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**Adult Attachment Representations and Secure Base Use
and Support in Couple Problem Solving Interactions**

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by

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Abstract of the Dissertation

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Validity is more than a rich suite of empirical correlates. They have to be the right correlates. In the case of the Adult Attachment Interview, validation includes showing links to the secure base concept, the central concept in Bowlby's and Ainsworth's attachment theory. Important evidence for the AAI's validity comes from longitudinal research linking infant Strange Situation classifications to the same person's AAI classifications 20 years later (e.g., Waters et al. 2000). In addition, Crowell et al. (2002) provided strong support for the attachment relevance of the AAI by showing that narrative coherence in the AAI is significantly related to secure base use and support in couple problem solving interactions. Interestingly, the secure base concept is not explicitly mentioned in the AAI scoring manual. This raises a question as to whether early representations of secure base experience play an important role in the AAI, or are they replaced by a different kind of representation as cognitive abilities mature and a person begins to organize their personality around an elaborate personal narrative (see McAdams & Pals, 2006).

The AAI Secure Base Scale (AAI_{SB} scale) is a newly developed scale (Waters, Waters, & Crowell, in preparation) designed to measure a person's knowledge and access to script-like representations of secure base experience from a subset of the AAI questions. This dissertation examines the AAI_{SB} scale's links to AAI Coherence and Mother/Father Accepting and Rejecting scales. In addition to evaluating the scale's discriminant validity, it tests the hypothesis that secure base script knowledge explains most of the relation between AAI Coherence and adults' secure base use and support in videotaped problem solving interactions. Data for the study was selected from the original Crowell et al. (2002) study. A sample of 60 AAI transcripts were scored using the AAI_{SB} scale. Correlations were used to evaluate convergent and discriminant validity in relation to conventional AAI Coherence, Acceptance, and Rejection scales. In addition, hierarchical multiple regression analysis was used to test the hypothesis that script knowledge accounts for most of the secure base use and support variance explained in the original Crowell et al. (2002) study. The correlation between AAI Coherence and Secure Base Script knowledge was .64, $p < .01$. In addition, Secure Base Script knowledge accounted for most of the correlation of AAI Coherence with Secure Base Use and Secure Base Support in the couple problem solving interactions.

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Introduction

John Bowlby began the story of secure base behavior with his studies involving young children. Mary Ainsworth brought it into the laboratory with the development of the strange situation. Mary Main and colleagues brought our understanding a step further by developing an adult measurement of attachment. Today, we continue to refine our methods for understanding attachment behavior and uncover the foundations of human attachment.

Three Key Insights

Drive theory is untenable. John Bowlby set out to save the key insights made by psychoanalysts by recasting them in more scientific terms. His first major insight was that psychoanalytic drive theory and the current thinking regarding the nature of the child's tie to mother were unsustainable and that criticisms by behavioral scientists (e.g., Eysenck, 1961) and philosophers of science (e.g. Popper, 1963, Adolph Gruenbaum, 1984) were well grounded. Unless Freud's genuine insights about the importance of early experience could be recast in more scientific terms, they were sure to be lost.

Ethology offers an alternative. His second major insight was recognizing that psychoanalytic ideas about early experience were not logically tied to Freud's drive theory. Thus, he might be able to preserve these ideas by linking them to an alternative motivation model. Bowlby also felt it was essential to build this new perspective on a sound scientific foundation. To a Cambridge student trained in biology, psychology and medicine, this meant a close tie to observable behavior. Bowlby was a great admirer of Charles Darwin and an enthusiastic naturalist. He was well aware that Darwin himself had made a detailed observational study of his oldest son's early development (Keegan & Gruber, 1985). So it was quite natural that he drew on the new science of ethology (observation of animals in their natural habitats) as a starting point for his project. This, and his emphasis on the importance of prospective study designs, is a methodological cornerstone of what was long termed Bowlby's "ethological attachment theory" (e.g., Ainsworth & Bowlby, 1991). (Footnote: The term has fallen out of use because many took it to imply an instinct theory rather than an emphasis on observation and an evolutionary perspective.)

The attachment-exploration balance. Bowlby's third major insight was a descriptive one. In his first paper on attachment theory Bowlby (1958) pointed out that the baby described by psychoanalysts was not the baby you would see in your own house. The psychoanalysts' baby was focused inward on its drive states and used the mother as little more than a tool for getting rid of accumulated drives. Real babies were intensely interested in the environment. In addition, their behavior toward the mother did not rise and fall over time as if it reflected drive states. Instead, it was very sensitive to context. Babies seemed to have a number of natural sensitivities to what Bowlby called "natural clues to danger" and seemed to monitor these and other information while they explored out and back from the mother. Accordingly, Bowlby suggested re-conceptualizing the child's tie to its mother. He rejected the psychoanalytic view of mother as a tool for drive reduction and suggested that it was better viewed as a relationship in which the mother serves as a secure base from which to explore as well as a haven of safety. Bowlby

termed this secure base behavior, which encompasses secure base use and secure base support. This was what his new motivation model would have to account for.

Maternal Sensitivity

Mary Ainsworth did much of the early work in validating aspects of our current Attachment Theory with her research in Uganda (1967) and her Baltimore longitudinal studies (Ainsworth, Blehar, Waters, & Wall, 1978). These studies were critical in identifying the features of maternal care that supported attachment development, especially behavior in close physical contact, sensitivity to infant signals, cooperation with ongoing behavior, physical and psychological availability, and acceptance of the infants needs. They also outlined the hallmarks of early secure base behavior (Ainsworth, Bell, & Stayton, 1971). And they showed the close link between maternal secure base support and the quality of infant exploration and secure base use (Ainsworth et al., 1978, Ch 7 & 8).

Ainsworth's work developed (mimeograph, JHU, Baltimore, Rev. 3/10/69) four elements of care giving that are important in providing good secure base support. The first is the ability of the mother to be sensitive to the baby's signals. The second is cooperation with ongoing behavior. The third is physical and psychological availability. The last element is acceptance of the baby's needs. Optimal care giving contains many elements beyond just these four aspects, however good secure base support is evident if these four aspects of care giving are present. These four elements promote the child to explore away from the mother and return in times of danger or distress. These exploration and return sequences form what Bowlby termed the secure base phenomenon – whereas the mother acts as secure base support for the child's exploration. Based on an understanding of these interactions, Mary Ainsworth developed the Strange Situation – a laboratory technique for measuring attachment behavior in young children. The technique consists of observing the child's behavior through a series of separations and reunions with the primary caregiver.

Mental Representations of Early Experience

The effect of day to day interactions that the child has with the mother accumulate over time. For the child, they form the basis of expectations as to how the mother will interact with him. The responses that he gets from times we he has attempted to elicit support/comfort become the building blocks for a mental structure summarizing how interactions in close relationships occur. At a very young age the child does not have the cognitive capacity to organize these experiences into any type of formal mental representation. The young child's world is made up of sensorimotor interactions with the environment. His understanding of his mother is simply grounded in the experience of interacting with her and in expectations based on previous encounters.

As the child's cognitive capacity develops these behavioral patterns with the mother gradually solidify into a mental structure which guides his own behavior and expectations (Bowlby, 1958). Recent work through Harriet Waters' lab has shown that these mental representations are likely organized as cognitive scripts (Waters & Waters, 2006). Over time the child utilizes this mental representation to guide his interactions with the

caregiver and across other relationships. To the extent that these behavioral interactions persist through time, they become building blocks to later personality and adjustment. This phenomenon is referred to as the “prototype hypothesis,” namely that one’s early experiences form a prototype upon which your later experiences are guided is a central aspect in Bowlby’s attachment theory (Bowlby, 1958).

Methods of Assessment

The Adult Attachment Interview (AAI) - Theoretical Background

Measuring attachment in children can be accomplished through observing their behavior with the parent, as, for example, in the Strange Situation or at home when behaviors are summarized with the Attachment Q-sort. Measuring mental representations however, is an entirely different ballgame. The Adult Attachment Interview (AAI) was developed to accomplish this. The interview assesses adults' mental representations of their childhood relationships to their parents (Main, Kaplan & Cassidy, 1985).

The interview consists of 20 questions which are audio taped and transcribed for coding. The first two questions ask for general information about family composition during childhood and family background. Then the interviewee is asked to provide five adjectives describing their relationship to their mother (Q3), and then five about their relationship to their father (Q4), between ages 5-12. The interviewee is then asked to recall experiences that illustrate each adjective. The next few questions (Q5 - Q9) ask which parent was the primary attachment figure and ask for recollections of significant separations, parental rejection, or threats. Two questions (Q10, Q11) then ask about the interviewee's perspective on their early experiences - asking whether and in what way early experiences are reflected in current personality and relationships, and asking why the interviewee thinks the parents might have behaved as they did and whether there were any adults other than the parents who were significant during their early years. The last two retrospective questions (Q13 & Q14) ask about significant losses and trauma or abuse during the early years. Questions 15 and 16 place the questions about early years in context by asking for a brief description of how the relationships might have changed over time (esp. during adolescence) and about the current relationship to the parents. As the interview moves toward its conclusion, several questions ask the interviewee to reflect briefly on their past and its relevance to their current personality and on their ideas about parenting. Finally, they are asked to elaborate on what they wish for their own real or imagined child 20 years from now. These last questions end the interview in the present time and allow for a smooth transition out of the interview. The interview takes approximately 1 hour to administer.

Table 1. Adult Attachment Interview Questions

(Complete text in Appendix 1)

1. Family Background	11. Why parents behaved
2. Early Relationship	12. Other Significant Adults
3. Adjectives (Mother)	13. Other Losses
4. Adjectives (Father)	14. Trauma
5. Closest Parent	15. Change relationship to parents
6. Upset	16. Current relationship w/ parent
7. Separation	17. Relationship to own children
8. Rejection	18. Three wishes
9. Threatening	19. Lessons Learned
10. Effect of Early Experience	20. Hopes for children

AAI Scoring

Much is forgotten during the course of childhood. And what is recalled is selective and subjective. Thus, the AAI is not taken as an accurate report of the events of a person's early life. Nor can it serve as a roadmap to the structure of underlying attachment working models. Instead, the transcript is viewed as a sample of verbal behavior, shaped by a combination of experience and personality structure that allows insights into the interviewee's "state of mind" with respect to attachment, a formulation which is operationalized primarily in terms of a complex scoring system.

The AAI scoring system involves scoring the full transcript on two sets of rating scales (5 Experience scales, 9 State of Mind scales) and then, in light of these scales, matching the narrative as a whole to a classification.

Experience Scales. These scales measure the coder's evaluation of what the individual's childhood experiences were actually like. Inferred parental behaviors based on the content of the historical accounts in the interview. These can be actual experiences mentioned by the interviewee or probable experiences based on content mentioned in the interview.

1. *Loving behavior by each parent* – measures the extent to which the speaker experienced loving or unloving behavior by either the mother or father. Overall the coder is looking for emotional support and availability demonstrated by each parent.

2. *Rejecting behavior by each parent* – measures the extent to which each parent acted to reject or avoid the child's attachment behavior. This scale is not meant to capture abuse behaviors.

3. *Role-reversing behavior by each parent* – measure the child's involvement in the parent's physical or psychological care and well-being. Having the child's proximity necessary for the parent's well-being is also considered an aspect of role-reversal.

4. *Neglect by each parent* – measure behavior by each parent that demonstrates a psychologically inaccessible person who is unresponsive/inattentive to the child's demands or needs for attention.

5. *Pressure to achieve by each parent* – measures the extent to which each parent pressured the child to achieve a certain status or position, or assume adult responsibilities, not solely for the child's own well-being but to satisfy the needs of the parent, where failure to achieve these expectations was connected to punishment or withdrawal of affection.

Current State of Mind Scales. These scales measure the interviewee's mental representations regarding attachment-related experiences. In addition, they give insight to the mental organization of attachment-relevant information.

1. *Metacognitive Monitoring* – the speaker's ability to reflect on the thinking and processing during the interview.

2. *Overall coherence of Mind* – this is the overall score given on the speaker's current "state of mind" with respect to attachment.

3. *Idealization* – this scale assesses discrepancies between what the speaker is saying directly about the parent versus discrepant comments given during the interview (eg. "my mother was very warm and caring" with inferences in the interview to abuse or neglect behaviors)

4. *Insistence on Lack of Memory* – the speaker's consistent inability to recall events or memories from childhood, especially when it is used to block additional questioning in a particular area.

5. *Derogating Dismissal of Attachment* – measures the extent to which the speaker dismisses attachment experiences or events.

6. *Fear of Loss of the Child Through Death* – assesses the adult's discussion of their own child and evaluates the parent's unfounded fears of the child's death

7. *Involving/Preoccupying Anger* – this scale is not limited to discussions of childhood. The scores are based on expressions of anger toward the mother, father or an important attachment figure.

8. *Passivity of speech* – this scale measures the episodes related to overtly vague expressions, failing to complete a sentence, adding odd words or phrases to an already complete sentence and/or the speaker slipping into other forms of speech.

9. *Coherence* - A key construct in the evaluation of one's adult attachment representation lies in the overall coherence of the transcript. Coherence is defined in Webster's dictionary (2010) as a systematic or logical connection or consistency; an integration of diverse elements, relationships or values. In the original studies conducted at Berkley the coherence of a transcript was the strongest correlate of infant security (Main, Hesse, Kaplan; 2005).

After the AAI had been in use for a few years, a linguist pointed out to Mary Main parallels between her coherence of transcript concept and the work of H. P Grice (1975, 1989). This provided a theoretical framework within to organize what, to this point, had been a rather informal and intuitive definition of coherence. Grice made the point that in order to be understood, it is not enough simply to produce sentences that are semantically and syntactically well-formed. It is also necessary to employ pragmatic devices that insure the speaker and listener are sharing the same meaning space. Grice proposed four maxims that summarize the tacit agreement between speaker and listener that makes conversation understandable. These are:

1. *Quality* – be truthful, and have evidence for what you say

The interviewee is expected to be able to back-up general comments or descriptions of the caregiver with specific memories from childhood.

2. *Quantity* - be succinct, yet complete

It is expected that the interviewee be able to tell a story from a logical beginning to end, but without a lot of extra, unnecessary information.

3. *Relations* – be relevant or perspicacious

The interviewee must provide information that is relevant to the questions being asked and in addition to providing direct examples associated with the topic or person being discussed.

4. *Manner* – be clear and orderly

Grice's maxims became the main constructs upon which coherence of the AAI transcript is based. Adherence to these demonstrates a coherent transcript, while deviations are associated with incoherence. In addition to Grice's maxims the scale utilizes the speaker's ability to maintain an overall consistency and collaboration within the transcript. The scorer should feel that the speaker was able to convey a clear, free flowing communication of past events. The speaker should be able to present their own point of view regarding past events and offer a full story of their past. Offering a full understanding of the events, relationships and influences of their past with clear examples and evidence of meta-cognitive monitoring exemplifies a coherent transcript. Overall, the

transcript must be readable and make sense. There should be a natural flow, or order to the conversation.

Violations of Grice's maxims:

Trained scorers of the AAI are asked to score reading from the top of the transcript down and also from the bottom back to the top to ensure that the reader understands comments that may be made later in the transcript which refer to earlier elements and provides a better understanding of the overall conversation. Incoherent transcripts violate the four maxims in many different ways, however these violations are grouped into two categories: (1) a violation of the internal consistency or quality and (2) a violation of the collaboration with the interviewer or the interview process.

A speaker can violate Quality by providing contradictions between the more general descriptions given about the caregiver and the specific memories provided. For example, if a speaker mentions that their mother was warm, but when asked for a specific memory can only mention that the mother constantly was demeaning to them, this would be a violation of Quality. Speakers will often preface what they say by noting that they “don’t remember the details” or “the story is too long to tell”. These are considered violations of Quantity. Transcripts that violate Quantity can also be ones that are often long and wondering. The speaker has no clear understanding of a beginning or end to what the interviewer is asking for. In addition, violations of Quantity can be seen in transcripts where it is evident that the speaker is trying to persuade the listener that their way of thinking about a particular person or situation is the “correct” one. Violations of Relation can be evidenced by the speaker avoiding questions, or diverting the conversation to other topics, or time periods. Individuals who violate Relation will often jump the conversation into other topics (or beyond childhood) or on other individuals. The speaker’s inappropriate use of jargon, tense, nonsense words, metaphors, phrases, jumbled sentences or stories that do not make sense can all qualify for violations of Manner.

Scoring Coherence

Scores for the coherence of a transcript range from 1 – 9, with 1 being not coherent and 9 being highly coherent. A 1 is given to the transcript if the scorer is struggling to understand the speaker’s statements throughout the course of the interview. In addition, the interview will often demonstrate contradictions in experience and/or changes in discourse strategies. These texts are very difficult to read and it is difficult to discern the actual experiences of the speaker. A score of 3 (low coherence) is given to transcripts which are not coherent throughout and the speaker presents incoherent text in one or more significant ways. Overall these transcripts are not seen as collaborative and may violate aspects of truthfulness as well. Moderate coherence (a score of 5) is given to transcripts which are not particularly clear or flowing, but overall a moderate sense of coherence can be gleaned from the speaker’s interview. There will be minor violations of either truthfulness or collaboration, but none so major as to prevent the reader from understanding the experience. A coherent designation (score of 7) is reserved for transcripts which present an overall coherent discourse in conversation and reflects many of the positive aspects of Grice’s maxims. There may be fleeting moments in the

transcript where the speaker loses track or violates a maxim, but over the course of the entire interview the coherence is evident. Finally a score of 9 is reserved for transcripts considered highly coherent. These speakers are fully aware of the questions being asked, are reflective in their responses and able to participate in the interview process in a way that adheres to all of Grice's maxims. These individuals are well-adjusted to the experiences of their past and are at ease with the topics being discussed.

Classifications - After assigning scores to the experience scales, state of mind scales and coherence the final step in scoring is to assign a classification to the transcript. There are five main categories for the AAI transcript and they are laid out as follows (these are excerpts of the scoring, for a full review of scoring refer to the AAI scoring manual):

Organized States of Mind:

F – *Autonomous* – given to transcripts which display moderate to high scores on coherence of transcript, coherence of mind, valuing of attachment, ease with the topics being discussed and often times a display of a lively personal identity, compassion, and ease with imperfections in the self. In addition to the main classification there are 5 sub-groups classifications assigned to an autonomous text.

Ds – *Dismissing* – this classification is used for texts where derogation of one or both attachment figures is present, a consistent response that they do not remember specific instances, interview responses that appear remote from memories or feelings, few comments in regards to hurt, distress or feelings of being dependent, while on the contrary comments with respect to independence and personal strength, emphasis on fun activities or material objects received. In addition, there are 4 sub-group classifications available for the dismissing classification.

E – *Preoccupied*- the preoccupied classification is given to transcripts which exhibit passivity or vagueness in discourse, involving or preoccupying anger, the present repeatedly “invades” the past, excessively long conversational turns accompanied by violations of relevance, subtle or overt linguistic confusions between self and parent. There are 3 sub-classifications associated with this category.

Disorganized States of Mind:

U/d - *Unresolved with respect to loss or trauma* – transcripts receiving this classification often exhibit extreme behavioral components or lapses in reasoning or discourse. This classification is used when there is no real best alternative in any of the other classifications associated with organized states of mind. There are no sub-groups associated with this classification, it is often described in conjunction with one of the above, best-fitting alternatives.

CC - *Cannot Classify* – This classification evolved out of the use of the AAI in high-risk populations and signified that the transcript does not fit into any one of the above AAI Classifications. It is most often seen when the interviewee exhibits a multitude of combination factors from the above categories. There are not sub-groups associated with this classification.

One of the first critical tests regarding the validity of the AAI was to determine its relation to infant strange situation classifications developed by Ainsworth (Ainsworth,

Blehar, Waters & Wall, 1978). As was expected, the AAI classifications were shown to parallel Ainsworth's infant attachment classifications (Main, Kaplan & Cassidy, 1985). In particular this was true for the mothers (primary caregivers) versus the fathers. This test lent support to the validity of the AAI by showing that there is a generational correlation of attachment as evidenced in the child's behavior and the parent's verbal accounts (i.e. mental representation). In keeping with Bowlby's theory, this implied that the parent's state of mind in regards to attachment is influencing the care giving behaviors with the child. A little further down the road, a meta-analysis of 18 attachment studies conducted by van IJzendoorn (1995) confirmed the results of the earlier 1985 study by Main and colleagues. In addition, the meta-analysis lent support to the mode of transmission from one generation to the next being carried via the care-giving techniques.

While assigning individuals to discrete classifications is one of the most commonly used strategies in attachment assessment (infant or adult), Waters & Beauchaine (2003) have argued that is more a convenience than a requirement of the theory. Indeed Waters, Treboux, Corcoran, & Crowell (unpublished manuscript) have shown that the dichotomies Autonomous vs. non-Autonomous, and Dismissing vs. Preoccupied, can be expressed as weighted linear composites (i.e., continuous variables) of the State of Mind and Coherence scales. In fact, the Autonomous vs. non-Autonomous dichotomy/dimension is almost entirely accounted for by the Coherence scale alone.

The AAI and the Secure Base Concept

The AAI has been put to widespread use in research. The interview protocol has been shown to be correlated with infant strange situation scores in normal samples (Main, 1985; Main & Goldwyn, 1998), clinical samples (Ward & Carlson, 1995), across cultures (Sagi, et. al, 1997) and even when the interview is conducted prior to the birth of the child (Fonagy, Steel & Steele, 1991). It has been shown to be related to other methods of measuring attachment (George & Solomon, 1996). In addition, it has been shown to be related to an adults' attachment behavior in a marital relationship (Crowell et. al., 2002), parental sensitivity and caregiving behavior (Ijzendoorn, 1995), and even adolescent emotion regulation (Beijersbergen, et al, 2008).

Although there has been a vast amount of research done to date, one important question still remains unsolved - what is driving all of these AAI correlates?

Some hypotheses have emerged:

The attention hypothesis. Attachment theorists have not really offered a specific explanation. Implicitly, the idea is probably that an incoherent AAI narrative results from some sort of psychological conflict arising from early attachment experiences. The conflict creates anxiety, and anxiety accounts for poor performance in the various validity studies (Main, 2000). Mary Main has suggested that difficult early experiences lead to what Bowlby called multiple models of the attachment figure (Main, 1991). These are incompatible and conflict among them interferes with the person's ability to control attentional processes. These then account for the incoherence of the AAI narrative and also for poor performance in parenting and other relationship related tasks.

The secure base alternative. As discussed above the secure base concept is central to Bowlby's theory and to the validity of tests, interviews, and observations as measures of

the Bowlby attachment construct. This is why links to one's own Strange Situation classification in infancy (Waters et al., 2000) and to secure base use and support in marriage (Crowell, et. al., 2002) are central to the validity of the AAI. Theories of temperament, anxiety, and general adjustment might account for many of the AAIs correlates, but only attachment theory predicts the links to security in infancy and secure base behavior in marriage.

Although the Waters et al. (2000) and Crowell, et. al. (2002) studies point to the AAI's secure base relevance, the link is only indirect. The AAI has secure base correlates but the scoring is in terms of narrative coherence. Still unexplained is how the secure base phenomenon ends up reflected in narrative coherence. The theory of conflicting working models and failure of attention control doesn't really address this. The hypothesized working models are not measured by the AAI and the notion that they are in conflict is undemonstrated and, as Hinde (1991) suggests of the working models concept itself, it is too open and offers itself as an explanation of almost any deficit.

Waters, Waters, & Crowell (2009) have suggested looking for secure base content in the AAI itself. To do this, they reviewed a number of AAI transcripts looking for secure base related content in each of the interview questions. They found that more than half of the references to Secure Base Use and Support was concentrated in the two adjective questions (Q3 and Q4) regarding both the Mother and Father and the Upset question (Q6). They then extracted these questions from a sample of AAI transcripts and identified two types of content that pointed to a person conceptualizing their parents as secure base figures.

The clearest indications of secure base content in the AAI were recollections of specific experiences in terms that suggest use of a secure base script. Usually, this involved the child being supported in some sort of exploration that was particularly enriching or where they were uncertain, or in emergencies in which the parent actively intervened on the child's behalf or dealt with an emergency and then effectively comforted the child. In addition to such vignettes, Waters et al. identified a wide range of expectations that also pointed to a person conceptualizing one or both parents as secure base figures. These include such theoretically important expectations as (a) the notion that the parent is "always there for me", "stronger and/or wiser, available, responsive - the kinds of expectations Mary Ainsworth highlighted as cornerstones of attachment security in infancy. They also noted indications that the relationship to the parents was characterized by "open channels of communication", a characteristic Inge Bretherton (e.g., 1990) has emphasized. Finally, Waters et al. (2009), noted content that suggested the parent was highly motivated to support the child - an attribution that can serve as the basis for expectations of availability and responsiveness.

From these indications, Waters et al. developed a 9-point AAI_{SB} scale for measuring the extent to which a person's AAI indicates that they conceptualize their relationship to one or both parents in terms of the secure base script.

Table 2. Secure Base Script Knowledge in AAI: The AAI_{SB} Scale

Score	Criteria
9	Several clear positive secure base scenes that have clear secure base script organization. Positive secure base expectation also may be present as well but are not required.
8	At least one positive scene that has clear secure base structure plus one or more additional positive scenes with partial or implied secure base script structure supported by multiple clear secure base related expectations.
7	One positive secure base scripted scene and several scene fragments or generic secure base scenes plus several secure base expectations.
6	Several positive scenes, none scorable as positive secure base on their own but credited as positive secure base in light of elaborated secure base related expectations in the transcript.
5	No clear positive secure base scenes with explicit or implicit secure base script organization. Instead, secure base conceptualization of the relationship is inferred from multiple examples of clear secure base expectations.
4	No clear positive scenes with explicit or implicit secure base script organization. Few if any positive secure base expectations and few of these have the specifics or elaboration needed to be confident of their secure base relevance.
3	No clear positive scenes with explicit or implicit secure base script organization. No clear positive secure base expectations. Narrative tends to be event focused.
2	Clear examples of scenes in which the scorer expects secure base resolution which does not occur (secure base script failures); one or more instances of expectations not consistent with secure base script.
1	Relationship viewed through lens of scripts that lack or are inconsistent with the secure base script organization. E.g. scenes and expectations suggest that the interviewee conceptualizes relationship to parents as one in which they were primarily focused on instrumental aspects of “good parenting”, or that child and mother were partners victimized by the fathers unpredictable outbursts.

This new scale has been shown to be related to secure base script knowledge assessed using prompt-word outlines ($r = .67$, $n=20$, $p<.002$). This suggests that there is a considerable amount of secure base content in AAI transcripts.

Waters (in press) has suggested that script knowledge plays an important role in conformity to Grices' Maxims (and thus to AAI Coherence scores). A script summarizes

the temporal-causal structure of a recurring event (in this case secure base interactions). It defines the beginning, content, transitions, and end of a specific type of interaction. In responding to the AAI interviewer, a person who knows the secure base script is thus more likely to (1) recognize the type of event the interviewer is asking about, (2) provide relevant information, (3) provide only relevant information, and (4) know when they have provided all the relevant information.

These, of course, are exactly the elements of Grice's Maxims. Thus, secure base script knowledge is hypothesized to explain both AAI Coherence and many of its correlates. From this point of view, the correlation between AAI Coherence and variables like Secure Base Use and Support do not reflect causal links. They are correlated because they share a common cause - script knowledge serving as a classic "third variable". This model is preferred over the notion that script knowledge mediates links between AAI Coherence and other variables because it is not clear how AAI Coherence could explain script knowledge. Theoretically, the casual influence goes the other way.

Methods

Explanation of this work

This dissertation offers an empirical test of the hypothesis that secure base script knowledge explains the link between AAI Coherence and one of its most important correlates, Secure Base Use and Support in marital interactions.

To answer this question this research examined the correlations and discriminant validity of the AAI_{SB} scale in relation to traditional AAI scales and, using hierarchical multiple regression, determined whether secure base script knowledge scored from the AAI accounts for most of the correlation between AAI Coherence and Secure Base Use and Support behavior in videotaped laboratory interactions.

Participants and Design

For the purpose of this study 60 female interviews were selected from a sample of complete data containing 157 engaged couples from Long Island, NY. On average, the couples were 3 months away from their wedding date. They were recruited from a wedding fair on Long Island and asked to participate in a study evaluating close relationships. For all individuals in the sample, this was their first wedding and they reported having no children. In the full sample, the mean age for the women was 23.5 years (SD = 1.5) and on average they had 14.8 years of education. In this sample, the mean age was 23.2 years (SD = 1.7) and on average they had 14.7 years of education. The criteria for selection in this study were that the subject had complete data on all the secure base variables and a usable AAI transcript.

The sample size of 60 was chosen to provide a power of .80 in testing the increment in R^2 in the hierarchical regression analyses. In addition, previous reports from this sample suggest that the secure base variables behave similarly in males and females. Moreover, 30 and 30 would provide too little power for the proposed analyses to be conducted separately in the two sexes.

Measures

Adult Attachment Interview (AAI)

As previously described, the AAI is a semi-structured interview which elicits adult attachment representation. The scale has been shown to be stable over a 2-month period (Bakermans-Kranenburg, et. al., 1993), a 3-month period (Sagi, et.al., 1994) and over a 20-year period (Waters, et.al., 2000). Reliability has been shown to be between 72-78%. In addition, the interview has been shown to have discriminant validity with IQ, social adjustment, discourse style and social desirability (Crowell, et. al., 1996; Sagi, et. al., 1994). To determine divergent validity, this study utilized two of the experience scales from the AAI. It was important to show that the new AAI_{SB} scale is not just a rephrasing of the information contained in these AAI sub-scales. The two scales used were the following:

Loving behavior by each parent – measures the extent to which the speaker experienced loving or unloving behavior by either the mother or father. Overall the coder is looking for emotional support and availability demonstrated by each parent.

Rejecting behavior by each parent – measures the extent to which each parent acted to reject or avoid the child's attachment behavior. This scale is not meant to capture abuse behaviors.

In addition, the overall coherence score will be utilized.

Adult Attachment Interview Secure Base Scale (AAI_{SB})

In scoring Secure Base script knowledge, the AAI_{SB} scale utilizes the Mother/Father Adjectives and Upset questions from the AAI transcript. Coders are also given the Family Relationship information to gain a background understanding of the family composition and who is being referred to throughout the rest of the interview. The scale measures secure base content contained in the Mother/Father Adjective and Upset questions only. Content from these questions is evaluated against a 9 point scale evaluating the aspects of Ainsworth's Secure Base Behavior content within the transcript. There were a total of two scorers. A total of 60 transcripts were scored by the primary scorer. In addition, 15 transcripts were scored for agreement. Scores that differed over 2 points were discussed and re-evaluated as necessary. The more experienced coder's scores were used for these analyses. The overall inter-rater agreement was $r(13) = .72, p < .01$.

The Secure Base Scoring System (SBSS) – Secure Base Content in Adult Partnerships

Utilizing Ainsworth's description of secure base use/support components, the Adult Secure Base Scoring System (Crowell, et. al., 1998) is a protocol to assess the attachment system in adult partnerships. Through a problem-solving assessment technique, the protocol elicits how couples might interact while engaged in a "controversial" discussion. The protocol is grounded in the idea that distress activates secure base behavior, just as it does in the Strange Situation for children.

The procedure consists of a semi-structured interaction between the couple on a topic which they disagree on. For the data used in this study, the topic was determined using the Discord scale of the Family Behavior Survey (FBS; Posada & Waters, 1988). The couple completed this questionnaire prior to the interaction listing issues they both

felt were important. They were then asked to discuss, for 15 minutes, an issue they've listed that they disagree on and this interaction is videotaped. The taped transaction is then scored for the care-seeking role (Secure Base Use) and the care-giving role (Secure Base Support). Both role are scored on the following criteria and these criteria are summed to provide an overall Secure Base Use and Secure Base Support score. The scales are meant to mirror Ainsworth's sensitivity scales for mother-infant interactions (Ainsworth et.al., 1978). For the purposes of this research the overall (summary) Secure Base Use and Support scale scores will be used.

The adult in the care-seeking role (Secure Base Use) is scored based on the following criteria:

- 1) *Strength and clarity of initial distress signal* – captures the individual's ability to effectively convey to his/her partner the need for Secure Base Support.
- 2) *Maintenance of a clear distress signal* – refers to the individual's ability to maintain, or increase a clear distress signal to the partner until the need is met.
- 3) *Approach to attachment figure* – the ability of the individual to approach their partner in emotions, words or affect in such a way that it elicits an attachment response from the partner.
- 4) *Ability to be comforted* – reflects the ability of the individual to be comforted by the partner and show diminished distress.

The adult in the care-giving role (Secure Base Support) is scored based on the following criteria:

- 1) *Interest in partner or "promotion of exploration"* – captures the partner's desire to see the other's need for support and encouragement of emotional expression/needs.
- 2) *Recognition of distress-* reflects the partner's ability to recognize the partner's expression of need for support.
- 3) *Interpretation of distress* – reflects the partner's ability to recognize the specific concerns which require support.
- 4) *Responsiveness to distress* – captures the partner's ability to be adequately comforting and supportive to the partner's distress signal through cooperative means.

Procedure

In preparation for scoring, the AAI transcripts were edited to remove all identifying information and any information related to previous analyses. In the course of work on development of the AAI Secure Base scale, it was determined that most of the secure base related content in the AAI is found in the Mother/Father Adjective and Upset questions of the AAI. It is important for the reader to first gain an understanding of the family composition and the more global family dynamics first. For this reason, the transcripts were reduced to include the Family Background questions (Questions 1 & 2) and then, for scoring purposes, the Mother/Father adjective and Upset questions

(Questions 3, 4 & 6). Question 1 (Family Background) is only included so that scorers can be aware of family composition, changes of residence, etc. Question 2 (Summary of early relationship to parents) was retained because it often includes information about family history (e.g., divorces, changes of living arrangements) and about events that significantly affected the family. It also often includes information that gives scorers a time frame for the family history. This often helps scorers locate events in time - e.g., before or after the divorce and therefore (implied) not in the early years on which the scoring focuses. Information in this question about the quality of family relationships is not used in assigning AAI Secure Base scores. AAI Secure Base Scale scores were based entirely on the content in the "Adjectives" and "Upset" questions. Questions 4 & 5: "Adjectives describing relationship to mother and to father." Question 6: "When you were young, what did you do when you were upset?"

Data Analysis

This research is an attempt to clarify the relation between two traditions in attachment study - research on infancy and early childhood that focuses on secure base behavior, and research on adults that focuses on mental representations ("Internal working models of attachment"). The data analyses address (a) links between AAI Coherence and participants' use of a secure base script to organize their attachment narrative, and (b) the extent to which links between AAI Coherence and other behaviors (here, Secure Base Use and Support in couple problem solving interactions) can be accounted for in terms of script-like secure base representations.

These goals can be framed in terms of the following hypotheses:

Prediction 1: There will be a positive correlation between the AAI_{SB} and AAI Coherence scales.

The first analysis is to determine if individuals who have higher coherence also have knowledge of the secure base script. If individuals are judged as coherent in their AAI interview they should have knowledge of the secure base script.

Prediction 2: Modest correlations between the AAI_{SB} and the AAI Loving and Rejecting scales.

It is expected that both the AAI_{SB} and AAI Coherence scores will be correlated with the Loving and Rejecting scales of the AAI, however it is important to show that the AAI_{SB} scale is not a re-framing of these sub-scales and to note the differences in amount of overlap between the AAI_{SB} and AAI Coherence scores and these sub-scores.

Prediction 3: The AAI_{SB} and AAI Coherence will both show a positive correlation with Secure Base Use and Support measures on the SBSS.

Individuals who have knowledge of the secure base script and also individuals who are deemed coherent in the AAI should both have high scores on the Secure Base Use and Support measures from the SBSS.

Prediction 4: A substantial portion of the relationship previously found between AAI Coherence and Secure Base Use and Support in the couple problem solving interactions will be accounted for by participants' secure base script knowledge.

Separate linear multiple regression analysis was used to evaluate the extent to which AAI Coherence and AAI_{SB} predict Secure Base Use and Secure Base Support in the laboratory. Hierarchical regression analyses was then employed to decompose the contributions of the two predictors to each total R² into their unique and common components.

Results

Prediction 1: There will be a positive correlation between the AAI_{SB} and AAI Coherence scales.

A correlation coefficient was computed between the AAI_{SB} and AAI Coherence scales. The results of the correlation analyses shows that the scales are positively and significantly correlated $r(58) = .64, p < .01$. This result supports the idea that individuals who have knowledge of the attachment script are also Coherent on the AAI.

Prediction 2: Modest correlations between the AAI_{SB} AAI Loving and Rejecting scales.

Correlation coefficients were computed among the AAI_{SB} and AAI Coherence scales with the Loving and Rejecting scales of the AAI. These correlations were then subjected to the Williams formula for testing the difference between two dependent correlations. The calculation utilized the correlation between the AAI Sub-Scale with the AAI_{SB} and with the AAI Coherence scale, in addition to the correlation between the AAI_{SB} and AAI Coherence scores and the total N. The procedure is based on dependent samples and the outcome is a t-value which is then evaluated against a t-table. The results are shown in Table 3 below.

Table 3.
Correlations of AAI_{SB} and AAI Coherence with Specific AAI State of Mind Scales and Significance Testing of Difference between the Two Correlations

AAI Subscale	AAI _{SB}	AAI Coherence	T-Value
Loving Mother N=59	.65**	.87**	3.96**
Loving Father N=59	.60**	.79**	2.78**
Rejecting Mother N=60	-.29*	-.39**	0.92
Rejecting Father N=58	-.32*	-.40**	0.67

** $p < 0.01$, (2-tailed); * $p < 0.05$, (2-tailed)

The results indicate that the AAI_{SB} scale is correlated with the sub-scales, but not so highly so as to think that these scales are interchangeable. The results indicate a 42% overlap between Loving mother and the AAI_{SB} scale. The results also show that there is 34% less overlap between the AAI_{SB} scale with Loving mother than the AAI Coherence scale. As for Loving father, the results show a 36% overlap with the AAI_{SB} scale, which is 26% less than the AAI Coherence scale. These correlations are consistent with the expectation that one would need a loving parent to provide the kind of consistent experience from which to build a script-like representation of early secure base experience. But they are not so high as to suggest that the script scoring criteria merely rephrase the Loving scale criteria, or that knowledge of loving behavior in the transcript is producing the script score through some sort of halo effect. If anything, that looks like a more serious problem for the Coherence scale, where the correlation approach the reliabilities of both scales.

For Rejecting Mother and Rejecting Father scales, the correlations are small but significant - 8% and 10% overlap with the AAI_{SB} scale. Correlations with the Coherence scale were also small but significant. These correlations are too low to raise issues of discriminant validity.

Prediction 3: The AAI_{SB} and AAI Coherence will both show a positive correlation with Secure Base Use and Support measures on the SBSS.

Correlation coefficients were computed among the AAI_{SB} and AAI Coherence scales with the Secure Base Use and Support measures on the SBSS. The results are presented in Table 4 below. The results show that individuals who know the secure base script show similar patterns of scores on both the AAI_{SB} and AAI Coherence scales.

Table 4.
Correlations of AAI_{SB} and AAI Coherence with Secure Base Use/Support

Wife SBSS	AAI _{SB}	AAI Coherence
Secure Base Use N=60	.503**	.501**
Secure Base Support N=60	.551**	.535**

** p < 0.01, (2-tailed); * p < 0.05, (2-tailed)

Prediction 4: A substantial portion of the relationship previously found between AAI Coherence and Secure Base Use and Support in the couple problem solving interactions will be accounted for by participants' secure base script knowledge.

Secure Base Use

The results of the multiple linear regression analyses show that AAI Coherence and AAI_{SB} account for 30.8% of the variance in Secure Base Use ($R^2 = .308$, $F(1, 57) = 12.69$, $p < .01$). The results of the hierarchical regression analyses on Secure Base Use are illustrated in Diagram 1. The unique contribution of AAI Coherence in predicting

Secure Base Use was 5.5% (step 2 R^2 change = .055, $F(1, 57) = 4.51$, $p = .038$). The unique contribution of AAI_{SB} was 5.7% (step 2 R^2 change = .057, $F(1, 57) = 4.73$, $p = .034$). The common predictive variance is therefore $30.8\% - 5.5\% - 5.7\% = 19.6\%$. As illustrated in segments, 1 and 2 of the Venn diagram, 78% of the overlap between AAI Coherence and laboratory secure base behavior is accounted for by AAI_{SB} script knowledge.

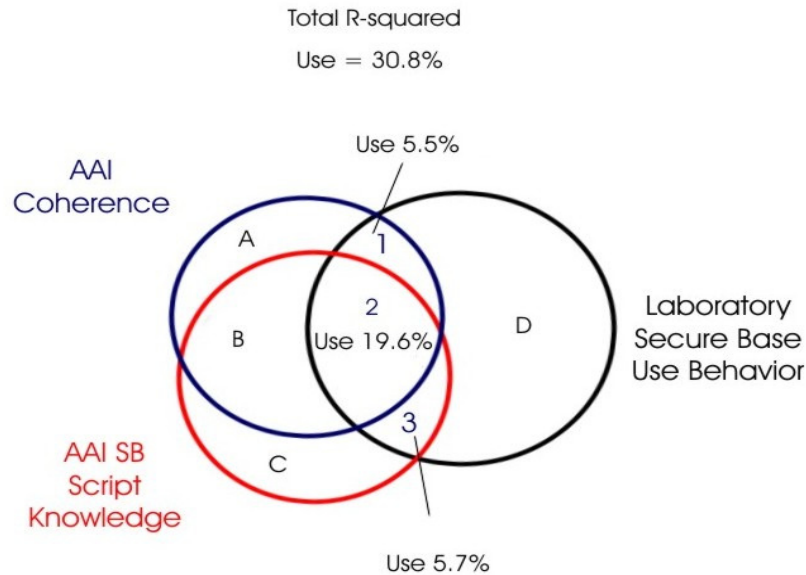


Diagram 1.

Venn Diagram of Secure Base Use with AAI Coherence and AAI_{SB}

Secure Base Support

The results of the linear multiple regression analyses show that AAI Coherence and AAI_{SB} account for 36% of the variance in Secure Base Support ($R^2 = .360$, $F(1, 57) = 16.05$, $p < .01$). The results of the hierarchical regression analyses on Secure Base Support are illustrated in Diagram 2. The unique contribution of AAI Coherence in predicting Secure Base Support was 5.7% (step 2 R^2 change = .057, $F(1, 57) = 5.09$, $p = .028$). The unique contribution of AAI_{SB} was 7.5% (step 2 R^2 change = .075, $F(1, 57) = 6.64$, $p = .013$). The common predictive variance is therefore $36\% - 5.7\% - 7.5\% = 22.8\%$. As illustrated in segments, 1 and 2 of the Venn diagram, 80% of the overlap between AAI Coherence and laboratory secure base behavior is accounted for by AAI_{SB} script knowledge.

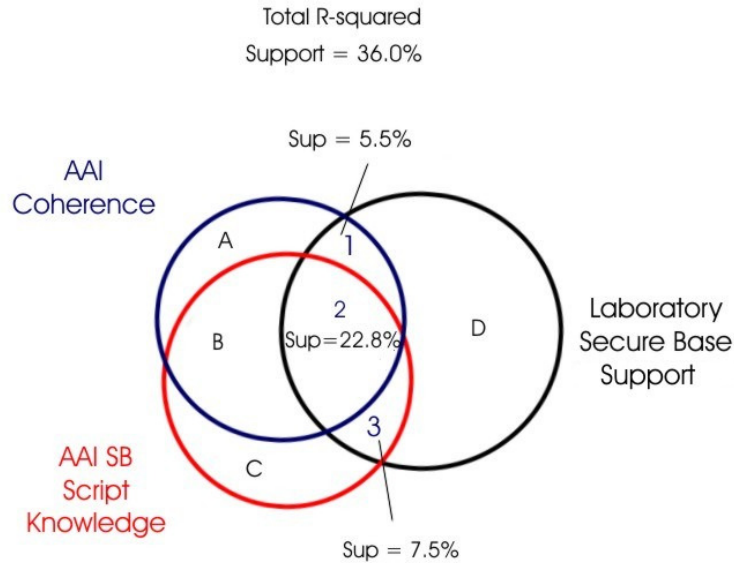


Diagram 2.

Venn Diagram of Secure Base Support with AAI Coherence and AAI_{SB}

Discussion

The secure base concept, central to Bowlby's attachment theory has been readily utilized in attachment research with children. The purpose of this research was to determine if the secure base concept actually does underscore our current research in adult attachment as well. Results of the first analyses showed that the AAI_{SB} scale does have concurrent validity with the AAI Coherence scale. It would be expected that individuals who score highly on the AAI_{SB} scale would also be able to be coherent in their AAI transcripts. Theoretically, we would expect this to be the case. Individuals who understand the secure base script would be more likely to have coherent transcripts. In fact, a point which was raised earlier in the paper, utilizing Grice's Maxims to score coherence lends to an understanding as to how these scores may run together. Individuals who have script knowledge have an easier time adhering to Grice's maxims just by nature of how a script operates cognitively. Individuals with secure base script knowledge more easily can stay on topic, and understand the beginning and end of the story since they are operating off of their script knowledge. In addition, their verbal reports of events from the past would be conveyed more coherently since they have a more organized cognitive structure to work from. The relationship of these two scales shows a 41% overlap. Obviously, there is similar information contained in both, however what is contained in each that is not contained in the other is of further theoretical interest.

The purpose of prediction #2 (modest correlations between the AAI_{SB} AAI Loving and Rejecting scales) was to show that the AAI_{SB} scale is more than just a re-conceptualizing of the Loving Mother/Father and Rejecting Mother/Father scales contained within the AAI. It would be expected to see some amount of overlap given that these scores are derived from the same transcript. However, it could be argued that the

AAI_{SB} scale is a re-formulation of these scales, and in particular of the Mother/Father Loving scales. Bear in mind, however that from a theoretical stand point, these scales are derived in entirely different ways. The Loving Mother/Father and Rejecting Mother/Father scales are experience scales from the AAI which are scored based on a coder's feelings of the interviewee's experiences during childhood. They are not based on the interviewee's own thoughts/feelings of how their parents behaved toward them during childhood. The AAI_{SB} scale is based on the individual's conceptualization of their experiences from childhood, which is more in line with the AAI state-of-mind scales than the experience scales. The results indicated that overall, the amount of overlap with all of these sub-scales was less for the AAI_{SB} scale than the AAI Coherence scale. Some amount of overlap with each of these sub-scales is not surprising given the fact that it would take a loving mother/father, showing consistent-supportive experiences in order for the child to develop script-like representations. In addition, the negative correlation between Rejecting Mother/Father and these scales would be expected given that a rejecting parent is not conducive to the development of a secure base script. The correlations were tested to see if they were significantly different, and the Loving Mother/Father scales were significantly less correlated with the AAI_{SB} scale than with the AAI Coherence scale.

The focus of this paper was to show that the relationship between AAI Coherence and the Secure Base Use & Support variables from the SBSS was substantially due to secure base content contained in the Coherence score. As expected, the AAI_{SB} scale showed a strong relationship with both the Secure Base Use and Secure Base Support scales from the SBSS. In addition, it is not surprising that there are similar correlations between these SBSS scales and the AAI Coherence score given that, from earlier analyses, it has been shown that there is a 41% overlap between the AAI_{SB} and AAI Coherence – consistent with the notion that secure base script knowledge accounts for a substantial portion of the individual differences traditionally discussed in terms of AAI Coherence.

As predicted, the regression analyses indicated that the correlations between AAI Coherence and laboratory secure base behavior reported by Crowell et al., (2002) are substantially explained by secure base script knowledge (78% for Secure Base Use and 80% for Secure Base Support, respectively).

Despite the fact that secure base script knowledge explains the bulk of the correlation between AAI Coherence and Secure Base Use and Support, Coherence made small but significant contributions to each (5.5% and 5.7%, respectively; both <.05). This study did not include measures that could directly address the nature of Coherence variance that is independent of secure base script knowledge and still correlated with laboratory secure base behavior. However, a measure as complex, personal, and emotionally charged as the AAI certainly must contain some components of depression, anxiety, and self esteem, that would influence laboratory interactions. In the same regard, variables such as relationship satisfaction, partner attachment status, or personality variables may account for the variance within both AAI Coherence and Secure Base Script knowledge that was not correlated with attachment behavior (A & C portions of Venn diagrams).

Similarly, this study does not include measures that could directly address the nature of the unique (unexplained) variance in AAI_{SB} scores and laboratory secure base behavior. The AAI_{SB} scale measures a cognitive construct, secure base script knowledge.

And the gap between cognition and behavior noted here is not peculiar to the attachment domain. Surely the same variables that account for the gap between cognition and behavior generally are in play here as well. In addition, a wide range of variables that are not specifically related to script knowledge, such as the partner's support for secure base behavior, relationship satisfaction, and situational/contextual factors in the assessment have some influence on secure base behavior.

In light of such influences, the substantial correlation between AAI_{SB} and laboratory secure base behavior is not diminished by the fact that there remains unexplained variance in both variables.

Significance

There are two distinct tracks in current attachment theory and research. The first focuses on secure base behavior in infancy and early childhood. The main assessments used in this age range are the Infant Strange Situation (and its adaptation for the preschool years) and the Attachment Q-set. Both focus on secure base behavior. The second track is based on Mary Main et. al.'s., influential 1985 paper, Security in infancy, childhood and adulthood: A move to the level of representation. The main assessment used in this work is the Adult Attachment Interview. Waters et al, 1991 described this situation as "a theory of infancy, a theory of adulthood and, in between, a great deal left to the imagination". Twenty years later, attachment theorists have not really bridged the gap between the secure base track and the mental representation track in theory or research.

The final hypothesis tested is an important step toward bridging the gap between the secure base track and the mental representation track in attachment theory and research. The answer is clear once we realize that, to a considerable extent, the representations captured in the AAI are representations of secure base experience. The "gap" between two tracks in attachment theory and research is not such a "gap" at all.

This study examined links between AAI Coherence, AAI secure base content, and adults secure base use and support in problem solving interactions. Confirming the hypotheses outlined above is only a first step. I have shown that secure base content in the AAI accounts for a good majority of the AAI's links to one specific domain of behavior. It would be of interest for researchers to use this project as a model, examining the AAI's many links to social behavior, personality, and adjustment to see whether AAI_{SB} accounts for these correlates as well or whether other aspects of AAI content is in play in predicting other criteria that are not as close to the secure base construct.

References

- Ainsworth, M. D. S. (1967). *Infancy in Uganda: Infant care and the growth of love*. Baltimore: Johns Hopkins University Press.
- Ainsworth, M.D.S., Bell, S. M., & Stayton, D. J. (1971). Individual differences in strange-situation behavior of one-year-olds. In H. R. Schaffer (ed.), *The origins of human social relations*. London and New York: Academic Press. Pp.17-58.
- Ainsworth, M. D., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of Attachment: A Psychological Study of the Strange Situation*. Hillsdale, NJ: Lawrence Erlbaum.
- Ainsworth, M. D. S. & Bowlby, J. (1991). An ethological approach to personality development. *American Psychologist*, *46*, 333-341.
- Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (1993). A psychometric study of the Adult Attachment Interview: Reliability and discriminant validity. *Developmental Psychology*, *29*, 870-879.
- Beijersbergen, M. D., Bakermans-Kranenburg, M. J., van IJzendoorn, M. H., Juffer, F. (2008). Stress regulation in adolescents: Physiological reactivity during the adult attachment interview and conflict interaction, *Child Development*, *79*, 1707-1720.
- Bowlby, J. (1958). Nature of the child's tie to his mother. *International Journal of Psycho-Analysis*, *39*, 350-373.
- Bowlby, J. (1969/82). *Attachment & loss: Attachment (Volume 1)*. New York: Basic Books.
- Bowlby, J. (1973). *Attachment & loss: Separation (Volume 2)*. New York: Basic Books.
- Bretherton, I. (1990). Open communication and internal working models: Their role in attachment relationships. In R. Thompson (Ed.), *Nebraska Symposium on Motivation, vol. 36; socioemotional development* (pp. 57-113). Lincoln, Nebraska: University of Nebraska Press.
- Coherence. (2010). In *Merriam-Webster Online Dictionary*. Retrieved (2010) from <http://www.merriam-webster.com/dictionary/coherence>.
- Crowell, J., Pan, H., Gao, Y., Treboux, D., & Waters, E. (1998). Scoring adults' secure base use and support: Overview of the Secure Base Scoring System (SBSS). Retrieved (2009) from <http://www.psychology.sunysb.edu/attachment/measures/content/sbss.pdf>.
- Crowell, J.A., Treboux, D., Gao, Y., Fyffe, C., Pan, H., Waters, E. (2002). Assessing secure base behavior in adulthood: development of a measure, links to adult attachment representations, and relations to couples' communication and reports of relationships, *Developmental Psychology*, *38*, 679-693.
- Crowell, J. A., Waters, E., Treboux, D., O'Connor, E., Colon-Downs, C., Feider, O., Golby, B., & Posada, G. (1996). Discriminant validity of the Adult Attachment Interview. *Child Development*, *67*, 2584-2599.

- Eysenck, H. J. (1961). "Psychoanalysis - Myth or Science?" *Inquiry* 4, 1-12.
- Fonagy, P., Steele, H., & Steele, M. (1991). Maternal representations of attachment during pregnancy predict the organization of infant-mother attachment at one year of age. *Child Development*, 62, 891-905.
- George, C., & Solomon, J. (1996). Representational models of relationships: Links between caregiving and attachment. *Infant Mental Health Journal*, 17, 198-216.
- Grice, H. P. (1975). Logic and conversation. In P. Cole & J. L. Moran (Eds.), *Syntax and semantics III: Speech acts* (pp. 41-58). New York: Academic Press.
- Grice, H. P. (1989). *Studies in the way of words*. Cambridge, Massachusetts: Harvard University Press.
- Gruenbaum, A. (1984). *The Foundations of Psychoanalysis: A Philosophical Critique*. Berkeley, CA: University of California Press.
- Hinde, R. A. (1991). Continuities and discontinuities. In M. Rutter (ed.), *Studies of psychosocial risk: The power of longitudinal data*. (pp. 376-384). Cambridge, England: Cambridge University Press.
- Main, M. (1985). Attachment: A move to the level of representation. Symposium conducted at the meeting of the Society for Research in Child Development, Toronto.
- Main, M. (1991). Metacognitive knowledge, metacognitive monitoring, and singular (coherent) vs. multiple (incoherent) models of attachment: Some findings and some directions for future research. In P. Marris, J. Stevenson-Hinde and C. Parkes, (Eds.), *Attachment Across the Life Cycle*, pp. 127-159. New York: Routledge.
- Main, M. (2000). The Adult Attachment Interview: Fear, attention, safety, and discourse processes. *Journal of the American Psychoanalytic Association*, 48, 1055-1096.
- Main, M., Hesse, E., & Kaplan, N. (2005). Predictability of behavior and representational processes related to attachment in the Berkeley Longitudinal Study: Attachment at 1, 6 and 19 years of age. In K. E. Grossmann, K. Grossmann, & E. Waters (Eds.), *The power of longitudinal studies in attachment*. New York: Guilford Press.
- Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood and adulthood: A move to the level of representation. In I. Bretherton & E. Waters (Eds.), *Growing points in attachment theory and research. Monographs of the Society for Research in Child Development*, 50(1-2, Serial No. 209), 66-106.
- Main, M. & Goldwyn, R. (1998). Adult attachment scoring and classification system. Unpublished manuscript. University of California at Berkeley.
- McAdams, D. P., & Pals, J. L. (2006). A new Big Five: Fundamental principles for an integrative science of personality. *American Psychologist*, 61, 204-217.
- Popper, K. (1963) *Conjectures and Refutations*, London: Routledge and Keagan Paul.
- Posada, G. & Waters, E. (1988). The Family Behavior Survey. Unpublished manuscript, State University of New York at Stony Brook.

- Sagi, A., van IJzendoorn, M. H., Scharf, M. H., Joels, T., Koren-Karie, N., Mayseless, O., & Aviezer, O. (1997). Ecological constraints for intergenerational transmission of attachment. *International Journal of Behavioral Development*, 20, 287-299.
- Sagi, A., Van IJzendoorn, M. H., Scharf, M. H., Koren-Karie, N., Joels, T., & Mayseless, O. (1994). Stability and discriminant validity of the Adult Attachment Interview: A psychometric study in young Israeli adults. *Developmental Psychology*, 30, 771-777.
- van IJzendoorn, M. H. (1995). Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the adult attachment interview. *Psychological Bulletin*, 117, 387-403.
- Ward, M. J., & Carlson, E. A. (1995). The predictive validity of the adult attachment interview for adolescent mothers. *Child Development*, 66, 69-79.
- Waters, E. & Beauchaine, T. (2003) Are there really patterns of attachment: Theoretical and empirical perspectives. *Developmental Psychology*, 39, 417-432.
- Waters, E., Kondo-Ikemura, K., Posada, G. & Richters, J. (1991). Learning to love: Mechanisms and milestones. In M. Gunner and Alan Sroufe (Eds.) *Minnesota Symposium on Child Psychology (Vol. 23: Self Processes and Development)*. 217-255.
- Waters, E., Merrick, S., Treboux, D., Crowell, J., & Albersheim, L. (2000). Attachment security in infancy and early adulthood: A 20-year longitudinal study. *Child Development*, 71, 684-689.
- Waters, E., Waters, T., & Crowell, J. Script-like Representations of Early Secure Base Experience in the AAI and in Brief Structured Narratives. Poster presented at the biennial meeting of the Society for Research in Child Development. Denver, CO. April, 2009.
- Waters, E., Treboux, D., Corcoran, D., & Crowell, J. Scoring secure versus insecure and dismissing versus preoccupied attachment as continuous variables: Discriminant analysis using AAI state of mind scales. Unpublished manuscript, State University of New York at Stony Brook.
- Waters, H. & Waters, E. (2006). The attachment working models concept: Among other things, we build script-like representations of secure base experiences. *Attachment and Human Development*, 8, 185-197.
- Waters, T. (in press). Secure base content in the Adult Attachment Interview. In E. Waters, B. Vaughn, & H. Waters (Eds.). *Measuring attachment*. New York: Guilford Press.

Appendix 1

AAI Questions (Outline Form)

1. Family Background

Could you start by helping me get oriented to your early family situation, and where you lived and so on? If you could tell me where you were born, whether you moved around much, what your family did at various times for a living?

2. Early Relationship

I'd like you to try to describe your relationship with your parents as a young child if you could start from as far back as you can remember?

3. Adjectives (Mother)

Now I'd like to ask you to choose five adjectives or words that reflect your relationship with your mother starting from as far back as you can remember in early childhood--as early as you can go, but say, age 5 to 12 is fine. I know this may take a bit of time, so go ahead and think for a minute...then I'd like to ask you why you chose them. I'll write each one down as you give them to me.

4. Adjectives (Father)

Now I'd like to ask you to choose five adjectives or words that reflect your childhood relationship with your father, again starting from as far back as you can remember in early childhood--as early as you can go, but again say, age 5 to 12 is fine. I know this may take a bit of time, so go ahead and think again for a minute...then I'd like to ask you why you chose them. I'll write each one down as you give them to me. (Interviewer repeats with probes as above).

5. Closest Parent

Now I wonder if you could tell me, to which parent did you feel the closest, and why? Why isn't there this feeling with the other parent?

6. Upset

When you were upset as a child, what would you do?

7. Separation

What is the first time you remember being separated from your parents?

8. Rejection

Did you ever feel rejected as a young child? Of course, looking back on it now, you may realize it wasn't really rejection, but what I'm trying to ask about here is whether you remember ever having rejected in childhood

9. Threatening

Were your parents ever threatening with you in any way - maybe for discipline, or even jokingly?

10. Effect of Early Experience

In general, how do you think your overall experiences with your parents have affected your adult personality?

11. Why parents behaved

Why do you think your parents behaved as they did during your childhood?

12. Other Significant Adults

Were there any other adults with whom you were close, like parents, as a child?

13. Other Losses

Did you experience the loss of a parent or other close loved one while you were a young child--for example, a sibling, or a close family member?

14. Trauma

Other than any difficult experiences you've already described, have you had any other experiences which you should regard as potentially traumatic?

15. Change relationship to parents

Now I'd like to ask you a few more questions about your relationship with your parents. Were there many changes in your relationship with your parents (or remaining parent) after childhood? We'll get to the present in a moment, but right now I mean changes occurring roughly between your childhood and your adulthood?

16. Current relationship w/ parent

Now I'd like to ask you, what is your relationship with your parents (or remaining parent) like for you now as an adult? Here I am asking about your current relationship.

17. Relationship to own children

I'd like to move now to a different sort of question--it's not about your relationship with your parents, instead it's about an aspect of your current relationship with (specific child of special interest to the researcher, or all the participant's children considered together). How do you respond now, in terms of feelings, when you separate from your child / children?

18. Three wishes

If you had three wishes for your child twenty years from now, what would they be? I'm thinking partly of the kind of future you would like to see for your child I'll give you a minute or two to think about this one.

19. Lessons Learned

Is there any particular thing which you feel you learned above all from your own childhood experiences? I'm thinking here of something you feel you might have gained from the kind of childhood you had.

20. Hopes for children

We've been focusing a lot on the past in this interview, but I'd like to end up looking quite a ways into the future. We've just talked about what you think you may have learned from your own childhood experiences. I'd like to end by asking you what would you hope your child (or, your imagined child) might have learned from his/her experiences of being parented by you?