KU LEUVEN

FACULTEIT PSYCHOLOGIE EN PEDAGOGISCHE WETENSCHAPPEN

**Our stories redeemed**

The relation between Attachment Security and Meaning making in Personal Narratives

Masterproef aangeboden tot het verkrijgen van de graad van Master of Science in de psychologie

Door

**Bep Keersmaekers**

promotor: Prof. Dirk Hermans

copromotor: Prof. Guy Bosmans

m.m.v: Prof. Theodore E. A. Waters (NYU-Abu Dhabi)

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**Summary**

In his book *The stories we live by: Personal myths and the making of the self*, personality psychologist Dan McAdams (1993) proposed that early attachment relationship experiences are a significant contributing factor in how humans make meaning from life events in their personal narratives. He argues that those who are more securely attached, learn that, when confronted with an obstacle, their caregiver will provide support and will (help) solve the problem. Through these attachment experiences, individuals will incorporate the idea that when things turn bad, they will get better. By contrast, those who are more insecurely attached, learn that, when in need, support is absent or unpredictable and they might therefore integrate the idea that when things are good, they might turn bad at any moment.

McAdams argues that these ideas might be visible in personal narratives through the narrative themes of redemption and contamination. A redemption sequence depicts an initially negative situation moving to a positive outcome. A contamination sequence describes a positive situation resulting in a negative outcome. A more secure attachment might result in the presence of more redemption sequences in life narratives, while a more insecure attachment might make result in the presence of more contamination sequences.

To test this hypothesis, a 5-year longitudinal study was conducted with 157 children moving from middle childhood into adolescence. In all five waves attachment data were collected by means of the Attachment Script Assessment (a measure for secure base script knowledge) and the Trust Scale. In the last two waves narrative theme data were collected by means of the Redemption and Contamination Scale (Wave 4 & 5) and a Guided Autobiography (only at Wave 5), in which adolescents were asked to narrate four specific life scenes. Correlations were calculated and subsequently six 3-step hierarchal multiple linear regression analyses were conducted, which provided limited support for the hypothesis. In Wave 4 earlier (Wave 1-3) secure base script knowledge and earlier trust were significant predictors for less redemption, contradicting to the hypothesis, while concurrent (Wave 4) trust significantly predicted more redemption. Concurrent trust also predicted significantly less contamination. In Wave 5 both earlier (Wave 1-4) and concurrent (Wave 5) trust both predicted significantly less contamination. In the discussion section, several possible explanations are brought forward for both the contradictory and non-significant results, such as for instance the methodology, the young age of the sample and the lack of diversity.

**Acknowledgments**

I would like to thank a couple of people who have been very important in the process of writing this thesis. First of all, my promotor, Professor Dirk Hermans. Thank you for your guidance, your inspiration, your enthusiasm, your patience and your faith in me. I have enjoyed working together on this project very much. Next is Professor Theodore Waters (New York University – Abu Dhabi). Thank you so much for your help, the many e-mails and Zoom calls during which you answered all of my questions. Your endless knowledge on - and devotion to this subject is truly admirable. Many thanks to Professor Guy Bosmans for your involvement and your help, it was very much appreciated. Thank you, Chloë Finet, for your work on this project, for your help and for answering my many questions. Also thank you, Elien Vanderveren, for your help and contribution to this project. All five of you deserve my biggest gratitude for your help and patience. I felt very blessed and humbled surrounded by a group of such smart people. I learned so much from this experience.

In the discussion section of this thesis, I wrote how our sample mostly consisted of children who grew up in relatively prosperous and safe households in the protected city of Leuven. I am well aware I used to be/still am one of them and that I could not have completed this thesis without the privilege of the massive amount of support from my parents. Endless gratitude is in order towards them and my elder sisters. Thanks to my mother, not only for your support, but also for being such an extraordinary role model as a psychologist. You never cease to inspire me. Thanks to my father, for being my rock and for always making sure I could write this thesis without having to worry about anything else. Thanks to my sisters, for their endless support and for challenging me to always give the best I have, like you do too. Thanks to Hanne for your love and support. And last but not least, hvala ti, Dražen, for your love, support and care.

**Approach and personal contribution**

This Master Thesis started as a self-submitted proposal. Two years ago I contacted Professor Hermans, telling him I was very interested in Narrative Coherence and Meaning making and asked him if there would be a possibility for me to write a Master Thesis about this subject, with him as my promotor. Professor Hermans saw a possibility for me to join the research project of Professor Guy Bosmans and Professor Theodore Waters (New York University Abu Dhabi). In September 2019, I attended the lecture Professor Theodore Waters gave in Leuven and afterwards Professor Hermans introduced me to both Professor Waters and Professor Bosmans. We got into a conversation about the possibility for me to join their research project and quickly found all parties enthusiastic about the idea. Subsequently I received around 120 audio files of the Adolescent Guided Autobiography Interviews. I transcribed all of the interviews between January and October 2020.

The initial idea was for me to master both the coding system for Narrative Coherence (Reese) and for Meaning Making (McAdams) and compare the two. I received the training for both coding systems, but as the project continued, I found myself more and more interested in the vast amount of possibilities the dataset of this longitudinal study provided. I chose to dive into the literature of Attachment Theory, encouraged by the knowledge my thesis was supervised by two experts in this topic, whom I could learn from.

Finally, I decided to write my thesis about the relation between attachment security and the narrative themes of redemption and contamination. I scored all the interviews according to the McAdams coding system for redemption and contamination. During this project, I punctually communicated with three professors and two assistants and organized international Zoom meetings**.**

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# Abstract

Human beings create life stories based on the events that happen to them. While doing so, they often give meaning to these events. McAdams (1993) argued that early attachment experiences might influence the way people make meaning of their life experiences. In the present study, the relation was examined between attachment security and the two narrative themes of redemption and contamination. A 5-year longitudinal study was conducted with 157 children with an average age of 10 years at the first wave and 16 years at the last wave, investigating both attachment data (Wave 1-5) and personal narrative data (Wave 4 & 5). Results provided limited support for McAdams’ hypothesis. More secure base knowledge and trust in Wave 1-3 was associated with viewing life events in a less redemptive manner in Wave 4, contrary to the hypothesis, while more secure base knowledge and trust in Wave 4 was associated with viewing life events in a more redemptive manner in Wave 4. More secure base knowledge and trust in Wave 4 was also related to viewing life events in a less contaminated manner in Wave 4. In Wave 5 more secure base knowledge and trust in both earlier waves (Wave 1-4) and the concurrent wave (Wave 5) was related to viewing life in a less contaminated manner. Possible explanations for these mixed results and implications for future research are discussed.

# Introduction

## Individual differences in Personal Narratives

Two individuals may have many things in common, like gender, nationality, personality traits and interests. Yet everyone has a different life story, based on the events that happen in the span of a lifetime (McAdams, 1993). People create narratives out of their personal experiences. In doing so, it helps them to acquire a better understanding of the ‘self”, form and maintain social connections, cope with stress and adversity, provide a sense of purpose and direction in life and therefore also guide future behaviour (e.g., Bluck et al., 2005; Fivush & Waters, 2013; Waters, 2014). Life stories are reflections of how people experience and make meaning of life events. They provide information about people’s personalities beyond what demographics and trait measures can tell. Personality psychologists like Dan McAdams argue that the classic trait approach on adult personality has paid too little attention to narrative representations of self and meaning given to important life events (McAdams, Diamond, de St. Aubin, & Mansfield, 1997). McAdams therefore proposed a three-level hierarchal model of adult personality (McAdams, 1995). The two bottom levels consist of dispositional traits (e.g., Big Five; Costa & McCrae, 1995; Goldberg, 1993; John & Srivastava, 1999) and conceptualized concerns and adaptations (e.g., life goals, developmental tasks, values). The upper level consists of integrative and internalized life stories.

The ways individuals construct and present these life stories vary tremendously. McLean et al. (2020) proposed three factors of individual differences in life narratives: autobiographical reasoning, structural aspects, and motivational and affective themes. *Autobiographical reasoning* captures narrative themes of integrative meaning, which show whether and how much narrators indicate *reflection* or *interpretation* in their narration of the event, (e.g., Habermas & Bluck, 2000). The function of this reasoning process is to make meaning of important life events, establishing personal temporal continuity (Pasupathi et al., 2007). *Structural aspects* include elements such as details about time and place, the order of the story content, and the degree and complexity of detail needed for audience orientation. Structural aspects are often classified under the broader term of narrative coherence (Adler, Waters, Poh, & Seitz, 2018; Baerger & McAdams, 1999; Lysaker, Clements, Plascak-Hallberg, Knipscheer, & Wright, 2002; Reese et al., 2011). The *motivational component* of narratives concerns goal-like orientations about broad-based general life concerns, like agency and communion (Bakan, 1966; McAdams, 1993; Wiggins, 1991). Agency reflects one’s sense of autonomy and achievement, the mastery of desired skills and the ability to exert influence on the course of one’s life. Communion refers to the need for relatedness, the motivation for attachment, affiliation and nurturance, the sense of belonging and connection to others. The *affective* *component* of narratives captures emotion, either of the narrative in general (e.g., overall tone), parts of the narrative (e.g., ending valence) or the emotional trajectory of the narrative (primarily shifts from the beginning to the end). The latter aspect is captured by the concepts of redemption (movement from negative to positive) and contamination (movement from positive to negative; e.g., McAdams, Reynolds, Lewis, Patten, & Bowman, 2001). A review by Adler et al. (2016) provided evidence that each of these conceptual groupings is related to well-being and establishes incremental validity in the association with and prediction of well-being beyond demographics and dispositional traits.

The individual differences in life story have been studied by researchers for young adulthood and midlife, mainly focussing on the implications for individuals’ identity and well-being. However, little research has focussed on where these individual differences emerge from. McAdams (1993) argued that early attachment relationship experience is an important contributing factor in motivational and affective themes in life stories, including redemption and contamination. His theory infers that what one learns as a child in a securely attached relationship, is that when things turn bad, they get better. When the child is confronted with distress, the caregiver acts as a secure base and (helps) resolve(s) the problem. According to McAdams’ theory, this attachment dynamic has a lasting influence on the themes individuals integrate in their life stories, as it creates the expectation of positive resolution to distress and an understanding of how the world works; that when things go wrong, they get better. These patterns or rhythms of life are supposedly internalized early and might manifest itself in the kinds of connections individuals make in their life narratives.

## Redemption and contamination

In a redemptive narrative, one tells a story in which a transformation takes place from a bad, affectively negative situation to a subsequent good, affectively positive situation. The memory of the negative life event is redeemed by the positive outcome. This positive outcome can be either the situation that has improved since the negative event, or the fact that the individual interprets the negative event as an experience that led to personal growth or resilience or some other positive change in self/identity. For example, an individual may tell an episode about being bullied as a child, moving on to stating that it made him/her stronger and taught him/her how to stand up for him/herself.

The contamination theme, by contrast, is present in a narrative when an individual moves from a good, affectively positive situation to a bad, affectively negative situation. The memory of the positive life event is spoiled by the negative outcome. For example, a person may bring a narrative about receiving a beautiful gift, next describing how the gift got stolen a few hours later. The contamination theme can also depict a rather neutral or neutrally negative situation that ends up in a downwards spiral and therefore becomes an affectively negative memory. For example, the memory of falling off a bike and scraping one’s knee, but instead of being comforted, being yelled at by the parent for crying.

McAdams, Diamond, de St. Aubin, and Mansfield (1997) were the first to introduce the themes of redemption and contamination in the study regarding the life stories of highly generative adults (scoring high on a set of objective indices assessing individual differences in generativity). Generativity was defined by Erikson (1950, p.267) as “a concern for establishing and guiding the next generation”. The results showed that these highly generative adults were more likely to narrate about their lives in way that resembled the overall form of a “commitment story”. McAdams (2001) defines a commitment story as “a story rich in concern for and commitment to promoting the well-being of youth and the next generation”. In this commitment story, one of the five central features was the redemption sequence, in which bad scenes were transformed or redeemed in good outcomes. Subsequently, McAdams also coded the opposite sequence, terming it the contamination sequence, when good things turn bad, and found that highly generative adults were less likely to include contamination sequences in their life stories than less-generative adults.

The themes of redemption and contamination seem to be mutually exclusive. However, a moderate negative correlation has been found between these two themes (McAdams et al. 2001). People who share more redemptive episodes in their life stories have higher levels of mental health and well-being in comparison to those who share more contaminated episodes. Nevertheless, the two themes can occur together in different parts of a person’s life story. Accordingly, rather than two opposing ends of a single variable, they are considered to be two separate variables.

 Regarding the relation between the two narrative themes and mental health and well-being, research has uncovered that participants who integrate more themes of redemption in their life stories, show higher rates of emotional health and satisfaction with life (Bauer, McAdams, & Sakaeda, 2005; Lodi-Smith et al., 2009; McAdams, Reynolds, Lewis, Patten, &Bowman, 2001). Individuals who bring life stories with more contamination themes, self-report higher levels of mental health problems, like low self-confidence and depression (Adler, Kissel, & McAdams, 2006; Lodi-Smith et al., 2009; McAdams et al., 2001). Higher levels of contamination themes provided in narratives of traumatic events are associated with higher levels of post-traumatic stress (Waters et al., 2013). Another study by Dunlop and Tracy (2013) found that recovering alcoholics who presented redemptive narratives were more likely to maintain their sobriety over time, compared to those who did not. Redemption and contamination show links to personality, and more specifically generativity (McAdams et al., 1997; McAdams et al., 2001). For example, late adolescents who scored higher on generativity and optimism were more likely to narrate turning points in their lives in terms of redemption than adolescents scoring low on these personality traits (McLean and Pratt, 2006). By contrast, as already mentioned above, an inverse association was observed between generativity and contamination in adults (McAdams et al., 1997, 2001).

Regarding retest reliability, the themes of redemption and contamination seem to be relatively stable across time.A study investigating the stability of redemption and contamination sequences of emerging adults - averaged across ten narratives of important life events - found the two themes to exhibit moderate stability over two years (r =.50, r =.28, respectively; McAdams et al., 2006). In middle-aged adults, redemption, but not contamination, as averaged across three important life event narratives, exhibited modest stability over three years (r =.31; Dunlop et al., 2016).

The life story or personal narrative in which these two themes of redemption and contamination can occur, is based on memories of life experiences, beginning already in early childhood. In these early experiences, sensitive care from primary caregivers is very important. Therefore, it could be expected that attachment security has an influence on meaning making in personal narratives. In a review by Habermas and Bluck (2000), research shows that the development of the cognitive skills and social-motivational demands that are necessary to establish overall coherence in a life narrative takes place during adolescence. The cognitive skills of encoding and recalling the temporal-causal structure of experience are already present in early infancy (e.g., Bauer & Dow, 1994) and memory and narrative development gradually continues during childhood (Fivush, 2011), but it is only in adolescence that life stories begin to consolidate (Habermas, 2010; Habermas & Bluck, 2000; McAdams, 1985). Given that there would be a link between attachment security and the development of affective themes in life narrative, signs of this association would likely start to become visible in middle childhood and adolescence, when children are only on the verge of developing their personal narrative.

## Attachment Security

Attachment security refers to trust in parental support that children develop when experiencing high quality and consistent parental secure base support. These experiences are presumed to be internalized into a mental representation of attachment relationships called an Internal Working Model (IWM; Bowlby, 1969). Waters (2017) defines an IWM as a “representation serving as a key mechanism by which early caregiving experiences influence the child’s cognitions, emotions and behaviour in novel developmental contexts”. Children who experience consistent support from their primary caregivers in response to stressful situations, tend to develop a stable expectation that their caregivers will always provide this kind of care and support, leading to (more) secure attachment. The primary caregivers thus act as secure bases for children from which they gain the trust to explore the world around them, while remaining sources of safety in case the child seeks support during a stressful moment (Cassidy, 2016; Dujardin et al., 2016).

When primary caregivers provide inconsistent support during distress so that the availability of sensitive care in times of need is unpredictable, children tend to present less trust (Ainsworth, 1978) and develop a more ambivalent or preoccupied attachment. The uncertainty of the caregiver’s availability for support, leads to children focussing their attention more exclusively on the caregiver, resulting in a constant need to be close to them (Cassidy, 2016).

When children find their caregivers to be persistently unavailable in case of distress, they tend to direct their focus more towards the environment instead of towards their caregiver, in order to suppress feelings of rejection and avoid the caregiver’s dismissive reactions to these feelings. In this manner, the lack of certainty of the availability of the caregiver’s sensitive care, leading to the development of a more avoidant or dismissive attachment (Cassidy, 2016). Individual differences in attachment security have a lasting influence on cognitive and socio-emotional development throughout life (Groh et al., 2017).

## Attachment features in Middle Childhood and Adolescence

Attachment security does not exist in a vacuum. Therefore, it is useful to place it within a broader developmental context. There is an important evolution in children’s cognitive and social abilities that influence the interpretation of the world around them. Children’s representations of attachment are likely influenced by their improved capacity for self-reflection, an increased focus on psychological states and overall changes in reasoning ability. Middle childhood also presents substantial changes in the parent-child dynamic, with children becoming more independent in their regulation of distress. Main, Kaplan, and Cassidy (1985) argued that evidence for attachment features should be identifiable on the levels of observable attachment behaviour and of attachment representations. At the level of observable attachment behaviour, Kerns and Brumariu (2016) identified four defining features for the attachment behavioural system in middle childhood. First, during middle childhood there is a shift in purpose of the attachment behaviour from *proximity* to the caregiver in early childhood to the *availability* of the caregiver. Second, parents are still preferred over peers as primary attachment figures in middle childhood. Third, the secure base contact between caregiver and child shifts toward a more collaborative alliance, with the development of a supervisory partnership between the two parties, in which the child is starting to use the caregiver more as a resource to appeal to when needed, rather than depending on the caregiver to resolve every issue. Lastly, caregivers continue to act both as secure bases that support a child’s exploration as well as safe havens to return to in stressful situations.

At the representational level, a cognitive script was observed in the IWMs of securely attached children in middle childhood similar to the one found in securely attached adults, called a secure base script (Psouni & Apetroaia, 2014; Waters, Facompré, Van de Walle, Dujardin et al., 2019). IWMs involve memories of specific autobiographical events from childhood that are constructed into narratives that help individuals understand and make meaning of the autobiographical events. Recent research suggests that IWMs not only consist of autobiographical memories, but also of a cognitive script that influences adaptive functioning (e.g., Waters, Bosmans, Vandevivere, Dujardin, Waters, 2015; Waters, Brockmeyer, Crowell, 2013; Waters, Raby, Ruiz, Martin, Roisman, 2018; Waters & Waters, 2006). Waters and Waters (2006) suggest that children who receive consistent sensitive care from their caregivers abstract the central features of those experiences to form a secure base script. This script summarizes the temporal-causal sequence of effective secure base use as follows: (1) the child and caregiver are constructively occupied with the environment; (2) the activity is interrupted by the encounter of an obstacle or distressing event; (3) the child signals the distress to the caregiver and seeks support; (4) the need for assistance is recognized by the caregiver and support is offered to the child; (5) the assistance and support are accepted by the child; (6) the assistance and support from the caregiver is helpful for overcoming the challenge; (7) the caregiver also provides effective emotional regulation and comfort; (8) the child and caregiver re-engage meaningfully with the environment (Waters & Waters, 2006).

Recent research has provided substantial support for the secure base script concept. Steele et al. (2014) found that secure base script knowledge in late adolescence was significantly predicted by the quality of parental caregiving during childhood and early adolescence. Similar results were found by Waters et al. (2017) in a longitudinal study of children born into poverty. Observations of maternal sensitive care acquired during the first 13 years of life significantly predicted secure base script knowledge both at age 19 and 26 years. The secure base script incorporates information during parent-child interactions in line with expectations of secure attachment. Over time, children who trust in caregivers as a secure base, will continue to do so. By contrast, in the absence of secure base trust, children’s trust appraisals will also continue to fluctuate (Bosmans, Van de Walle, Goossens, & Ceulemans, 2014).

The amount of secure base script knowledge and secure base trust could possibly influence the way children, and later adolescents, view their own life stories. It could be expected that children who trust their caregivers as a secure base, over time have internalized the idea that when confronted with an obstacle, the obstacle will be overcome and therefore, when things are bad, they don’t stay bad. This internalized idea may then find its way into their personal narrative, in which they might then present redemptive stories about how something was difficult at first, but then had a positive resolution. By contrast, children whose secure base is either unpredictably present or not quite present at all, might internalize the opposite idea, that when things are good, they might not stay good. This idea also might subsequently be integrated into their life stories, in which they might present contaminated episodes about how something was good at first, but then turned out to have a negative outcome.

## The present study

The present study investigates the role of attachment security in the development of individual differences in life stories of adolescents. McAdams (1993) argued that early caregiving experiences in infant and childhood attachment relationships have lasting influence on the life stories individuals present in adulthood. According to this hypothesis, secure attachment relationships set a tone of life in which the securely attached individual holds the expectation of a redemptive sequence: when confronted with bad things, good things will follow. If this hypothesis holds, it is to be expected that the first signs of this association will already be visible in the adolescent stage, when life narratives begin to consolidate. This study is one of the first to examine the relation between early attachment experiences and affective themes in adolescents’ personal narrative.

Our hypothesis is that the level of attachment security will be significantly correlated with the salience of the personal narrative themes of redemption and contamination. Individuals with more secure attachment are predicted to provide narratives richer in themes of redemption, while those with less secure attachment are predicted to present narratives with more themes of contamination. As for which component of attachment will be most strongly related with the narrative themes, we do not formulate a specific hypothesis.

To test this hypothesis, data from a 5-year longitudinal research of Guy Bosmans (KULeuven) and Theodore E.A. Waters (New York University – Abu Dhabi) were analysed. In the first wave, participants were between the ages of 9 and 13, with an average age of 10 years old. In all five waves, participants completed a version of the Attachment Script Assessment (Middle Childhood, Adolescent or Adult) and the Trust Scale. In the fourth and fifth wave participants filled in a Redemption and Contamination Questionnaire. Only in the fifth wave a Guided Autobiography Interview was conducted. In the current study, associations were examined between different facets of attachment security and salience of the two narrative themes in the questionnaire and autobiographies: redemption and contamination. The present study establishes a strong relationship between the early experience of attachment and the meaning making of life events in adolescence by using attachment data from a longitudinal study, of which the first data were collected long before the types of cognitive/narrative abilities needed to consolidate life stories have developed.

# Method

## Participants

Flyers with an invitation to participate in a 5-year longitudinal study were distributed to 4th-, 5th-, and 6th-grade classrooms at several primary schools in Leuven and Hamont-Achel (Belgium). One hundred and fifty-seven children and their mothers signed up for the study. From April 2013 through May 2019 children participated in yearly laboratory visits. For their participation at the assessments of Wave 1-4, children were offered two movie theatre tickets and were entered into a drawing to win an MP3 media player. For the fifth wave, participants received an online gift voucher of EUR 45. The ethical committee SMEC of KU Leuven approved the study design (Institutional Review Board [IRB] S54874/ML8907; “The Role and Functioning of Attachment-Related Attentional Processes and the Vulnerability to Depression”). Wave 5 was also approved by the Institutional Review Board of the NYU Abu Dhabi.

In the first wave, children in middle childhood age 9 to 13 years participated (mean age = 10.91, SD = 0.87). Eighty-one of them (51.6%) were girls. Ninety-seven percent of the participants listed their mother as the primary caregiver during their first 3 years of life. Mothers were generally well-educated, with 36.3% holding a 4-year university degree, and 42.7% holding a graduate school degree. Similar education levels were reported for fathers, with 23.6% holding a 4-year university degree, and 45.9% holding a graduate school degree. Seventy-six % of children lived in two-parent households.

One hundred and forty-six, 133, 106 and 113 children, respectively participated in the following Waves 2-5 (i.e., 93%, 84.7%, 67.5% and 72% of the original sample). All original participants were again invited to take part in the fifth wave, irrespective of drop out at previous waves. Hence the number of participants is higher in the fifth than in the fourth wave. To compensate the remaining loss of participants, those who no longer wanted to participate were asked if they would agree to only participate in a part of the fifth wave (e.g., only fill out child and/or mother questionnaires and/or child autobiography at home). When the questionnaire-only group was added, a total of 131 children participated at Wave 5.

Some Attachment Script Assessment (ASA) data were missing because either the participant refused to complete the task or because transcripts were not scorable (i.e., participant asked to stop the narrative), were lost, or the files had been damaged. These cases were rare, with three participants at Wave 1, three at Wave 2, five at Wave 3, and two at Wave 4 failing to complete some or all ASA stories during their visit. During Wave 5, all 113 participants succeeded in completing the ASA task and no files were lost or damaged.

Secure base script scores at Waves 1, 2, 3, 4 and 5 were available for 155, 144, 131, 106 and 113 children, respectively (98.7%, 91.7%, 83.4%, 67.5% and 72% of the original sample). Redemption and Contamination Questionnaire scores at Wave 4 and 5 were available for 104 and 129 children, respectively (66.2% and 82.2 % of the original sample). Guided Autobiography Interview scores at Wave 5 were available for 118 children (75.2% of the original sample).

## Procedure

The ages of the participants and conducted measures at each wave are presented in Table 1. The data were collected either in Leuven or in Hamont-Achel. The Trust Scale was completed on paper in Wave 1-4 and on computer in Wave 5. Redemption and Contamination Questionnaire was completed on a computer in both Wave 4 and 5. The order of administration of the Attachment Script Assessment Stories were randomized. The Guided Autobiographies were conducted by a trained interviewer.

|  |
| --- |
| **Table 1** |
| *Conducted measures and ages of participants at each wave* |
|  | Age in years | Measures |
| Wave | Range | Mean | SD |  |
| 1 | 9 – 13 | 10.91 | 0.87 | Attachment Script Assessment, Trust Scale |
| 2 | 10 – 14 | 11.88 | 0.87 | Attachment Script Assessment, Trust Scale |
| 3 | 11 – 15 | 12.90 | 0.85 | Attachment Script Assessment, Trust Scale |
| 4 | 12 – 16 | 13.90 | 0.79 | ASA, TS, Redemption & Contamination Scale |
| 5 | 14 – 18 | 16.71 | 0.88 | ASA, TS, RCS, Guided Autobiography |

## Materials

***Redemption and Contamination Measures***

**Redemption and Contamination Scale (Appendix 1).** This scale was developed for the present study. It consists of 20 items measuring the extent to which the participant has the tendency to view life events in an either more redemptive or contaminated manner (e.g., “When bad things happen in my life, I trust the future will be better”, “When things are going well in my life, I feel like they could be interrupted at any moment by something bad.”). Adolescents responded on a 7-point Likert-scale ranging from 1 (completely not true) to 7 (completely true). A redemptive item was always interspersed with a contaminated item and ultimately separate sum scores were calculated for a total redemption score and a total contamination score. Participants completed this questionnaire in both Wave 4 and 5. It was opted for to include this scale, since it could be expected that the adolescents might already have these tendencies of viewing life events in a redemptive or contaminated way, but have not yet integrated them into their life stories.

**Guided Biography.** In Wave 5 the participants were asked to complete a Guided Autobiography, an interview based on McAdams’s (1985) life story technique. The participant was instructed to describe four specific scenes: a high point (peak experience), a low point (nadir experience), a turning point and an additional meaningful memory. The participant was asked to present a detailed narrative of what happened in the scene, when it happened, who was involved, how he/she felt in that moment, why this specific event was important to him/her and what the event may say about who he/she is or was at the time, or about his/her personality. When the participants did not include the answers to these specific questions, prompts were given by the interviewer to complete the narrative. The interview was conducted orally and required approximately 15-30 minutes to complete. All of the recorded interviews were then transcribed verbatim. A small portion of the interviews (24) was completed online, 18 of those were considered suitable for scoring.

Subsequently the transcripts of the interviews were scored according to the McAdams scoring system for redemption and contamination (2001). The designated scorer (Bep Keersmaekers) was trained by an experienced scorer (prof. Theodore Waters) using transcripts of English interviews. After establishing adequate scoring competence, all adolescent interview transcripts of the present study were scored. A *redemption sequence* was defined by McAdams (2001) as “an explicit transformation in the narrative from a negative affect state to a positive affect state.” He also states that “evidence for the negative state has to be clear and explicit. The participant needs to describe some situation, period or event in life in which he or she suffered in some way and experienced pain, fear, sadness, anguish, and so on”. In addition, to score for redemption, the negative situation needs to either resolve into a positive situation or needs to produce some kind of positive result. An important remark is that this positive result does not need to outweigh the negative situation. A relatively tragic event (e.g., loss of a loved one) that resolves in a seemingly minor positive situation (e.g., finding more value in small things) would still be considered a redemption sequence. One point is assigned by the coder to a narrative consisting of a redemption sequence as described above. In case the narrative was given one point for redemption, the scorer subsequently continued to consider two additional subcategories. The two subcategory themes are called *enhanced agency* and *enhanced communion* and are acquired from Tedeschi and Calhoun’s (1995) conceptualization of posttraumatic growth and are added to especially compelling or powerful redemption imageries.

A bonus point for *enhanced agency* was given when the participant explicitly reported “enhanced self-efficacy, strength, confidence, or self-understanding, directly resulting from the change from negative to positive affect state” (McAdams, 2001). One point was added to the redemption score if the participant explicitly reported that he or she experienced enhanced personal agency as a result of the transition from negative to positive in the narrative. A bonus point for *enhanced communion* was given when the respondent explicitly reported “enhanced interpersonal intimacy, love, friendship, caring, or feeling a sense of community with others, directly resulting from the change from negative to positive affect state” (McAdams, 2001).

*Contamination sequences* were scored in a similar way as the redemption sequences. Each of the four narratives was coded for the presence or absence of a transition from a positive situation to a clearly negative result. A point for contamination was granted if the sequence started in an affectively positive (or positively neutral) state and this was followed by a distinctly negative outcome. The scores for contamination were then added up across the four narratives to form a total contamination score, hypothetically ranging between 0 and 4.

***Attachment Measures***

Attachment security is a complex construct; therefore, a broad variety of measures has been developed for its assessment. For middle childhood and adolescence, most measures were adapted from measures that were used for both earlier and later developmental periods. In infancy, observational measures are indicated, while in adolescence and adulthood assessments typically employ interviews or questionnaires. Bosmans and Kerns (2015) argue that instead of searching for one golden standard measure for attachment in middle childhood, researchers should focus on which component or aspect of the attachment construct is measured. Regarding middle childhood, they propose a model for comparing attachment measurements with the secure base construct as the common core, as Waters and Cummings (2000) argue this is the key to capturing attachment. Regarding other attachment measures, they propose the dual process theory by Gawronski and Creighton (2013) as a possible theoretical framework. According to this theory, a differentiation can be made between measures that tap into strategic processes and measures that tap into automatic processes. Measures of strategic processes (e.g., self-report) contain a component of awareness and provide a reflection of the way children want their attachment representations to be seen by both themselves and others. Measures of automatic processes tap into constructs beyond the child’s control (e.g., narrative coherence or observation). In addition, there is also a difference among measures in whether attachment is conceptualized as relationship specific or as a general representation of attachment relationships.

Middle childhood and adolescence attachment research mainly focusses on two types of representational measures of attachment: narrative storytelling assessments (e.g., Bureau & Moss, 2010; Granot & Mayseless, 2001; Kerns, Tomich, Aspelmeier, & Contreras, 2000) and questionnaires (e.g., Kerns et al., 1996, 2001). Most used is the Security Scale (SS; Kerns et al., 1996) to assess overall attachment security. Another frequently used questionnaire is the child version of the Inventory of Parent and Peer Attachment, called the People In My Life Questionnaire (Ridenour, Greenberg, & Cook, 2006). Questionnaires generally tap into strategic processes and assess conscious representations of relationships with caregivers. They conceptualize attachment as relationship specific.

More recently, alternative tests to measure attachment have been designed, like middle childhood and adolescence versions of the Adult Attachment Interview, mainly focussing on narrative coherence. In recent years, middle childhood and adolescence versions of the Secure Base Script Test have been designed. Story-telling tasks for situations eliciting secure base behaviour tap into both strategic and automatic processes and assess attachment representations as reflected in story themes, depicted attachment behaviour and narrative coherence. They conceptualize attachment either as relationship specific or general.

As the data of this study stemmed from a larger longitudinal study, several attachment measure data were available: the Child Attachment Interview, the Attachment Script Assessment, the Security Scale and the Trust Scale. Since the Child Attachment Interview and the Attachment Script Assessment tap into the same component of attachment representation and present a high mutual correlation, the decision was made to only use the ASA for the present study. Moreover, the Child Attachment Interview was only conducted at Wave 1. The same rationalisation principle was applied for the Security Scale and the Trust Scale. Considering they are both questionnaires, present a high mutual correlation and conceptually measure the same attachment construct, it was opted for to only use the Trust Scale in the present study. Taking fewer variables into the data-analysis will reduce the chance of making a Type 1 error.

**Middle Childhood Attachment Script Assessment (MC ASA). (Appendix 2)** At Waves 1, 2, and 3, children completed the Dutch version of the Middle Childhood ASA (Waters et al., 2015). Translation of the original MC ASA to Dutch was initially completed by a bilingual graduate student and verified by Guy Bosmans. The MC ASA contains three attachment-related prompt word outlines consisting of mother–child interactions, one about a scary dog in the yard, a second about an injury at the beach and a third about losing a soccer game. Each of the prompt word outlines feature 12 words or statements and are grouped into three columns, suggesting a beginning, middle, and end. The outlines describe familiar scenes, each depicting an element of distress that would cause the child to look for his or her secure base. Participants are instructed to create a narrative using as many words from the prompt as possible, to tell “as good a story as possible” and to be elaborative. They are also asked to narrate in the first person, as if the narratives depict an interaction between themselves and their parent. Each story is given a score ranging from 1 to 7. Scores ranging between 4 and 7 reflect the presence of secure base script knowledge. Higher scores indicate more pronounced elaboration on central aspects of the secure base script (e.g., seeking and receiving effective comfort and support when distressed). Scores of 3 are given to event-focused stories with little secure base script knowledge. Scores ranging between 1 and 2 are awarded to narratives that include strange or atypical content.

A subset of 40 MC ASA stories from each storyline (i.e., dog, beach, and soccer) were independently scored by three coders to establish interrater reliability. A two-way mixed model and absolute agreement for single measures were used to calculate intraclass correlation coefficients (ICCs). These ranged between .71 and .93 for the scary dog story, between .90 and .92 for the injury at the beach story, and between .82 and .90 for the lost soccer game story. ICCs for the three coders were respectable to very good for the dog story (α = .79), the beach story (α = .91), and the soccer story (α = .85). After reliability was established, all remaining stories were randomly assigned in equal sets and independently coded.

**Adolescent Attachment Script Assessment (Ado ASA).** At Waves 3, 4 and 5, participants completed the adolescent version of the Attachment Script Assessment, the Ado ASA (Dykas et al., 2006). This version was added to the test battery to capture the normative shifts in children’s sources of stress during the transition from middle childhood to adolescence. The Ado ASA contains four attachment-related prompt word outlines that are modified to describe parent–adolescent scenarios (e.g., nervous about a test, not being invited to a party, losing a tennis match, trouble with personal appearance). Again, participants were asked to take on the role of the narrator and write the story in the first person. To reduce experimental fatigue, since both the middle-childhood and adolescent versions of the ASA were assigned at Wave 3, children only completed two of the four adolescent stories, one depicting a father– child relationship (exam) and one depicting a mother– child relationship (acne/haircut). Applied coding procedures were similar as described for the MC ASA.

At Wave 3, a subset of 30 Ado ASA stories from each storyline (i.e., exam, acne/haircut) was independently scored by two coders to establish interrater reliability. A two-way mixed model and absolute agreement for single measures was used to calculate ICCs. For the exam, acne, and haircut storylines, ICCs were .89, .77, and .81, respectively. After inter-rater reliability was established, all remaining stories were randomly assigned in equal sets and independently coded.

At Wave 4 and 5, participants completed all four of Ado ASA stories. At Wave 4, a subset of 30 Ado ASA stories from each storyline was coded by three coders (one master coder and two others) to establish interrater reliability. A two-way random model and absolute agreement with average measures was used to calculate ICCs. For the acne story, haircut story, party story, exam story, and tennis story, ICCs equalled .97, .84, .90, .88, and .96, respectively. After establishing inter-rater reliability, all remaining stories were coded by the master coder and one of the other trained and reliable coders. In all cases, the average score across coders was used. At Wave 5, the same procedure was used. For the acne story, haircut story, party story, exam story, and tennis story, ICCs equalled 0.81, 0.89, 0.92, 0.90 and 0.92, respectively.

**Adult Attachment Script Assessment (Adult ASA).** Participants at Wave 4 and 5 were assigned two adult romantic relationship stories taken from the original Adult ASA (Waters & Rodrigues-Doolabh, 2004), in an attempt to capture the generalization of secure base script knowledge to new relationship situations. The Adult ASA stories describe challenges that might be experienced by a romantic couple (e.g., difficulties during a camping trip, news of a romantic partner’s involvement in a car accident). In the Adult ASA participants are asked to write stories about fictional characters rather than providing narratives in the first person, like in the middle-childhood and adolescent versions of the ASA. Similar translation of the Adult ASA items was applied as described for the MC ASA and Ado ASA.

At Wave 4, 30 Adult ASA stories from each story set were independently scored by three coders (one master coder and two others) to establish reliability. A two-way random model and absolute agreement with average measures was used to calculate ICCs. For the camping trip and accident storylines, ICCs were .94 and .90, respectively. After establishing reliability, the remaining stories were scored by two sets of coders. Each set of coders consisted of the master coder and one other person, which was determined by randomly assigning stories in equal sets. A one-way random model with average measures was used to compute the ICCs. For the camping trip story and the accident story, ICCs were .90 and .75, respectively. At Wave 5, the same procedure was used. For the camping trip and accident storylines, ICCs were 0.92 and 0.79, respectively.

**Trust Scale.** The Trust subscale of the People In My Life Questionnaire was used to measure trust in maternal support. This scale was designed to measure 9- to 12-year-old children’s representations of attachment figures (PIML; Ridenour, Greenberg, &Cook, 2006). The PIML is a child-friendly adapted version of the Inventory of Parent and Peer Attachment (Armsden & Greenberg, 1987). It consists of three subscales; Trust in the attachment figure’s support, Communication about negative affect, and Alienation from the attachment figure (e.g., Allen, Porter, MacFarland, McElhaney, & Marsh, 2007; Belsky, Jaffee, Hsieh, & Silva, 2001). The PIML is a widely studied measure with good internal consistency, construct validity and reliability in middle childhood (Ridenour, Greenberg & Cook, 2006). For the present study, it was opted to only use the items of the Trust scale. In this scale, trust is defined as the positive cognitive/affective experiences of trust in the accessibility and responsiveness of attachment figures. The Trust scale contains 10 items (e.g., “I can count on my mother to help me when I have a problem”). Participants respond on a 4-point Likert scale ranging from 1 (*almost never true*) to 4 (*almost always true*). Each item was scored from 1 to 4, with a higher score indicating greater perceptions of trust.

# Results

## Preliminary analyses

***Demographics***

As is common practice in most attachment research, certain sample demographics like age, gender and parental education were selected as covariates to examine the potential impact of confounding variables. The descriptives for age have already been discussed in the method section. Gender descriptives are presented in Table 2. For Wave 5, the gender proportion was calculated for both the adolescents who participated in the entire study (113) and those who only filled in the questionnaires at home (+ 18 = 131). By reinviting all original participants and offering the possibility of only completing the questionnaires at home, the researchers partly restored the gender disproportion that had increased throughout the waves.

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| **Table 2** |
| *Descriptive statistics for gender in Wave 1, 2, 3, 4 and 5.* |
| Wave | Amount | % |
| 1 | Boys: 76 | 48.4 |
| Girls: 81 | 51.6 |
| 2 | Boys: 70 | 47.9 |
| Girls: 76 | 52.1 |
| 3 | Boys: 62 | 46.6 |
| Girls: 71 | 53.4 |
| 4 | Boys: 44 | 41.5 |
| Girls: 62 | 58.5 |
| 5 | Boys: 62 | 47.3 |
| Girls: 69 | 52.7 |

In Wave 1, results of the background questionnaire indicated that 79% of mothers and 69.4% of fathers had received a form of higher education (graduate school or university degree), while 21% of mothers and 30.6% of fathers had received primary or secondary education. These percentages remained stable throughout Wave 2-5, with respectively 78.8%, 79.7%, 82.1% and 80.9% of mothers having received higher education and 67.8%, 69.2%, 70.8% and 71.8% of fathers. Since maternal and paternal education were moderately correlated (r = .61\*\*\*), the final results were only controlled for maternal education.

Correlations for age, gender and maternal education with predictor and outcome variables are presented in Table 3. Higher child age significantly predicted more secure base script knowledge in Wave 1, but not at the following waves, and higher trust in Wave 3 and 4. Regarding child gender, girls presented significantly more secure base script knowledge than boys in all five waves. Higher maternal education significantly predicted more secure base script knowledge in all waves except the second.

***Attachment Data (predictor variables)***

The mean and standard deviation for each wave of the Trust scale and the Attachment Script Assessment are also presented in Table 3. Internal consistency of the Trust Scale was established by calculating Cronbach’s alpha, which was .80 for Wave 1 and respectively .76, .84, .90 and .84 for Wave 2-5. Cronbach’s alphas for the ASA were also sufficiently high, .70 at Wave 1 and respectively .74, .81, .79 and .80 for Wave 2-5. Correlations between the two measures were mostly not significant.

***Redemption and contamination data (outcome variables)***

For the Redemption and Contamination Scale, total scores were calculated for both themes, possibly ranging between 0 and 70. Descriptives are presented in Table 3. Reliability was established by calculating Cronbach’s alpha for both the redemption measuring items (Wave 4: α = .88 and Wave 5: α = .90) and the contamination measuring items (Wave 4: α = .85 and Wave 5: α = .86).

 The scores of the Guided Autobiographies possibly ranged between 0 and 4 for both redemption and contamination, since there were 4 narratives in each interview (high point,

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| **Table 3** |
| *Bivariate correlations of Secure Base Script Knowledge (ASA), Trust, Redemption and Contamination Scale (RCS), Guided Autobiography Redemption and Contamination scores and covariates.* |
| Measure | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1. W1 ASA | \_ |  |  |  |  |  |  |  |  |  |
| 2. W2 ASA | .48\*\*\* | \_ |  |  |  |  |  |  |  |  |
| 3. W3 ASA | .41\*\*\* | .59\*\*\* | \_ |  |  |  |  |  |  |  |
| 4. W4 ASA | .40\*\*\* | .53\*\*\* | .65\*\*\* | \_ |  |  |  |  |  |  |
| 5. W5 ASA | .39\*\*\* | .40\*\*\* | .43\*\*\* | .54\*\*\* | \_ |  |  |  |  |  |
| 6. W1 Trust Scale | .10 | .10 | .02 | -.04 | .04 | \_ |  |  |  |  |
| 7. W2 Trust Scale | .17\* | .09 | .05 | -.08 | .01 | .57\*\*\* | \_ |  |  |  |
| 8. W3 Trust Scale | .11 | .08 | .01 | -.18 | -.04 | .63\*\*\* | .59\*\*\* | \_ |  |  |
| 9. W4 Trust Scale | -.03 | -.04 | -.02 | -.11 | -.05 | .36\*\*\* | .45\*\*\* | .70\*\*\* | \_ |  |
| 10. W5 Trust Scale | -.11 | -.06 | -.05 | -.21\* | .01 | .30\*\*\* | .28\*\* | .48\*\*\* | .61\*\*\* | \_ |
| 11. W4 RCS Red. | -.12 | -.26\* | -.17 | .01 | -.11 | -.04 | -.03 | .04 | .34\*\* | .05 |
| 12. W4 RCS Cont. | .04 | .11 | .09 | .09 | -.07 | -.17 | -.25\* | -.27\*\* | -.51\*\*\* | -.30\*\* |
| 13. W5 RCS Red. | -.04 | -.17 | -.12 | -.05 | -.11 | .11 | .19\* | .18 | .21\* | .19\* |
| 14. W5 RCS Cont. | -.06 | -.08 | .10 | .05 | -.04 | -.23\*\* | -.25\*\* | -.25\*\* | -.32\*\* | -.31\*\*\* |
| 15. W5 GA Red. | .06 | -.01 | .02 | .02 | .15 | -.05 | .12 | .07 | .18 | .09 |
| 16. W5 GA Cont. | .10 | .06 | -.05 | -.10 | .06 | -.15 | -.04 | -.20\* | -.20 | -.20\* |
| 17. Child age | .21\*\* | .15 | .05 | .18 | .16 | .04 | -.05 | -.21\* | -.24\* | -.21 |
| 18. Child gender | .22\*\* | .22\*\* | .46\*\*\* | .36\*\*\* | .38\*\*\* | .11 | .09 | .03 | .15 | -.05 |
| 19. Mat. education | .20\* | .12 | .22\* | .28\*\* | .24\* | -.06 | -.05 | -.10 | .02 | -.09 |
| Mean | 3.90 | 4.27 | 4.14 | 3.75 | 4.31 | 3.58 | 3.59 | 3.58 | 3.51 | 3.43 |
| SD | .74 | .82 | .84 | .67 | .81 | .35 | .31 | .37 | .47 | .41 |
| *Note. Correlations presented with pairwise exclusion (N rage = 101-157); Wave 1-2 ASA include Middle Childhood version scores, Wave 3 ASA includes composite of Middle Childhood and Adolescent versions, Wave 4-5 ASA includes composite of Adolescent and Adult versions; Child gender coded as male = 1, female = 0; Child age measured in years, not rounded. \*p<0.05, \*\*p<0.01, \*\*\*p<0.001. Mat. Education: Maternal Education.* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Measure | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 11. W4 RCS Red. | \_ |  |  |  |  |  |  |  |  |
| 12. W4 RCS Cont. | -.51\*\*\* | \_ |  |  |  |  |  |  |  |
| 13. W5 RCS Red. | .39\*\*\* | -.32\*\* | \_ |  |  |  |  |  |  |
| 14. W5 RCS Cont. | -.35\*\* | .57\*\*\* | -.55\*\*\* | \_ |  |  |  |  |  |
| 15. W5 GA Red. | .05 | -.22\* | -.03 | -.14 | \_ |  |  |  |  |
| 16. W5 GA Cont. | .01 | -.02 | -.23\* | .18\* | -.11 | \_ |  |  |  |
| 17. Child age | -.02 | .18 | -.07 | .10 | .02 | ,04 | \_ |  |  |
| 18. Child gender | .04 | .08 | .04 | .10 | .13 | -.15 | .11 | \_ |  |
| 19. Mat. education | .03 | -.09 | .13 | -.12 | .09 | -.11 | -.10 | -.03 | \_ |
| Mean | 49.38 | 24.93 | 46.59 | 29.17 | .81 | .33 | 10.91 | 1.52 | .79 |
| SD | 9.05 | 9.88 | 9.12 | 11.21 | .89 | .56 | .87 | .50 | .41 |
| *Note. Correlations presented with pairwise exclusion (N rage = 101-157); Wave 1-2 ASA include Middle Childhood version scores, Wave 3 ASA includes composite of Middle Childhood and Adolescent versions, Wave 4-5 ASA includes composite of Adolescent and Adult versions; Child gender coded as male = 0, female = 1; Child age measured in years, not rounded. \*p<0.05, \*\*p<0.01, \*\*\*p<0.001. Mat. Education: Maternal Education.* |

low point, turning point and additional important event). The mean score for redemption was 0.81 with 44.9% of participants scoring 0 across all 4 narratives. The mean score for contamination was 0.33 with 71.2% of participants scoring 0 across all 4 narratives. Possible explanations for these findings will be examined in the discussion section.

Bivariate correlations between the RCS and the Guided Biography are also presented in Table 3. Concerning the Redemption and Contamination Scale, correlations between the two different themes and waves were significant. The correlations between the two measures were quite modest. There was no significant correlation between Redemption and Contamination in the Guided Autobiography.

## Relations between attachment data and redemption and contamination data

As shown in Table 3, there were no significant associations between secure base script knowledge (ASA) and Redemption and Contamination. However, Trust did present weak to moderate significant correlations with Redemption and Contamination in the expected direction, indicating more trust is associated with more redemption and less contamination, especially with RC Scale Contamination of Wave 4 and 5. Weak correlations in the expected direction were found between Wave 3 and 5 Trust and Wave 5 Guided Biography Contamination, indicating that higher levels of trust at Wave 3 and 5 were associated with less contamination sequences in the Guided Autobiography.

## Hierarchal multiple linear regression analysis

The research questions of this study are if one can predict redemption and contamination outcome results based on earlier attachment data, and what happens when one controls for concurrent attachment data and for age, gender and maternal education. Six outcome variables were examined, namely RCS Redemption results of Wave 4 and 5, RCS Contamination results for Wave 4 and 5 and redemption and contamination results of the Wave 5 Guided Autobiographies. Regarding the attachment data, secure base script knowledge data (ASA) and Trust scores of all five waves were included. SPSS 27.0 was used to analyse the data. Z-scores were calculated for the attachment variables, in order to take composites from multiple waves (see below), as case scale range may change across different versions of the attachment measures. Separate multiple regression analyses were conducted for the secure base script (ASA) data and the Trust Scale data as predictor variables for each of the six outcome variables. For the analysis of the RCS redemption and contamination results of Wave 4, composite scores of the attachment data of Wave 1-3 (i.e., a composite for Waves 1-3 Trust data and a composite for Waves 1-3 ASA data) were computed and taken as the first step (earlier attachment data), attachment data of Wave 4 (Trust data or ASA data) were taken as the second step (concurrent attachment data) and demographic data were taken as the final step of the analysis, to examine the potential impact of these covariates on the results. For the analysis of the redemption and contamination results of Wave 5, composite scores of the attachment data of the first four waves were computed and taken as the first step (earlier attachment data), attachment data of the fifth wave were taken as the second step (concurrent attachment data) and demographic data were taken as the final step of the analysis. Missing values were dealt with by excluding cases pairwise.

 The results are presented in Tables 4-9. All results will be discussed, but due to lack of space and for reasons of clarity, it was opted to only show significant results in this section and present the non-significant results in Appendix 3. In addition, it will also be indicated when R² change or coefficients were marginally significant (p<.10), since the likelihood of these results becoming statistically significant when utilizing more advanced statistical techniques for addressing missing data in the analysis (for example multiple imputation) is possible. The most promising results were found in the Wave 4 Redemption and Contamination Scale data-analysis.

***Wave 4 RCS Redemption data***

Regarding the analyses for predicting Wave 4 RCS Redemption with secure base script knowledge data (ASA) as the predictor variable, the R² was fairly small yet significant in the first step, but didn’t change significantly in the following steps (see Table 4). Earlier secure base script knowledge (Wave 1, 2 and 3) became more significant with each step, yet, interestingly, the coefficients pointed in the opposite direction of our hypothesis; higher secure base script knowledge was associated with less redemption scores. Nonetheless, there seems to be a significant effect of our predictor of interest (earlier secure base script knowledge) that remains significant even when controlled for concurrent attachment data and covariables.

Regarding the Trust data, earlier trust (Wave 1-3) was not significantly related to redemption in the first step. When added the concurrent (Wave 4) Trust data in the second step, the R² significantly changed. The coefficient for the concurrent Trust in the second and third step was significant and in line with the hypothesis, indicating that higher levels of concurrent trust were associated with more redemption. The coefficient for earlier Trust became significant in the second step and remained significant when controlled for covariables, however pointed in the opposite direction of our hypothesis, indicating that higher levels of earlier trust are associated with less redemption.

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| **Table 4** |
| *Regression results with Wave 4 Redemption and Contamination Scale Redemption as dependent variable* |
| ASA data | Trust Scale data |
|  | Predictor | R² | Unstandardized β |  | Predictor | R² | Unstandardized β |
| Step 1 | ASA W123 | .05\* | -.28\* | Step 1 | Trust W123 | .00 | -.02 |
|  |  |  |  |  |  |  |  |
| Step 2 | ASA W123 | .09† | -.46\*\* | Step 2 | Trust W123 | .18\*\*\* | -.36\*\* |
|  | ASA W4 |  | .24† |  | Trust W4 |  | .51\*\*\* |
|  |  |  |  |  |  |  |  |
| Step 3 | ASA W123 | .10 | -.48\*\*\* | Step 3 | Trust W123 | .19 | -.37\*\* |
|  | ASA W4 |  | .20 |  | Trust W4 |  | .55\*\*\* |
|  | Child Gender |  | .21 |  | Child Gender |  | -.04 |
|  | Child Age |  | .01 |  | Child Age |  | .11 |
|  | Mat. Education |  | .10 |  | Mat. Education |  | -.01 |

†*p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001; Mat. Education: Maternal Education.*

***Wave 4 RCS Contamination data***

For this outcome variable, the secure base script knowledge results (ASA) were not significant. They can be found in Appendix 3 (Table 10). Regarding the Trust data (see Table 5), the R² change was significant in the first two steps, but adding the demographics in the third step did not improve the model. The earlier trust made for a significant coefficient in the expected direction in the first step, indicating that more trust is associated with less contamination, but not in the second and third step. The concurrent Trust data (Wave 4) produced a significant coefficient in the expected direction in the second and third step of this analysis, again indicating more trust is associated with less contamination. In conclusion, the effect of earlier Trust was not robust to the inclusion of concurrent trust, but the effect of concurrent Trust was robust to the inclusion of the covariables.

**Table 5**

*Regression results with Wave 4 Redemption and Contamination Scale Contamination as dependent variable*

|  |  |  |  |
| --- | --- | --- | --- |
| Trust Scale data |  |  |  |
|  | Predictor | R² | Unstandardized β |
| Step 1 | Trust W123 | .08\*\* | -.32\*\* |
|  |  |  |  |
| Step 2 | Trust W123 | .26\*\*\* | .03 |
|  | Trust W4 |  | -.53\*\*\* |
|  |  |  |  |
| Step 3 | Trust W123 | .29 | .02 |
|  | Trust W4 |  | -.53\*\*\* |
|  | Child Gender |  | .30† |
|  | Child Age |  | .03 |
|  | Mat. Education |  | -.18 |

†*p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001; Mat. Education: Maternal Education.*

***Wave 5 RCS Redemption data***

Regarding the analysis with the Wave 5 RCS Redemption data as the outcome variable, the secure base script knowledge (ASA) data-analysis once more did not turn out significant and can be found in Appendix 3 (Table 11). Earlier Trust (see Table 6) made for a small yet significant R² change in the first step, with a significant coefficient in the expected direction, indicating more trust is associated with more redemption. The effect of earlier Trust was not robust to the inclusion of concurrent Trust in the second step, where neither earlier nor concurrent Trust turned out a significant predictor.

**Table 6**

*Regression results with Wave 5 Redemption and Contamination Scale Redemption as dependent variable*

|  |  |  |  |
| --- | --- | --- | --- |
| Trust Scale data |  |  |  |
|  | Predictor | R² | Unstandardized β |
| Step 1 | Trust W1234 | .04\* | .25\* |
|  |  |  |  |
| Step 2 | Trust W1234 | .05 | .18 |
|  | Trust W5 |  | .12 |
|  |  |  |  |
| Step 3 | Trust W1234 | .08 | .18 |
|  | Trust W5 |  | .13 |
|  | Child Gender |  | .06 |
|  | Child Age |  | -.01 |
|  | Mat. Education |  | .38† |

†*p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001; Mat. Education: Maternal Education.*

***Wave 5 RCS Contamination data***

In this analysis secure base script knowledge (ASA) was also not significantly associated with the dependent variable and can be found in Appendix 3 (Table 12). By contrast, trust presented significant coefficients (see Table 7) for both earlier (Wave 1-4) and concurrent (Wave 5) Trust in the expected direction, indicating more trust is associated with less contamination. Earlier Trust remained significant on top of concurrent Trust and covariables in the second and third step.

|  |  |  |  |
| --- | --- | --- | --- |
| **Table 7** |  |  |  |
| *Regression results with Wave 5 Redemption and Contamination Scale Contamination as dependent variable* |
| Trust Scale data |  |  |  |
|  | Predictor | R² | Unstandardized β |
| Step 1 | Trust W1234 | .10\*\*\* | -.38\*\*\* |
|  |  |  |  |
| Step 2 | Trust W1234 | .13\* | -.25\* |
|  | Trust W5 |  | -.21\* |
|  |  |  |  |
| Step 3 | Trust W1234 | .17 | -.28\* |
|  | Trust W5 |  | -.21\* |
|  | Child Gender |  | .23 |
|  | Child Age |  | .00 |
|  | Mat. Education |  | -.38† |

†*p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001; Mat. Education: Maternal Education.*

***Wave 5 Guided Autobiography Redemption data***

The regression analysis of the Guided Autobiography data (Wave 5) turned out not significant (see Table 8). Regarding the redemption data as outcome variable, secure base script knowledge (ASA) presented an almost significant R² change in the second step, with the concurrent secure base script knowledge as an almost significant coefficient in the expected direction. Results for Trust were not significant and can be found in Appendix 3 (Table 13).

**Table 8**

*Regression results with Wave 5 Guided Autobiography Redemption as dependent variable*

|  |  |  |  |
| --- | --- | --- | --- |
| ASA data |  |  |  |
|  | Predictor | R² | Unstandardized β |
| Step 1 | ASA W1234 | .00 | .04 |
|  |  |  |  |
| Step 2 | ASA W1234 | .03† | -.09 |
|  | ASA W5 |  | .19† |
|  |  |  |  |
| Step 3 | ASA W1234 | .04 | -.13 |
|  | ASA W5 |  | .14 |
|  | Child Gender |  | .23 |
|  | Child Age |  | .01 |
|  | Mat. Education |  | .18 |

|  |
| --- |
| †*p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001; Mat. Education: Maternal Education.****Wave 5 Guided Autobiography Contamination data*** Regarding the contamination data as outcome variable, the secure base script knowledge analysis (see Table 9) only presented an almost significant R² change in the third step, when covariables were added, with Child Gender as a significant coefficient (girls producing more contamination scores than boys). The Trust data analysis presented an almost significant R² change in the first step, with earlier Trust data (Wave 1-4) as an almost significant coefficient. These already minimal effects disappeared when concurrent Trust was added.**Table 9** |
| *Regression results with Wave 5 Guided Autobiography Contamination as dependent variable* |
| ASA data | Trust Scale data |
|  | Predictor | R² | Unstandardized β |  | Predictor | R² | Unstandardized β |
| Step 1 | ASA W1234 | .00 | .03 | Step 1 | Trust W1234 | .03† | -.21† |
|  |  |  |  |  |  |  |  |
| Step 2 | ASA W1234 | .00 | -.01 | Step 2 | Trust W1234 | .04 | -.13 |
|  | ASA W5 |  | .06 |  | Trust W5 |  | -.14 |
|  |  |  |  |  |  |  |  |
| Step 3 | ASA W1234 | .06† | .07 | Step 3 | Trust W1234 | .09 | -.10 |
|  | ASA W5 |  | .15 |  | Trust W5 |  | -.18 |
|  | Child Gender |  | -.46\* |  | Child Gender |  | -.30 |
|  | Child Age |  | .01 |  | Child Age |  | -.01 |
|  | Mat. Education |  | -.40 |  | Mat. Education |  | -.34 |

†*p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001; Mat. Education: Maternal Education.*

# Discussion

The results of the present study provide limited support for McAdams’ (1993) hypothesis that the affective narrative themes of redemption and contamination are rooted in early attachment experiences and that the first signs of this association are already visible during adolescence, when life stories start to be constructed. This study examined the relation between attachment security and redemption and contamination in a 5-year middle childhood to adolescent sample in order to provide a longitudinal test of the hypothesis. The analyses showed mixed results which gave birth to a set of new research questions.

In Wave 4 earlier secure base script knowledge and earlier trust were significant predictors for viewing life events in a less redemptive manner (RCS), contrary to the hypothesis, while concurrent trust was a significant predictor for viewing life events in a more redemptive manner (RCS). Concurrent trust was also a significant predictor for viewing life events in a less contaminated manner (RCS). In Wave 5 both earlier and concurrent trust were significant predictors for viewing life in a less contaminated manner.

In general, the Redemption and Contamination Scale provided distinctly stronger results than the Guided Autobiographies. This supports the proposed idea that even if the schemas of redemption and contamination are already cognitively present, they may not yet have been integrated into the life narratives. Since the Redemption and Contamination Scale does not fully tap into the construct of narrative themes, but rather into an either redemptive or contaminated attitude towards life events, the question arises how well these results inform our hypotheses. Future studies with an adult sample are needed to evaluate whether redemption and contamination are more pronounced as narrative themes once life stories become fully consolidated. An additional consideration to be made about the age range of the sample is the fact that, although the longitudinal aspect of the present study offers an interesting perspective, using data from two different phases of development, middle childhood and adolescence, during which human beings go through so many important changes, might have created too big of a leap to jump. Regarding future research this calls for either longer longitudinal follow up or larger samples.

In the fourth wave, both secure base script knowledge and trust significantly predicted redemption. However most coefficients, except concurrent trust, pointed in the opposite direction of the hypothesis. This would indicate that more secure base script knowledge and trust is associated with less redemption. A possible explanation for this unexpected finding might be that secure attachment is more likely to occur in a safe environment in which little major negative events take place that could be redeemed. The sample of this study did consist mostly of adolescents with overall highly educated parents, growing up in the safe and prosperous area of Leuven, where poverty and crime rates are relatively low and children are exposed to little environmental adversity in comparison to other areas or countries.

In recent years, research in developmental psychology has shifted away from the idea that developmental outcomes can be maladaptive. Rather, they are all adaptations to a certain context. For example, in a study by Rifkin-Graboi et al. (2021), results supported the idea that early life caregiving adversity enhances aspects of cognition needed to manage interpersonal threats. Moreover, a study with the same sample as the present study examining the stability and change in secure base script knowledge (Waters, Facompré, Van de Walle et al., 2019) showed that minor, yet frequently occurring, stressful life events (daily hassles) predicted increases in secure base script knowledge in Wave 3 and 4. As attachment theory suggests, minor stressful life events could lead to greater trust in parental availability and responsiveness in secure base interactions. By contrast, no significant relation was found between change in secure base script knowledge and more severe, but less frequent, stressors, which would be more prone to be affectively redeemed or contaminated. Major stressors (e.g., separation, trauma or loss) may be less conducive to attachment learning, since these issues are less likely to be immediately solved by the primary caregiver than daily hassles. A possible next step of research could be to examine the relation between redemption and contamination and major versus daily stressful life events, since data of both variables are available in the current sample. If minor, but not major, stressful life events predicted increases in attachment security, which in turn is linked to lower redemption, a proposed hypothesis could be that instead, major stressful life events would be associated with higher redemption, since major stressful events might be more prone to be redeemed. Future research should address this complex interaction between attachment experiences, stressors and life story themes.

When looking closely at the Wave 4 RCS Redemption analysis, the earlier Trust coefficient presents a distinct change from non-significance to significance from the first step to the second. The most obvious explanation is that there is shared method variance, variance that can be attributed to the measuring method rather than to the constructs the measures are considered to represent, as in this case earlier trust and concurrent trust were measured in the same way. However, self-reported trust also correlates with measures that do not share the same methodology, hence other possibilities to clarify this outcome should be explored. For example, another logical explanation is that the earlier Trust coefficient was impacted by the concurrent Trust variable that was added in the second step, thereby partialling out some error variance. Earlier Trust is then predicting a proportionally larger amount of the unexplained variance in the second step. To be sure this result was not due to any other possible cause, several assumptions for multiple regression analysis were examined.

A possible explanation for these findings would be multicollinearity between the earlier Trust data and the concurrent Trust data. To examine this, both the correlation between the two variables and the Variance Inflation Factor (VIF) were calculated. For the fourth wave analyses, the correlation between earlier Trust and concurrent Trust was .58\*\*\* and the VIF was 1.6. For the fifth wave analyses, the correlation between earlier Trust and concurrent Trust was .49\*\*\* and the VIF was 1.4. All are below the cut-off for severe multicollinearity (r > .60; VIF > 4).

Because repeated measures were used in this analysis (longitudinal data), the assumption of independent values of residuals was possibly not met. A Durbin-Watson statistic was used to test the assumption of independent residuals. This statistic ranges between 0 to 4. For the assumption to be met, this value should be as close as possible to 2. Values below 1 and above 3 are reason for concern and could render the analysis unreliable. Durbin-Watson statistics for all significant results are presented in Table 10. We conclude that the assumption has been met.

|  |
| --- |
| **Table 10** |
| *Durbin-Watson statistics for all significant results* |
| Dependent variable | Predictor | Durbin-Watson |
| W4 RCS Redemption | Trust | 2.083 |
|  | ASA | 1.933 |
| W4 RCS Contamination | Trust | 2.083 |
| W5 RCS Redemption | Trust | 2.068 |
| W5 RCS Contamination | Trust  | 1.938 |
| W5 GA Redemption | ASA | 2.182 |
| W5 GA Contamination | Trust | 2.217 |
|  | ASA | 2.123 |

Regarding the Guided Autobiographies, the results were not significant. The complexity and limitations of this study suggest further hypotheses to be explored by future research into the relation between attachment and narrative themes. More complex statistical analyses for handling longitudinal data, with more refined ways to deal with missing data, could possibly present more significant results regarding the Guided Autobiographies.

Furthermore, the non-significant results of the guided autobiographies might also be due to the methodology that was used. Both redemption and contamination are affective narrative themes connected to negative life events, while only one out of four requested narratives in the interview prompted for a negative life event, which was the nadir experience. For the peak experience, only 6 out of 118 children (5.08%) presented a redemption narrative. In addition, during the interview, the question “Which impact did this event have on you?” was omitted, while this question was part of the original set of questions composed by McAdams (2001) and might have been a specific probe for either redemption or contamination. Finally, the granting of bonus points for agency and communion for the adolescent narratives was rather challenging when compared to the adult narratives used during training, since the former often lacked the complexity and multidimensionality of the latter. The adolescent narratives tended to revolve around either redemption, contamination, agency or communion, but rarely a combination of these themes. All of these factors might have potentially made for too little variance in the results, which in turn made it more difficult to find significant effects. An additional coding system for only agency and communion was composed by McAdams (2001), which hence seems to be a highly interesting and logical next step. It could be expected that, due to the age group of the participants, these themes about self and others would be frequently exhibited in their narratives. As mentioned earlier, while coding the Guided Autobiography narratives it became clear that participants often displayed agency and communion themes, but the coding system for redemption and contamination demands to be applied in such a way that bonus points for agency and communion can only be granted when there is a redemption sequence in the first place. When a coding system solely scoring for Agency and Communion would be applied onto the Guided Autobiographies, new hypotheses regarding the interaction with attachment security could be formulated.

An additional potential limitation to the present study is the possibility that both in the secure base script knowledge measure and the redemption and contamination autobiography measure, cognitive and linguistic abilities might be possible confounding variables. Part of the variance could possibly be explained by the participants’ intellectual strength. In the present study, controlling for the number of words of the ASA was one possible way to handle this issue, but eventually parental education was included as a covariate, since a wide range of research supports the link between parental education level and cognitive functioning in children (Bradley & Corwyn, 2002). Future research would have to factor in intellectual abilities as a potential confound when possible.

Although the proposed hypothesis was not fully supported, the results of the present study are a meaningful step towards a broader understanding of the developmental source of individual differences in constructing and making meaning of life stories. Another possible next step of statistical analysis would be to split up the earlier attachment data composite into two composites, one for middle childhood (Wave 1 and 2) and one for early adolescence (Wave 3 and 4), in order to examine when exactly the first signs of redemption and contamination predicting results start to occur.

The present study is one of the first to look at attachment experiences as a possible origin of individual differences in life stories. Future developmental and personality research may broaden our knowledge about this dynamic interaction. Research may benefit from conducting a study with an older and perhaps more diverse sample with more defined and layered life stories.

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# Appendix 1: RC-Scale

Duid voor elk van de stellingen hieronder aan hoe waar de stelling over het algemeen is voor jou, op de volgende schaal van 1 tot 7:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Helemaal niet waar | Grotendeels niet waar | Een beetje niet waar | Wel/niet waar | Een beetje waar | Grotendeels waar | Helemaal waar |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

|  |  |
| --- | --- |
| 1. Als er goeie dingen gebeuren in mijn leven, dan blijft dat meestal niet duren.
2. Als er slechte dingen gebeuren in mijn leven, dan kan ik daar gewoonlijk door groeien als persoon.
3. Als er iets negatiefs gebeurt in mijn leven, dan heeft dit een blijvende negatieve invloed op mij.
4. Als er slechte dingen gebeuren in mijn leven, dan denk ik gewoonlijk dat het enkel beter kan worden.
5. Vreugdevolle momenten in het leven, worden altijd gevolgd door teleurstelling.
6. Als ik lijd onder negatieve gebeurtenissen, dan maakt me dat uiteindelijk een sterker persoon.
7. Ik ben bang dat wanneer er iets slechts gebeurt, dit blijvende negatieve gevolgen zal hebben.
8. Als er slechte dingen gebeuren in mijn leven, dan vertrouw ik er op dat de toekomst beter zal zijn.
9. Als er iets goeds gebeurt in mijn leven, dan heb ik schrik dat de toekomst negatieve gebeurtenissen zal brengen.
10. Als je moeilijkheden ondervindt in het leven, dan word je daar een betere persoon van.
11. Ik verwacht dat moeilijkheden in mijn leven leiden tot grote pijn en verdriet.
12. Als er iets negatiefs gebeurt in mijn leven, dan blijf ik optimistisch en denk ik aan de goeie dingen die daarna kunnen gebeuren.
13. Als de dingen goed gaan in mijn leven, dan heb ik het gevoel dat die elk moment onderbroken kunnen worden door iets slechts.
 | 1 2 3 4 5 6 71 2 3 4 5 6 71 2 3 4 5 6 71 2 3 4 5 6 71 2 3 4 5 6 71 2 3 4 5 6 71 2 3 4 5 6 71 2 3 4 5 6 71 2 3 4 5 6 71 2 3 4 5 6 71 2 3 4 5 6 71 2 3 4 5 6 71 2 3 4 5 6 7 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Helemaal niet waar | Grotendeels niet waar | Een beetje niet waar | Wel/niet waar | Een beetje waar | Grotendeel waar | Helemaal waar |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

|  |  |
| --- | --- |
| 1. Ik geloof dat uitdagingen in het leven er zijn om iets uit te leren en om te groeien als persoon.
2. Als er iets slechts gebeurt in mijn leven, dan zorgt dat ervoor dat ik dieper en dieper zink.
3. Ik heb er vertrouwen in dat slechte periodes in mijn leven gewoonlijk niet lang duren.
4. Wanneer ik op en top geniet van mijn leven, dan zullen ongetwijfeld slechte dingen volgen.
5. Ik verwacht dat moeilijkheden in mijn leven leiden tot groei en geluk.
6. Als er slechte dingen gebeuren in mijn leven, dan heb ik geen vertrouwen dat het ooit beter zal worden.
7. Ik heb er vertrouwen in dat elke negatieve ervaring in mijn leven op een positieve manier zal eindigen.
 | 1 2 3 4 5 6 71 2 3 4 5 6 71 2 3 4 5 6 71 2 3 4 5 6 71 2 3 4 5 6 71 2 3 4 5 6 71 2 3 4 5 6 7 |

# Appendix 2: Example of an Middle Childhood Attachment Script Assessment

Taken from: Waters, T.E.A., Bosmans, G., Vandevivere, E., Dujardin, A., Waters, H.S. (2015). Secure Base Representations in Middle Childhood Across Two Western Cultures: Associations With Parental Attachment Representations and Maternal Reports of Behavior Problems. *Developmental psychology, 51, 1013-1025.*

Sample Prompt Word Outline and Stories

**At the Beach**

|  |  |  |  |
| --- | --- | --- | --- |
| Mom and I | climb *(sandcastle)* | mom | bandage |
| picnic | rocks (*glass*) | hurry | hug |
| beach | I’m cut | doctor | home |

Example 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 okay. After a few minutes exploring again my mom wanted us to go home so that my knee could heal perfectly.

Example 2

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.

Example 3 Low-scoring story—No secure base content/support seeking, focus on maternal negative affect

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.

# Appendix 3: Non-significant results

**Table 10**

*Regression results with Wave 4 Redemption and Contamination Scale Contamination as dependent variable*

|  |  |  |  |
| --- | --- | --- | --- |
| ASA data |  |  |  |
|  | Predictor | R² | Unstandardized β |
| Step 1 | ASA W123 | .01 | .11 |
|  |  |  |  |
| Step 2 | ASA W123 | .01 | .07 |
|  | ASA W4 |  | .06 |
|  |  |  |  |
| Step 3 | ASA W123 | .05 | .04 |
|  | ASA W4 |  | .06 |
|  | Child Gender |  | .05 |
|  | Child Age |  | .17 |
|  | Mat. Education |  | -.23 |

*Mat. Education: Maternal Education.*

**Table 11**

*Regression results with Wave 5 Redemption and Contamination Scale Redemption as dependent variable*

|  |  |  |  |
| --- | --- | --- | --- |
| ASA data |  |  |  |
|  | Predictor | R² | Unstandardized β |
| Step 1 | ASA W1234 | .01 | -.15 |
|  |  |  |  |
| Step 2 | ASA W1234 | .02 | -.10 |
|  | ASA W5 |  | -.07 |
|  |  |  |  |
| Step 3 | ASA W1234 | .06 | -.15 |
|  | ASA W5 |  | -.15 |
|  | Child Gender |  | .28 |
|  | Child Age |  | -.02 |
|  | Mat. Education |  | .47† |
| †*p<0.10. Mat. Education: Maternal Education.* |

**Table 12**

*Regression results with Wave 5 Redemption and Contamination Scale Contamination as dependent variable*

|  |  |  |  |
| --- | --- | --- | --- |
| ASA data |  |  |  |
|  | Predictor | R² | Unstandardized β |
| Step 1 | ASA W1234 | .00 | .08 |
|  |  |  |  |
| Step 2 | ASA W1234 | .01 | .15 |
|  | ASA W5 |  | -.11 |
|  |  |  |  |
| Step 3 | ASA W1234 | .04 | .11 |
|  | ASA W5 |  | -.12 |
|  | Child Gender |  | .20 |
|  | Child Age |  | .09 |
|  | Mat. Education |  | -.25 |

*Mat. Education: Maternal Education.*

**Table 13**

*Regression results with Wave 5 Guided Autobiography Redemption as dependent variable*

|  |  |  |  |
| --- | --- | --- | --- |
| ASA data |  |  |  |
|  | Predictor | R² | Unstandardized β |
| Step 1 | Trust W1234 | .01 | .10 |
|  |  |  |  |
| Step 2 | Trust W1234 | .01 | .06 |
|  | Trust W5 |  | .07 |
|  |  |  |  |
| Step 3 | Trust W1234 | .04 | .03 |
|  | Trust W5 |  | .10 |
|  | Child Gender |  | .27 |
|  | Child Age |  | .04 |
|  | Mat. Education |  | .26 |

*Mat. Education: Maternal Education.*