively taxing/sophisticated interview into childhood presents a unique set of challenges (but see Shmueli-Goetz, Target, Fonagy, & Datta, 2008; also Kriss, Steele, & Steele, 2012; Steele & Steele, 2005). Research on children's development of autobiographical memory and narrative skill suggests that the ability to produce organized, reflective, and coherent autobiographical narratives (a central task demand of AAI-like measures) is undergoing rapid development over the childhood period and may complicate measurement (e.g. Habermas & Bluck, 2000; Habermas & de Silveira, 2008). Further, children are still living with their primary caregivers and the open-ended nature of such interviews may allow for day-to-day conflicts in the home to influence the content and quality of their interviews. Coding schemes for interview based assessments that do not emphasize representation/narrative organization (i.e. coherence) and instead emphasize retrospective reports of attachment behaviors/content (e.g. Zimmermann et al., 2009) sidestep this concern. However, there are still issues associated with the accuracy of retrospective reports of children and this approach fails to capture the *organization* of attachment representations which is believed to be critical (e.g. Main, Kaplan, & Cassidy, 1985). Questionnaires also bring their own set of complications, including halo effects, social desirability, and again, similar to interview tasks, cognitive challenges regarding the child's ability to be self-reflective (Kerns & Siebert, in press).

In addition, researchers interested in observational assessments need to be attuned to the challenges in staying true to the central "secure base" construct of attachment theory as they characterize secure base phenomena in this childhood period (see Spangler & Zimmermann, 2014 for further discussion of this issue). This requires identifying the circumstances in which children seek out secure base support or signal for intervention by a sensitive secure base. Despite the obvious difficulties in assessing attachment during middle childhood, the ability to measure attachment representations during this period is vital to developmental research, especially in the case of (1) studies that require longitudinal attachment assessment from, to, or through middle childhood and (2) for researchers interested in testing central hypotheses of attachment theory in middle childhood.

Given these opportunities and challenges, attachment researchers have continued to seek converging evidence for the core hypotheses of attachment theory across a broad range of

measures of attachment representations for the middle childhood period (e.g. Kerns, Tomich, Aspelmeier, & Contreras, 2000). Available reviews (Bosmans & Kerns, 2015; Dwyer, 2005; Kerns & Richardson, 2005; Kerns & Seibert, in press;) note the strengths and weaknesses of the different measures along with the empirical evidence supporting each. The availability of multiple methodologies, however, can be a double-edged sword. On the one hand, researchers have the option to select the method that seems to best match their research goals. On the other, researchers have to question whether the different methods assess the same construct as those measured earlier, concurrently, or later in development particularly when their task characteristics vary significantly in terms of what they demand of the participant and nature of the scoring method (or focus of questionnaire items; Pinquart, Feußner, & Ahnert, 2013).

Script-like Attachment Representations

The notion of attachment representations taking the form of a cognitive script (Schank & Abelson, 1977) derived from early experience with caregivers was first introduced by Bretherton (1987; 1991) and elaborated by Waters, Rodrigues and Ridgeway (1998) in their re-analysis of preschoolers' story stem completions from the Bretherton, Ridgeway, and Cassidy (1990) study. Waters et al. (1998; see also Waters & Waters, 2006) argued that the cognitive underpinnings of attachment representations can be thought of as a secure base script, a temporal-causal representation of secure base use and support in which the: (1) attached individual is engaged in constructive activity; (2) a challenge is encountered that disrupts this activity and/or leads to a level of distress; (3) the attached individual signals for assistance; (4) the other dyad member recognizes the signal and responds in a manner consistent with the message; (5) the assistance is accepted: (6) the assistance is effective in resolving the challenge; (7) comforting/affect regulating behavior occurs as well and; (8) the attached individual/dyad resume activity or initiate a new activity. The temporal-causal structure linking each element of the script is a critical feature of the script approach. The secure base script not only contains information about what happens in a secure base interaction, but what *should* happen, when, and why. As a result, the secure base script simultaneously reflects content (actions/behaviors) and organization (causal connections) of attachment representations. Like scripts more generally, these features of the secure base script are thought to provide a direct link to cognitive processing and behavior in relationships (e.g. Bosmans, Braet, Heylen & De Raedt, in press; Waters, Brockmeyer, & Crowell, 2013).

Findings from Waters et al. (1998) demonstrated that, in early childhood, securely attached children were more likely to produce stories that followed the structure/sequencing of the secure base script. Furthermore they showed individual consistency in secure base script knowledge from 37 to 54 months of age in spite of significant changes in cognition and language skills. Waters and Rodrigues-Doolabh (2001) responded to these script findings with young children by developing a narrative-based assessment to elicit attachment relevant stories from *adults* that could also be scored in terms of secure base script knowledge, the Attachment Script Assessment (ASA).

In contrast to interview based methods, the ASA implements a prompt word procedure in which columns of words formed an outline of a beginning, middle, and end of a possible story. Embedded in the story outline was some distress or difficulty in which a secure base could respond in accordance with the secure base script. This method provides a level of structure and consistency across participant (i.e. everyone is asked to tell the same stories based on the same outlines) that open-ended interview methods do not. The adult participants from Waters and Rodrigues-Doolabh (2001) completed the ASA and the Adult Attachment Interview for purposes of validation. Results indicated that individuals with high script scores reflecting knowledge/access to a secure base script were more likely to be classified as secure individuals based on their AAIs. Further, secure base script knowledge in adulthood has also shown positive association with high-quality parenting as well as attachment security in the next generation, even among biologically unrelated caregivers and their adopted children (Bost et al., 2006; Coppola, Vaughn, Cassibba, & Constantini, 2006; Groh & Roisman, 2009; Monteiro, Veríssimo, Vaughn, Santos, & Bost, 2008; Tini, Corcoran, Rodrigues-Doolabh, & Waters, 2003; Vaughn, Waters, Coppola, Cassidy, Bost, & Veríssimo, 2006; Vaughn et al., 2007; Veríssimo, Monteiro, Vaughn, Santos, & Waters, 2005; Veríssimo & Salvaterra, 2006; Wong et al., 2011), and secure base behavior in romantic couples (Waters, Brockmeyer, & Crowell, 2013).

An adaptation of the attachment script assessment for adolescence has produced parallel results linking adolescent script representations with adolescent security assessed by the AAI (Dykas, Woodhouse, Cassidy, & Waters, 2006). Moreover, Steele et al. (2014) examined the developmental antecedents of secure base script knowledge (as measured by the adolescent version of the ASA) focusing on observed parental sensitivity across the childhood period and infant attachment security in a subsample of the NICHD Study of Early Child Care and Youth Development cohort (N = 673). Results indicated that secure base script knowledge was associated with observations of maternal and paternal sensitivity assessed across childhood and into to adolescence and, to a lesser extent, with mother-infant attachment in the first three years of life. Waters et al. (2015) examined the latent structure of secure base script knowledge and found that it was generalized across multiple relationship domains (i.e. maternal and paternal; parent-child and adult-adult) and is continuously distributed (not categorical).

In continued efforts to explore the development and impact of secure base script knowledge several researchers have attempted extended investigations of this construct into the middle childhood period. Kerns, Abraham, Schlegelmilch, and Morgan (2007) examined relations between children's emotion regulation and secure base script knowledge measured via a story stem completion task. Children's secure base script scores were significantly associated with both mood (child report) and emotion regulation (teacher report). Further, Psouni and Apetroaia (2014) examined convergent validity between the secure base script construct using the Secure Base Script Test (SBST) and the Kerns Security Scale (KSS; e.g. Kerns, Klepac, & Cole, 1996) and the Friends and Family Interview (FFI; Kriss, Steele, & Steele, 2012) in a large middle childhood sample. They found that SBST scores were significantly associated with both attachment assessments providing critical evidence that

the secure base script construct is an important component of attachment representations in the middle childhood period.

Overall, work focused on secure base script knowledge has supported the hypothesis that an individual's history of secure base support is represented in memory as a secure base script beginning in early childhood, and if that parental support has been consistent, the script will be present into late adolescence. Further, evidence suggests that secure base script knowledge has implications for attachment related behavior in adulthood (e.g. Waters et al., 2013). That said, there exists a gap in our understanding of secure base script knowledge in the middle childhood period regarding several core hypotheses of attachment theory. Specifically, intergenerational transmission of secure base script knowledge and relations between script knowledge and (mal)adaptive behavior.

Current Investigation

To investigate the presence of secure base script knowledge in middle childhood and its relation to critical theoretically predicted correlates, we conducted two studies. The first study collected attachment narratives using age appropriate prompt word outlines to elicit attachment relevant narratives. We aimed to address two questions in Study 1. First, we examined whether participants' secure base script knowledge was consistent across different attachment narratives in the middle childhood script assessment. Evidence of this kind of consistency would indicate the presence of an underlying generalized secure base script that guided narrative production across the task. Neutral stories were also included in the study to assess the degree that general story telling ability impacted script scores. Second, we tested the hypothesis that there would be intergenerational transmission of attachment by examining relations between the script scores of the children and their mothers, who completed the adult version of the ASA. We predicted that mothers' script scores would be positively associated with those of their children, independent of children's general story telling ability. Empirical studies linking the AAI and children's attachment status has established this relation as a key piece of support for attachment theory (Hesse, 2008; Van IJzendoorn, 1995). Support for similar links between maternal secure base script knowledge and childhood attachment security has already been provided for younger children (Tini, Corcoran, Rodrigues-Doolabh, & Waters, 2003; Vaughn, et al., 2007; Wong et al., 2011)

The second study examined evidence of cross-cultural generality and replication regarding the presence of script-like attachment representation in a sample of 9 to 12 year old children recruited in Belgium. Evidence of cross-cultural generality has long stood as a central prediction of attachment theory. Further, we extended the findings of Study 1 to include analyses of the relations between middle childhood script scores and maternal reports of maladaptive behavior. Following from Bowlby's (e.g. 1973) framework for understanding the development of psychopathology in relation to attachment representations of (in)consistent and (un)supportive care, we included the Childhood Behavioral Checklist to assess relations between secure base script knowledge in middle childhood and maladaptive behavior in our sample (Achenbach & Rescorla, 2001). Research and recent meta-analytic data suggest moderate links between attachment and internalizing and externalizing symptoms in childhood (Brumariu & Kerns, 2010; Fearon, Bakermans-Kranemburg, Van

IJzendoorn, & Roisman 2010; Groh, Fearnon, Bakermans-Kranenburg, Van IJzendoorn, Steele, & Roisman, 2014; Groh, Roisman, Van IJzendoorn, Bakermans-Kranenburg, & Fearon, 2012; Madigan, Atkinson, Laurin, & Benoit, 2013; Rothbaum & Weisz, 1994).

Study 1

Our first step in assessing secure base script knowledge in middle childhood was to adapt the prompt word methodology used for the adult and adolescent script assessments for the middle childhood age range. Based on the early narrative work in which prompt word outlines were first used to study narratives skills in children, we adopted an outline format of four columns of groups of words to frame story lines (Waters & Hou, 1987, Waters, Hou & Lee, 1993). This is in contrast to the three column format used for the script assessments for older participants because children are less adept at elaboration and an additional column of words encourages continued narrative production.

The second step was to identify attachment relevant scenarios for middle childhood to frame the story lines used in the script assessment. The adult assessment used both mother-child and adult relationship scenarios that adults might experience in their everyday lives, whereas the adolescent script assessment used ordinary situations in which either a mother or father might provide secure base support for an adolescent (e.g., adolescent is upset about being left out of a party or is concerned about an upcoming exam). In selecting appropriate scenarios for middle childhood we took advantage of the Kerns and colleagues' (2007) survey findings of attachment-type situations identified by 7 to 12 year old children. Injury or illness of self, performance failures, and frightening situations that included animals were among the situations in which children at this age would want contact with an attachment figure. These types of situations formed the basis of the current middle childhood script assessment. Based on previous research suggesting that secure base script scores do not differ across stories focused on mother-child or father-child relationships and given that mothers most typically serve as the primary caregiver, all stories focused on mother-child dyads (see Waters et al., 2015 for evidence of generalization of script knowledge across relationship domain)

Consistent with the hypothesis that attachment experiences at all ages from preschool to adulthood are represented as a secure base script, we anticipated that script scores across all the middle childhood attachment stories would be highly correlated, but would show weak correlations with narrative organization scores coded from neutral stories. Furthermore we expected a significant relation between mother and child script scores consistent with the attachment literature that has shown significant cross-generation relationships.

Method

Participants—Forty 5th and 6th grade children along with their mothers participated in the study. Participants were recruited from flyers distributed in local elementary schools and through general mailings to community households. Mothers and their children attended one experimental session either at the local high school or at our university laboratory and received fifty dollars for their participation. The children ranged in ages from 10 years 3 months to 12 years, 0 months of age, *M* age = 11 years, 1 month, *SD* = 7 months. Twenty-

two girls and 18 boys participated. Four participant children were Hispanic, one was Asian, and 35 were white. Age of mothers ranged from 38 years 7 months to 53 years 0 months, *M* age = 44 years, 11 months, *SD* = 3 years, 10 months. Two were divorced, one was not married and 37 were married. Mothers' occupations ranged from stay at home moms to part time work (e.g., bank teller) to professional, full-time careers (e.g., physicians, teachers). Education levels ranged from 2 years of college to professional and graduate degrees.

Measures

Middle Childhood Script Assessment: Three attachment-related stories were collected from the children. The prompt word outlines were printed in large font and were grouped into four columns that defined a beginning, middle and end for the potential story. The attachment prompt word outlines for the children described familiar scenarios in which there was some type of distress that would trigger the child to seek out his or her secure base. These stories could elicit secure base content from a child who possessed secure base script knowledge. The stories, *Scary Dog in the Yard*, *At the Beach*, and *Soccer Game*, required the child to assume the role of the narrator and speak in the first person, as if the story were about themselves and his/her mother. All three prompt word outlines are presented in the Appendix. Before the children began their attachment narratives, they were presented a practice prompt word outline about an ordinary, everyday activity (Trip to Park, or Snowy Day). This provided some opportunity to ask questions about the procedure and for the experimenter to provide additional explanation if the child was uncertain about how to use the words to produce a story.

The two neutral, event-based prompt word outlines, *Johnny's Day* and *Susie's Day*, were presented after the attachment narratives. They were different from the attachment prompt word outlines in that neither had the potential or the purpose to tap into a secure base script. The same format was utilized with groups of words arranged in columns constituting a beginning, middle and end for a potential story. Both neutral story prompts are also included in the Appendix.

Attachment Script Assessment: Mothers were given similar prompt word outlines using Attachment Script Assessment described by Waters and Waters (2006). The four attachment narratives included in the assessment consist of two mother-child stories (Baby's Morning, Doctor's Office) and two adult-adult stories (Jane and Bob's Camping Trip, and Sue's Accident). A practice story was not included for the mothers as they have shown no difficulty in understanding the task or instructions in previous work.

Procedure—When the mothers and their children arrived for their experimental session, the mothers were first asked to fill out a demographic sheet that included basic information about children in the family, parents' education, work schedules and marital status. The mother and child were then seated in separate rooms, each with a female researcher. In the case of the child, they were shown the practice story and the prompt word procedure explained. They were told that "If you read down the columns and go from left to right, you can see that the words follow a basic storyline. There is a beginning, middle, and end (pointing in the general direction of the four columns). We will be asking you to tell stories

using outlines like this one. The outline will stay in front of you the whole time while you are telling your story. It's just a guide, so you do not have to use all the words if you don't want to, you can change the order around if you want. When you tell your story you should put in as much information and as many details as you can to tell the best story you can."

After the overview of the prompt word procedure, the child began with the practice story. The experimenter gave the child up to a few minutes to think about their potential story, and then recorded their story with a digital recorder when they signaled they were ready to start. The experimenter answered any questions after the practice story and the child then began producing the three attachment narratives followed by the two neutral stories. The child was reminded about the basic instructions as they proceeded from one story to the next. Presentation of the prompt word outlines varied from one participant to the next, with the restriction that all attachment narratives were presented before the two neutral stories. This was to prevent any biases on the part of the experimenter in how they presented the different stories.

The procedure for the mothers was almost identical. The experimenter introduced the prompt word outlines, described the column organization framing a storyline going from left to right, and indicated that elaboration of the materials was welcomed. As with the children, they were told that they did not have to use every word in producing their story, and could make changes that fit their story. They were told that their stories should approximate about ½ to 1 page long, double spaced. Furthermore they were encouraged to take as much time as they needed to think about the story before beginning to tell their story. When they were ready, their narratives were recorded on a digital recorder. The prompt-word outline sheets remained in front of them while they generated their story and the four attachment narratives were presented in different orders to minimize any biases in presentation by the experimenter.

Results

The results are presented in three different sections. The first includes descriptive information about mean script scores, rater agreement and passage length for both the attachment and neutral narratives from the middle childhood assessment and the attachment narratives from the mothers. The second examines evidence of a secure base script in middle childhood. The third presents information regarding the relationship between mothers' attachment script scores and children's attachment script scores.

Descriptive Statistics—Using the Waters and Rodrigues-Doolabh (2004) seven-point secure base script scale for the narrative assessment of attachment, the three separate attachment narratives collected from each child were scored by two independent raters. The scoring proceeded by story line, not by individual participant, so that coders were blind to each participant's scores on the other stories. Scores range from rich secure base script content (7-6) to moderate levels (5-4) to event-focused narratives with no secure base content (3) to narratives that are either brief or contain atypical content inconsistent with a secure base script (2-1). Narratives with high script scores had evidence of numerous of secure base script components described in the introduction (e.g., engaged in a constructive

activity, encounters a problem/challenge, signals their distress, etc). Lower scores reflect weaker evidence toward no evidence and even content inconsistent with the script (e.g. parent makes problem worse). Additional information of the secure base script framework is available in Waters and Waters (2006).

Rater agreement on script scores was consistently high (within 1.5 points on 98% of the passages from each prompt word set). Intraclass correlations (ICCs) ranged from .77 to .85. Mothers' attachment narratives were also assessed on the seven-point scriptedeness scale by two independent scorers, with high rater agreement, ICCs ranging from .73 to .88 across the four attachment narratives. Scores from the independent raters were averaged to provide more reliable scores for each attachment narrative from both script assessments.

Using the Waters and Hou (1987) seven-point narrative scale for assessing storytelling skills, the two neutral narratives collected from each child were also scored by two independent raters. Once again, scoring proceeded by story line, not by participant. Narrative scores range from evidence of episode structure (7-6) to causal-temporal structure (5-4) to primarily temporal or uneven use of temporal or causal connections (3-1). The two scores from each rater were averaged for each neutral story line, intra-class correlation .88 for Susie's Day and .94 for Johnny's day.

Mean script scores for the children and their mothers along with the neutral narrative scores are presented in Table 1. Script scores for children's attachment narratives ranged from 1.0 to 7.0 covering the entire 7 point scriptedness scale. Similar results were obtained from the mothers' script scores which ranged from 1.50 to 7.0. Children's narrative scores on the neutral stories covered the full range of the narrative scale from 1.0 to 7.0 as well. Table 2 presents both a high and low scoring "At the Beach" story to highlight the different script qualities of the children's narratives.

With respect to passage length, mean word counts for children's attachment narratives ranged from 91 (Scary Dog) to 103 (At the Beach) to 118 (Soccer Game) words, *SD*s from 43 to 90 words. Mean neutral narrative word counts ranged from 100 (Johnny's Day) to 123 (Susie's Day) words, *SD*s 56 to 71. Mean word counts for mothers' attachment narratives ranged from 243 to 273 words, *SD*s from 149 to 182. Not surprisingly, the narratives produced by mothers were longer, a pattern common in the narrative literature.

Evidence of a Secure Base Script—Correlations between the three attachment narratives and neutral narratives are presented in Table 3. We first correlated the script scores from the three attachment narratives collected from each child to establish that the secure base script was consistent and generalized across story themes. All correlations were well within the significance range, spanning from .47 to .55, *p*s < .01. The alpha reliability of the averaged script score (across all three attachment narratives) was $\alpha = .78$ (males, $\alpha = .67$; females, $\alpha = .85$). This high degree of reliability of the composite score provides evidence of a secure base script in middle childhood which is effectively tapped into by the prompt word method and brought to bear across story themes. Correlations between the mothers' attachment script scores were also significant, ranging from .42 to .61, *p*s < .01 and with an alpha reliability of $\alpha = .79$ for the averaged score.

Importantly, only one of the six correlations between the neutral narrative scores and the attachment script scores was significant, with correlations ranging from .16 to .30. These results support the hypothesis that the narrative script assessment taps into an underlying secure base script and is not particularly influenced by generalized storytelling ability. Furthermore there was no association between child age and mean attachment script scores, $r = .16$, $p = .369$, or maternal education and child ($r = -.138$, $p = .40$) or maternal ($r = -.105$, $p = .519$) script scores. Further, there was no significant gender effect ($t(38) = .95$, ns), mean script scores of 3.73 (SD = .88) and 4.02 (SD = 1.03) for male and female children, respectively.

Associations Between Mother and Child Secure Base Script Knowledge—The adult and child attachment script scores were correlated to determine whether there was a positive relationship between mothers' and children's secure base script knowledge. The statistical analysis demonstrated a significant correlation of .33, $p = .034$. Further, when children's scores for storytelling ability in the neutral stories was introduced as a control this association remained, partial $r = .31$, $p = .05$. This result supports the prediction for intergenerational transmission of attachment representations, an issue we return to in the discussion. Further categorical analysis was also conducted by grouping mothers and children into one of two groups, those with secure base script knowledge (mean script score 4.0 or higher) and those with little or no script knowledge (less than 4.0). Of the 17 mothers who were in the secure script range, 13 had children in the script range (76% hit rate). Of the 23 mothers outside the script range, 16 of the children were also outside the script range (70% hit rate; chance = 50%). A Chi-square (Yates-corrected) analysis of the two by two frequency table revealed a X^2 of 6.55, df = 1, $p = .01$. The overall "hit rate" was 73% and is similar to reported relations between mothers' Adult Attachment Interview and their children's attachment classification (Van IJzendoorn, 1995).

Study 2

Positive results from Study 1 indicated that children in the 10 to 12 year age range had access to and knowledge of a secure base script. The prompt word methodology was successful in eliciting attachment narratives that could be scored by the secure base script scale used for adolescent and adult Attachment Script Assessments (Dykas et al, 2006; Steele, et al., 2014; Waters & Waters, 2006). In light of these results, we took the next step to replicate the findings in a new group of children and broaden the reach of the middle childhood script assessment by selecting a cross-cultural sample. For Study 2 we administered the middle childhood script assessment to 50 children from Belgium ranging in age from 9 to 12 years. The prompt word outlines were translated into Dutch and initially piloted in order to assess the adequacy of the translation and particular story scenarios for the Belgium sample. Appropriate corrections were then made in the prompt words before the formal study began. Belgium is a predominantly Catholic post-industrial European nation with a population of roughly 11 million people and three national languages. Compared to the United States, Belgium experiences less income inequality, has a lower infant mortality rate (Central Intelligence Agency, 2014), and its children report significantly lower levels of internalizing and externalizing behaviors compared to the United States (Rescorla et al., 2007)).

As indicated in the general introduction further evidence of the presence and significance of secure base script knowledge in middle childhood was pursued, first by examining the intercorrelations between script knowledge scores for each attachment related narrative and second by examining relations between script knowledge and internalizing and externalizing behaviors which have been linked to attachment security in previous research (e.g. Fearon, et al., 2010; Groh et al., 2014; Madigan et al., 2013). We chose to examine relations between children's secure base script knowledge and maternal reports of externalizing and internalizing behavior problems in an effort to avoid respondent bias inflating observed correlations. It should also be noted that meta-analyses examining attachment security and behavior problems focused on behavioral measures of attachment, and the script assessment is a representational measure. As a consequence, positive results would add to a relatively sparse literature linking attachment representations in middle childhood to significant behavioral assessments. In turn this should move the field closer to a more detailed understanding of the interplay between early caregiving experiences, generalized representations of those experiences and important correlates of attachment across development.

Method

Participants—Fifty children participated in the current study, which was part of a broader study during which mothers and children visited the lab one time. Children were recruited from 4th, 5th and 6th grade of elementary schools in Flanders, the Dutch-speaking region of Belgium. Flyers were distributed in six different schools. The sample consisted of 23 boys (46%) and 27 girls (54%) with ages ranging from 9 years 2 months to 11 years 7 months. Mean age was 10.4 (*SD* = 0.6). All children had a Belgian nationality. Concerning family status, 76% of the children lived together with both biological parents and one fifth (22%) had divorced parents. One child only lived with her mother (2%). Regarding parental level of education, 6% of the mothers had an elementary school degree, 18% had a high school degree, 38% had a post-high school technical training or a bachelor degree, and 38% had a master's degree. Four of the children (8%) had received psychological treatment, one of them was diagnosed having ADHD and one was diagnosed as having a major depressive disorder.

Procedure—When participants arrived at the laboratory, mother and child were seated in two different rooms. The children's visit began with the administration of the Middle Childhood Script Assessment and was then followed by a series of questionnaires and an experimental task that was not part of the current study. During that time, mothers provided demographical information and filled out the Child Behavior Checklist. At the end of the experimental session, all participants were debriefed and rewarded for their participation with two movie tickets.

Measures

Middle Childhood Script Assessment: As in Study 1 the children first received a practice story, followed by the three attachment-related stories. No neutral stories were included in Study 2. There were some minor wording changes to the *At the Beach* story because there are no rocks on Belgium beaches. Instead "glass" in the sand is the culprit for the child's

injury in the story line (see Appendix). All the procedures for implementing the script assessment were the same as described in Study 1.

Childhood Behavioral Checklist: (CBCL; Achenbach & Rescorla, 2001) lists child behavior problems such as hitting family members or peers. Using a 3-point scale ranging from 0 (not true) to 2 (very true or often true), mothers were asked how often they had observed each behavior. The questionnaire consists of 113 items, which are summed into nine subscales: Anxious/Depressed, Withdrawn, and Somatic Complaints (the internalizing scales); Aggressive Behavior and Delinquent Behavior (the externalizing subscales); and Social Problems, Thought Problems, and Attention Problems. All these symptoms are then added up in a Total Problems (raw) score which represents the overall amount of psychopathology symptoms present in the child. The CBCL has good predictive validity (Achenbach & Rescorla, 2001). It can significantly distinguish between children with psychiatric disorders and non-disordered children (Novik, 1991). Furthermore, problem behaviors assessed with CBCL can predict poor outcome 4 years later (Koot & Verhulst, 1992). The current sample's Cronbach alphas were for the Internalizing scale, $\alpha = .83$ and for the Externalizing scale, $\alpha = .86$.

Results

The results are presented in two sections. The first includes descriptive information on the Belgium script scores and evidence of a secure base script in this sample. The second examines the correlation between the Middle Childhood Script Assessment and the CBCL.

Evidence of a Secure Base Script – Belgium Sample—As in Study 1, the three attachment narratives from each child were scored on the seven-point scriptedness scale developed for the ASA by two independent raters. Scoring proceeded by story line, not by individual participant, and scores from the raters were then averaged. Rater agreement was consistently high. Intraclass correlations ranged from .78 to .96 across the three attachment narratives. Mean script scores from the Belgium sample are summarized in Table 1. The mean scores were comparable to those of the U.S. sample on each story ($t(88)$ statistics ranged from 1.10 to 1.69, all $p > .10$) and individual scores ranged from 1.0 to 7.0 covering the entire 7 point scriptedness scale. With respect to passage length, mean word counts for the children's narratives ranged from 107 (Scary Dog), to 94 (At the Beach), to 104 (Soccer Game) words, *SD*s ranged from 117 to 127 words. Table 2 also presents a high scoring "At the Beach" story from the Belgium sample along with those from the U.S. to demonstrate the similarities in secure base script content that appear across the two cultures.

The next step was to evaluate the evidence in favor of a secure base script in the Belgium sample. Once again, we examined correlations among the three attachment narratives indicating an underlying general secure base script that cuts across various situations. The correlations among stories in the current sample are presented in Table 3 along with the results from Study 1. All Pearson correlations were large and suggested the task tapped the same underlying construct, spanning from .45 to .46, $p < .01$. The alpha reliability of the averaged script score (across all three attachment narratives) was $\alpha = .81$ (males, $\alpha = .66$; females, $\alpha = .81$). This high degree of reliability of the composite score for the complete

sample is comparable to that of Study 1 (α = .79), as is the reliability by gender, and reaffirms the hypothesis that attachment related experiences are represented as a secure base script across the two western cultures. Furthermore, the similarity in statistical profiles suggests that the prompt word methodology is effective in tapping into secure base script knowledge in children from 9 to 12 years of age. The intercorrelations reported with respect to the script stories was comparable to similar studies in this age group, and in adolescence and adulthood (Dykas, et al., 2006; Steele, et al., 2014; Psouni & Apetroaia, 2013)

Secure Base Script Knowledge and Relations with the CBCL—In order to examine associations between secure base script knowledge and psychopathology, we ran a series of bivariate correlations between script knowledge and CBCL internalizing and externalizing scales. These results are presented in Table 4 along with descriptive statistics (means and *SD*s) for the measures. Age, gender, and maternal education was also included in the correlational analyses. Although age and gender were not significantly related to script scores in Study 1, they were in the current sample. A significant gender difference in secure base script knowledge was previously reported by Steele et al. (2014), the largest study of secure base script knowledge to date. This may in part be due to girls exhibiting significantly better verbal ability than boys (e.g. Hyde & Linn, 1988). It is unclear why age and gender difference were not found in Study 1. In addition to age and gender effects, maternal education was significantly associated with CBCL internalizing scores.

In order to control for these effects, we conducted hierarchical regression analyses entering age, gender, and maternal education in step 1 in the analyses, and script scores in step 2 to examine the relations between script scores and CBCL scores. The results are presented in Table 5. Script scores continued to negatively correlate with the Internalizing and Externalizing scales. These results open the door for further discussion and investigation of the interplay between secure base script knowledge and adaptive as well as maladaptive behavior.

General Discussion

Taken together, the studies presented here build on previous literature and provide three critical pieces of evidence regarding the presence of a script-like representation of the secure base relationship in middle childhood. We presented evidence that the middle childhood script assessment tapped a stable underlying secure base script using samples drawn from two different western cultures, the United States and Belgium. This finding is consistent with the secure base script literature more generally (see Waters et al., 2015). In addition to evidence of consistency, we also presented the first evidence of intergenerational transmission of secure base script knowledge (Study 1) and relations between secure base script knowledge and maladaptive behavior in middle childhood (Study 2). Our results suggest that the middle childhood ASA presented here is a valid and reliable tool for investigators interested in attachment representations during the middle and late childhood period.

The intergenerational transmission of script knowledge results are consistent with research examining intergenerational transmission of attachment security more generally (Madigan,

Bakermans-Kranenburg, Van IJzendoorn, Moran, Pederson, & Benoit, 2006; Van IJzendoorn, 1995), but represents an important extension to script-like attachment representations (see see Bost et al., 2006 for links between script knowledge and children's attachment behavior). But as Van IJzendoorn argued, the means by which parents impart their attachment representation to their child has yet to be fully explained (see Bernier, Matte-Gagne, Belanger, & Whipple, 2014 for further discussion of this issue; also see Bernier & Dozier, 2003; Fonagy & Target, 2005; Meins, 1999). Certainly parenting behavior and sensitivity are a significant portion of the intergenerational transmission equation, and there is evidence to suggest that secure base script knowledge influences parenting behavior as well (Coppola et al., 2006). Bernier et al. (2014) also provided strong evidence that support for autonomy is a critical independent component of the intergenerational transmission of attachment (see also Vaughn et al. 2014). In addition, Bost et al. (2006) found that mothers' secure base script scores were positively associated with the way they reminisced about the past with their children (i.e. emotion talk). It is possible that it may not be the emotion talk or elaborative style of parent-child reminiscing *per se* that is critical to attachment, but the narrative organization and structure provided by the mother (see Fivush & Waters, in press). Specifically, mothers who know the secure base script themselves may work to draw their children's attention to elements of secure base use and support consistent with the script during conversations about the past. This would, in essence, teach the child to view their past through the lens of the secure base script and perhaps facilitate the construction of a more explicit (and episodic) representation of the history of the attachment relationship, the kind of representation tapped by the AAI and other retrospective narrative interviews. Future research is needed, but examination into the contributions of autonomy support, parental sensitivity, and parent-child reminiscing (in addition to maternal secure base script knowledge) may allow us to explain much more variance in children's development of a secure base script.

In an effort to explore the adaptive significance of secure base script knowledge in middle childhood, we examined relations between the middle childhood ASA and CBCL. Bowlby was clear about the adaptive significance of attachment representations consistent with security (see also Sroufe, Egeland, Carlson, & Collins, 2005). In the absence of consistent, sensitive and competent care, Bowlby (e.g. 1973) argued that children would likely develop maladaptive models of social relationships and bring those to bear on the broader social environment. Although our results provide the first support for links between secure base script knowledge and adjustment in childhood, the assessments selected for child (mal)adaptive behavior in this study highlight pathology, not social competence. In line with Belsky and Cassidy's (1994) arguments that childhood attachment may have stronger implications for the development of social competence (compared to psychopathology), a recent meta-analysis by Groh et al. (2014) found that early attachment security better predicted social competence than it did internalizing symptoms later in development, however this was not true of externalizing symptoms. In many ways the strength of the secure base script construct is its close conceptual ties to adaptive (rather than maladaptive) behavior. Knowing the secure base script suggests that you understand and expect supportive/sensitive care in relationships, and are more likely to provide it as well (e.g. Waters et al., 2013). Not knowing the secure base script does not necessarily mean

maladaptive behavior must manifest, though the lack of sensitive and consistent parental support implied by low script scores undoubtedly increase their likelihood. It would be fruitful to examine relations between secure base script knowledge and adaptive, as well as maladaptive, behavior across childhood to see if the kinds of differential effects reported by Groh et al. (2014) hold true for secure base script knowledge. That said, the magnitude of the associations between script knowledge and behavior problems reported here are similar to those reported in previous research in middle childhood using different measures of attachment (e.g. Brumariu & Kerns, 2010; Granot & Mayseless, 2001; Greenberg, Cicchetti, & Cummings, 1990; Kerns, Brumariu, & Seibert, 2011; Ridenour, Greenberg, & Cook, 2006). However, due to the script approach's emphasis on a single dimension of security to insecurity we were unable to examine specific predictions based on categorical distinctions in insecurely attached individuals (e.g. disorganization).

As discussed in the introduction to this paper, evidence of a script-like organization of attachment representations has been found across a wide range of development: early childhood (Waters, et al., 1998), adolescence (Dykas, et al., 2006; Steele et al., 2014), adulthood (Waters & Waters, 2006), and now in middle to late childhood (this study, also Psouni & Apetroaia, 2013; see also Kerns et al., 2007). The secure base script concept has also recently been extended into research examining the later stages of life when adult children are often faced with the challenge of caring for their aging parents (Chen, Waters, Hartman, Zimmerman, Miklowitz, & Waters, 2013). However, our understanding of the longitudinal stability of secure base script knowledge is extremely limited (but see Vaughn et al., 2006). One of the central questions of attachment theory has always been the stability of attachment across the life span. That said, evidence of stability in large samples has been modest (e.g. Booth-LaForce & Roisman, 2014).

Developmental scientists' ability to accurately assess stability across the lifespan may, in part, be complicated by measurement issues (Sroufe, 1979; see also Kerns, 2008; Pinquart, et al., 2013). As it stands today, attachment research investigating stability and change typically examines links between infant/child behavioral observation with the coherence of retrospective autobiographical interviews in adolescence and adulthood. There is substantial conceptual distance between narrative coherence and the attachment behavior/experience hypothesized to give rise to it, and to arise from it (see Steele et al., 2014; Waters & Waters, 2006 for similar arguments). One advantage of the secure base script approach is its clear conceptual ties to secure base behavior and interaction. The script approach provides a set of developmentally appropriate assessment tools targeting the same construct (i.e. secure base script knowledge) from early childhood through to adulthood and these assessments maintain a close conceptual link to behavioral observation and to the developmental tasks/ challenges of the age group being assessed (e.g. Adolescence: social embarrassment or academic competence; Adulthood: supporting romantic partners or caring for children).This opens the door to both short-term and long-term investigations of stability and chance in attachment representations with greater consistency in the operationalization of the construct of interest and the measurement approach.

The studies presented here have several limitations that must be acknowledged. Due to time constraints, Study 2 did not collect maternal ASAs so we were unable to examine

intergenerational transmission in that sample nor were assessments of the children's narrative abilities collected for use as a covariate. Further, additional assessments of psychopathology were not collected. Thus we were not able to establish that the associations between secure base script knowledge and internalizing and externalizing behaviors were not the result of more general psychopathology influencing both measures. It will be important for future research to take these issues into consideration. Additionally, it will be important for researchers to seek cross-cultural replication of the findings presented here in non-western cultures as well. That said, we believe this study is an important first step in comparing findings with the secure base script construct in children growing up in different socio-cultural contexts.

The middle childhood period is one of great importance for the attachment relationship. During this period the social influences on the attachment bond broaden, and the scope and nature of the secure base support required by caregivers shifts as the challenges that face the developing child shift (e.g. Kerns, 2008). A parent's ability to adapt to their developing child and their changing needs is a critical test for attachment figures as the child transitions into increasingly complex social and academic worlds (e.g. Waters & Cummings, 2000). Given the dramatic differences in the kinds of care and support required in middle childhood compared to those of infancy, secure base script knowledge assessed in the middle childhood period may prove to be an important mediator between experienced care in infancy/early childhood and adaptive outcomes in adolescence and adulthood. Secure base script knowledge in middle childhood may reflect the successful efforts of parents to adapt to the changing needs of their children which may be critical to adaptive outcomes. Script-based measures may serve as a useful tool for people attempting identify significant mediators that provide a link between early experience with caregivers and adaptive functioning in adulthood.

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Appendix A

Middle Childhood Assessment – Narrative Prompt Word Outlines

Scary Dog in the Yard			
outside	sniff	mom	dog gone
play	bark	broom	go inside
big dog	I cry	chase	play
At the Beach (*changes in Belgium Version*)			
Mom and I	climb (*sandcastle)*	mom	bandage
picnic	rocks (*glass)*	hurry	hug
beach	I'm cut	doctor	home
Soccer Game			
morning	play	I miss	Mom
big game	tired	lose	talk
nervous	easy shot	upset	practice

Neutral Middle Childhood Narratives			
Susie's Day			
jeans	sink	party dress	ice cream
mud pies	soap	present	cake
Susie	Mom		games
Johnny's Day			
Johnny	Park	coke	pajamas
bike	Billy	Johnny & Billy	TV
	football	comics	milk

Table 1

Descriptive Statistics for Middle Childhood and Mother Script Assessments

	M	SD
Secure Base Script Scores (1 to 7) - Child		
Scary Dog in the Yard	3.81	1.14
At the Beach	3.74	1.18
Soccer Game	4.11	1.16
Narrative Scale Scores (1 to 7) - Child		
Susie's Day	3.85	1.39
Johnny's Day	3.43	1.49
Secure Base Script Scores (1 to 7) - Mother		
Baby's Morning	3.99	1.12
Doctor's Office	4.07	1.36
Camping Trip	3.68	1.01
Sue's Accident	4.03	1.20
Secure Base Script Scores (1 to 7) - Belgian Sample		
Scary Dog in the Yard	3.39	1.46
At the Beach	3.48	1.04
Soccer Game	3.67	1.29

Table 2

Sample Prompt Word Outline and Stories – Middle Childhood Script Assessment

At the Beach (*Belgium changes in Study 2)*			
Mom and I	climb (*sandcastle*)	mom	bandage
picnic	rocks (*glass*)	hurry	hug
beach	I'm cut	doctor	home

Secure Base Script Story (Study 1)

One day my Mom and I went to the beach to have a picnic. The beach was miles long. There was tons of rocks there so we decided to explore the land. I climbed on the rocks and one time I slipped by accident and I cut my knee. My mom hurried over there and she was wondering if I was ok. She saying "Let's go. We have to get you to the doctor." But I knew that it wasn't that bad so I told her "No, it was ok. I just need a band-aid." And then my mom hurried into the picnic basket and she got out band-aids a box of band-aids because she always like, she always has everything that we might need. She never knows what happens. So she out the band-aid on my knee and gave me a hug. She wanted me to feel okay about it but I was already ok. After a few minutes exploring again my mom wanted us to go home so that my knee could heal perfectly.

Secure Base Script Story (Study 2- Belgium Sample)

Mom and I had a great, had a great idea. We went to the beach. We drove with the car to the beach and we had a picnic, and we brought a picnic. Yes, and we parked and then we went searching for a spot on the beach. Mom went tanning a bit, by the sun, through the sunscreen. And I nicely went swimming in the sea. But suddenly, auw auw that hurts! I yelled, I yelled to mom and mom ran fast as the wind to me. My child, what's wrong. Yes, and, yes I said 'mom, my foot hurts'. And she took a look at my foot, and no! that was a glass that got straight into my foot. We drove as fast as possible to the doctor. At the nearest doctor. The doctor put a bandage over her foot that was bleeding badly. But it hurt very very much. And in order to relief the pain a bit, I hugged mom very tight. Mom liked that. And then we go home. What a beautiful day at the sea, except for the foot.

Low Scoring Story – No secure base content/support seeking, focus on maternal negative affect (Study 1)

One day my mom and I decided to have a picnic at the beach. We were in the water for hours but it started to get boring as the day was getting darker, so I decided to climb the rocks. My mom was very nervous about it. I went and all of a sudden I fell and got cut. My mom was freaking out and we had to hurry home to call a doctor. Finally, the doctor came and he bandaged my cut and I was going to be okay. I gave my mom a hug and then I went home and everything was going to be fine.

Table 3

Bivariate Associations of Secure Base Script Knowledge Within Attachment Stories and with Narrative Ability Controlling for Child Age and Gender

Intercorrelations of Script Scale Scores (USA Sample; N = 40)

	Scary Dog in the Yard	At the Beach
At the Beach	.55**	--
Soccer Game	.47**	.53**

Intercorrelations of Script Scale Scores (Belgium Sample; N =50)

	Scary Dog in the Yard	At the Beach
At the Beach	.46**	--
Soccer Game	.45**	.45**

Correlations Between Script Scores and Narrative Ability (USA Sample; N = 40)

	Scary Dog	At the Beach	Soccer Game
Susie's Day	.24	.18	.30
Johnny's Day	.30	.16	.18

* $p < .05$,

** $p < .01$

Table 4

Correlations Between Childhood Script Scores, CBCL Scores, and Child Age, Gender and Maternal Education

	Childhood Scripts	CBCL Externalizing	CBCL Internalizing	Age	Maternal Education
Childhood Scripts	1				
CBCL Externalizing	−.38**	1			
CBCL Internalizing	−.33**	.63**	1		
Age	.32*	0.19	0.2	1	
Gender	.39**	−0.27	−0.16	0.16	
Maternal Education	.18	−.21	−.29	−.12	1
Means	3.51	5.88	23.1	10.36	5.66
SDs	1.08	5.91	19.96	0.6	1.66

* $p < .05$,

** $p < .01$

Table 5

Predicting CBCL Scores from Childhood Attachment Script Scores – Summary of Regression Analyses

CBCL Internalizing Scale

Variables in Analysis	*R*	R^2	R^2 Change	*F* Change	(*df1,df2*)	Sig. *F* Change
Step 1: Age, Gender, Mat Ed	.310	.096	.096	1.625	(3,46)	.196
Step 2: Script Scores	.495	.245	.149	8.890	(1,45)	**.005**

CBCL Externalizing Scale

Variables in Analysis	*R*	R^2	R^2 Change	*F* Change	(*df1,df2*)	Sig. *F* Change
Step 1: Age, Gender, Mat Ed	.403	.162	.162	2.972	(3,46)	**.041**
Step 2: Script Scores	.534	.285	.123	7.755	(1,45)	**.008**

* $p < .05$,

** $p < .01$