Attachment-related information processing: exploring the effect of attachment organization on cognitive regulation in adults
Zeijlmans van Emmichoven, I.A.

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Chapter 1

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Introduction

The studies reported in this thesis examine Bowlby’s (1980) hypothesis that differences in attachment security are associated with variations in information processing. Using experimental paradigms, we studied attention, memory, expectations and perception in nonclinical individuals and anxiety patients. A detailed introduction to the studies is given in each chapter. In this general introduction, we provide a résumé of relevant aspects of attachment theory and information processing.

Attachment theory, as originally developed by John Bowlby (1973, 1980, 1984) and empirically expanded by Mary Ainsworth (Ainsworth, Blehar, Waters, & Wall, 1978), proposes that internal working models of attachment, that is, mental representations of attachment relationships are, at least partially, shaped by early childhood experiences with primary caregivers. These attachment representations enable children to anticipate their caregivers’ behavior, to interpret it, and to adapt their own behavior to that of their caregivers. Parents who are not consistently sensitive or responsive towards the child’s signals of anxiety are thought to contribute to the development of an insecure mental representation of attachment.

In young children, attachment behavior -- a precursor of the internal working model of attachment -- is assessed in a laboratory procedure involving two brief separations from the parent (Strange Situation Procedure; Ainsworth et al., 1978). Children's reactions towards the parent during reunion allows differentiation of the children in four groups. Some children are easily comforted after separation and resume playing again. These children reveal a secure attachment relationship. Other children tend to avoid the parent after separation and seem to concentrate on toys; these children show anxious-avoidant attachment behavior. The third group consists of anxious-ambivalent children who alternately seek contact and angrily resist contact with the parent after separation. The fourth group is called disorganized-disoriented; it includes children who appear to have no consistent strategy at reunion to handle the distress caused by the separation (Main & Solomon, 1990). For older children methods have been developed to tap into the child’s attachment representation through responses to photographs, family drawings, story completion, or through analyses of parent-child discourse (for an overview, see Main, 1995).

In adults, internal working models of attachment can be identified by means of the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985). This is a semi-structured interview with questions concerning the relationships with parents in the past and the present, and questions concerning memories of specific attachment-related experiences like illness, emotional distress, rejection, separation, trauma and loss. The interview transcript is coded according to a manual (Main & Goldwyn, 1994). To ensure reliability, AAI coders are trained intensively (see Hesse, 1999). Again, respondents can be classified into four types of attachment representations. These classifications are determined by how respondents speak about their experiences in terms of coherence of thought and language during the interview, rather than by what they say. Individuals classified as autonomous (or securely attached) on the basis of their AAI transcript tend to value attachment relationships. They present a coherent picture of their attachment biography, whether their childhood attachment-related experiences were favorable or not. Dismissing (or avoidantly attached) adults tend to dismiss
the importance and influence of attachment relationships in their lives. On an abstract semantic level they usually present a positive image of their parents, but they are unable to support it with childhood memories of a loving parent. An idealizing stance and a claim of lack of childhood memories are highly characteristic of these individuals. Preoccupied adults seem very ambivalent about their attachment relationships and are unable to describe their experiences coherently. They may still be angry with their parents or may passively try to please them. Finally, an unresolved state of mind with respect to loss or trauma is coded when respondents show signs of disorganization or disorientation during discussions of potentially traumatic events.

There is a substantial concordance between parental and infant attachment classifications (about 75%); this is not dependent on whether the AAI is administered to a parent before or after the birth of a child (van IJzendoorn, 1995). These findings corroborate the notion of intergenerational transmission of attachment security: sensitivity and responsiveness of the parent towards the child are presumed to be influenced by the parent’s own attachment representation. Several longitudinal studies seem to confirm the continuity (and lawful discontinuity) of attachment representations across the first 20 years of life (see Hesse, 1999).

As the utilization of the construct “working model” already suggests, new experiences will leave traces in the mental representations of attachment. Especially in early childhood, internal working models are updated along with development. However, Bowlby (1973) postulated that, once they are established, mental attachment representations will become increasingly resistant to change in the course of time because they are thought to function on an automatic level. Attachment representations are assumed to regulate information processing and consequently tend to become self-confirming. The internal working model of attachment is defined as "... a set of conscious and/or unconscious rules for the organization of information relevant to attachment and for obtaining or limiting access to that information ..." (Main, Kaplan, & Cassidy, 1985, pp. 66-67). Consequently, internal working models established early in life are thought to be of great influence on all attachment-relevant situations to come. Theoretically, attachment representations bear resemblance to cognitive schemata: knowledge structures acquired by integrating and evaluating experiences and reinforced by their effect on information processing (e.g. Williams, Watts, MacLeod, & Mathews, 1997).

The attachment system is regarded as one of the behavioral control systems human beings are equipped with from birth on. It is a flexible system, directed at adaptation to a wide scope of environmental variation for reasons of survival (Bowlby, 1984; Ainsworth et al., 1978) and reproductive fitness (Belsky, 1999). This implies that human beings must regulate their internal states and must be able to adapt their strategies to regularities and irregularities in the environment. Main (1990) was the first to consider differences between primary and secondary attachment strategies and thereby increased the understanding of individual differences in attachment behavior. Secure attachment is presumed to be the primary attachment strategy; in case of experienced threat, the child turns to the caregiver for help. If the caregiver is available and sensitively responsive towards the child, the primary strategy suffices to make the child feel secure again and resume exploration of the environment. Main (1990) argued that insecure attachment developed as a secondary
(conditional) strategy in response to rejecting or inconsistently responsive caregiver behavior. In case of an unresponsive caregiver, such as a parent who is unlikely to react to pronounced signals of distress, the child will deactivate attachment behavior (e.g., conceal distress) and thereby elicit the support and care that the caregiver is capable of providing (see also Cassidy & Kobak, 1988). This implies that the child will focus its attention on its environment at the expense of primary attachment behavior. In case of an inconsistently responsive caregiver, the child will hyperactivate attachment behavior (e.g., maximize the expression of distress) to attract the caregiver’s attention, at the expense of attention to its environment (see also Cassidy & Berlin, 1994). For an extended and partially alternative view of conditional attachment strategies from a modern evolutionary viewpoint, see Belsky (1999).

To sustain conditional attachment organization, attention, memory, perception and expectations as well as behavioral mechanisms need to be utilized (Main et al., 1985). A cognitive strategy constructed from experience ensures the best possible outcome of attachment behavior. It serves adaptive self-protective and self-enhancing functions, although it may subsequently interfere with adequate updating of the internal working model (Bretherton & Munholland, 1999). This implies that information processing is different between autonomous and insecure attachment representations, and possibly even between dismissing and preoccupied states of mind with regard to attachment. Although this proposition is often stated as a fact in attachment literature and sometimes endorsed by correlational data, controlled evidence for differences in cognitive processing between secure and insecure attachment representations is rare (Rutter, 1995; Rutter & O’Connor, 1999). Two studies directly assessed the effect of attachment security on attention to and memory for affective information in children. In one study, it was found that in three-year old children, memory for affectively laden events varied as a function of attachment security: securely attached children remembered positive events better than negative events, while the reverse was true for insecurely attached children; no differences were found for the children’s attention to the positive and negative events (Belsky, Spritz, & Crnic, 1996). Another study of attachment-related information processing in preschoolers showed that insecure-avoidant children turned their attention away from attachment-related stimuli, but no evidence was found for insecure-ambivalent children turning their attention toward these stimuli. Securely attached children showed better memory for stories concerning responsive and stories concerning rejecting attachment interactions than both groups of insecure children (Kirsch & Cassidy, 1997). We are not aware of other experimental studies of information processing in relation to attachment representations in children or in adults. In Chapter 4 we will discuss a study of information processing in relation to attachment style (Baldwin, Fehr, Keedian, Seidel, & Thomson, 1993). However, the attachment style questionnaire applied in that study is directed at current behavior in partner relationships and is not associated with attachment representations as classified by means of the Adult Attachment Interview (for an overview of different attachment measures, see Crowell, Fraley, & Shaver, 1999).

In this thesis, bias in information processing as a function of attachment security is one of the two main topics. The other main issue concerns the relation between attachment security and anxiety disorders. In the past decades, most of the research on anxiety disorders has been inspired by the cognitive-psychophysiological model (e.g., Barlow, 1988; Clark, 1986; see also McNally, 1990; Williams et al., 1997). However, there has also been a renewed interest
in the role of early developmental and rearing experiences on the etiology and pathogenesis of agoraphobia (Goldstein, 1982; Kolk, 1989; Shear, 1996). Attachment theory proposes that agoraphobia may partly result from insecure attachment representations (Liotti, 1991). Bowlby (1973) proposed that an anxious-ambivalent internal working model of attachment plays a key role in the etiology of agoraphobia. He considered the fear of leaving home or a significant other (also called: separation anxiety) the central symptom of this condition and thought this was best accounted for by a history of childhood anxiety regarding the availability of the attachment figure. A meta-analysis by de Ruiter & van IJzendoorn (1992) revealed that agoraphobics indeed report significantly more childhood separation anxiety and parental overprotection than panic disorder patients without agoraphobia and normal controls. These authors conclude that anxious-ambivalent (preoccupied) attachment is a risk factor for the development of agoraphobia. However, many studies of the childhood experiences of agoraphobics indirectly test attachment-theoretical hypotheses and utilize retrospective self-report measures concerning the childhood memories of the participants. As mental representations of attachment are presumed to function on an automatic level and are hardly open to self-reflection through self-report, it is thought more suitable to investigate attachment organization by means of the Adult Attachment Interview (George et al., 1985), a measurement tool that does not rely on retrospection by the respondent.

If Bowlby’s hypothesis about the etiology of agoraphobia would turn out to be empirically valid, this would have strong implications for treatment strategies. It has been stated that not even half of the agoraphobia patients treated with therapeutic techniques based on the cognitive-psychophysiological model, show clinically significant recovery (e.g. Jacobson, Wilson, & Tupper, 1988; Roy-Byrne & Cowley, 1995). In a thorough overview of treatment-effect studies, Roth & Fonagy (1996, Chapter 6) concluded that about two-thirds of the patients suffering from panic disorder with agoraphobia profit from cognitive-behavioral therapy. However, when looking at absolute instead of relative improvement, it appears that only 25% to 33% of the agoraphobia patients show full recovery. Although cognitive-behavioral therapy (in combination with psychopharmacological treatment; see van Balkom, Bakker, Spinhoven, Blaauw, Smeenk, & Ruesink 1997; Bakker, van Balkom, Spinhoven, Blaauw, & van Dyck, 1998) is the treatment of first choice in panic disorder with agoraphobia, severe agoraphobia may require additional treatment (Roth & Fonagy, 1996).

For several reasons, it is conceivable that insecurely attached agoraphobics may benefit less from cognitive-behavioral therapy than securely attached ones. Attachment security is thought to be conducive to successful treatment; an autonomous state of mind with regard to attachment is characterized by the capacity for flexible reflection on emotional experiences and fewer restrictions on affective expression than insecure attachment; also, it may have an enhancing effect on the therapeutic relationship and on treatment compliance (Dozier & Tyrrell, 1998; Slade, 1999). Furthermore, if agoraphobia is based on distressing attachment experiences more than on a psychophysically conditioned learning history, the issue of attachment insecurity should also be addressed in psychotherapy. However, before conducting research in these directions, it is indicated to investigate whether there is a relation at all between anxiety disorder diagnosis and the state of mind with regard to attachment.
Chapter 1

Research questions

In this thesis, the following research questions are addressed:
1. Is it possible to experimentally demonstrate differences in information processing between adults with autonomous and adults with insecure attachment representations?
2. Is there a demonstrable difference in information processing between adults with dismissing and adults with preoccupied attachment representations?
3. Are differences in attachment-related processing of a general nature or do they only show in specific domains of information processing like attention, memory, expectations or perception?
4. Do information-processing biases determined by attachment (in)security differentiate agoraphobic patients from non-agoraphobic anxiety disorder patients?

Readers familiar with attachment theory will notice that we do not formulate specific research questions regarding the unresolved AAI classification. The reason is that the indices for the unresolved attachment category in the AAI are not representative of the overall state of mind with regard to attachment and consequently individuals classified as unresolved receive a best-fitting alternate classification as autonomous, dismissing or preoccupied. Up to date, there is no reason to expect unresolved loss or trauma (as defined in the AAI) to regulate information processing in a specific way. We will, however, analyze our data with both three-group and four-group AAI classifications.

Organization of the thesis

Sensory inflow from the environment goes through many stages of selection, interpretation and appraisal before it affects behavior. Limitations within the cognitive system lead to competition and selectivity in processing, that may take the form of activation or inhibition and result in output differences. The information-processing paradigm allows researchers to investigate individual differences in selectivity and capacity for the processing of specific types of stimuli (Williams et al., 1997).

In the study presented in Chapter 2, early attentional information processing in relation to attachment security was investigated by means of the emotional Stroop task. In a sample of participants without DSM-diagnoses, two Stroop experiments were carried out, one with generally threatening stimuli and one with attachment-related threatening stimuli. The aim of the study was to investigate whether the anxiety raised by the threatening stimuli would elicit differences in task performance between autonomous and insecurely attached participants. To differentiate between preconscious and conscious attentional processing, stimuli were administered both subliminally and supraliminally.

Chapter 3 describes the investigation of cognitive processing in relation to the quality of attachment in an anxiety disorder sample. Selective attention, as measured by means of the emotional Stroop task, was expected to be more pronounced in a clinical sample as it is an frequently documented phenomenon in affective disorders. Again, stimuli were administered both subliminally and supraliminally. Furthermore, differences in elaboration of threatening stimuli as a function of attachment organization were investigated by means of a free recall task and a recognition memory task.
Chapter 4 describes the study of attachment-related expectations concerning the reaction of a romantic partner in both a nonclinical and an anxiety disorder sample. We examined the assumption that relationship expectations are congruous with adult attachment representations, which we expected to result in systematic biases in the processing of relationship information. This was studied by means of a primed lexical decision task, which allows the investigation of the kind of interpersonal outcome an individual automatically associates with various relationship-related situations. Two different methods of adult attachment assessment were applied to investigate their converging and their predictive power.

The previous studies all applied linguistic tasks; it has, however, been suggested that pictures can assess affective associations more directly than words can (de Houwer & Hermans, 1994). In Chapter 5, a study is reported on the processing of pictorial stimuli. We investigated the effect of attachment security on perceptual processing in both a nonclinical and an anxiety disorder sample. By means of the Defense Mechanism Test, we administered a generally threatening and a separation-related picture and investigated whether insecure attachment representations were characterized by perceptual defensive strategies like enhanced or inhibited threat perception.

Finally, Chapter 6 presents a general discussion of our findings on variations in information processing as a function of the mental representation of attachment. Furthermore, we reflect on the implications for future research into attachment-related information processing.