Attachment-related information processing: exploring the effect of attachment organization on cognitive regulation in adults
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Chapter 6

General discussion and concluding remarks
To enhance understanding of the effect of attachment organization on cognitive regulation in adults, we investigated biases in information processing as a function of the mental representation of attachment. We administered the Adult Attachment Interview to our participants to assess their state of mind with regard to attachment and applied several paradigms to study individual differences in attention, memory, expectations and perception. We will discuss our findings in light of the research questions we set out with. Furthermore, we will consider the sample characteristics and the methodological limitations of our studies, and we will formulate recommendations for future studies.

Research questions and answers

1. Is it possible to experimentally demonstrate differences in information processing between adults with autonomous and adults with insecure attachment representations? As reported in Chapters 2 and 3, we found provisional evidence that insecurely attached adults differ from autonomous ones in encoding and retrieving incoming information. Insecure attachment in a nonclinical sample was found to go together with a general response inhibition on the Stroop task, without differential effects for emotional valence of the stimuli. In an anxiety disorder sample, cognitive avoidance of threatening stimuli by insecurely attached participants was found both on the Stroop task and on the free-recall memory task.

2. Is there a demonstrable difference in information processing between adults with dismissing and adults with preoccupied attachment representations? The attention and memory tasks did not differentiate between dismissing and preoccupied participants. As reported in Chapter 4, on a strategic level dismissing participants showed deactivation at the cost of response speed. They differed from both autonomous and preoccupied individuals in the regulation applied when confronted with attachment-relevant situations, regardless of the positive or negative valence of the situation. From our findings with the primed lexical decision task, we may conclude that to support a dismissingly organized attachment strategy, attention is focused away from aspects of the situation that activate attachment-related thoughts and emotions. Findings from the DMT studies reported in Chapter 5 indicate that dismissing individuals minimize the expression of negative emotion when confronted with separation threat, while preoccupied individuals maximized their attention to separation threat. As the task results may concern a response bias more than a perception bias, we cannot make sure whether the two insecure groups really differ in their appraisal of threat. Their task strategy, however, is different in quality.

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? We have found provisional evidence that there may be a single insecure attachment representation, regulating attention and memory in a way different from an autonomous attachment representation. Regarding expectations and perception, when the tasks require participants to select and execute a response, we can tentatively conclude that conditional strategies are applied. Dismissing individuals seem to apply a deactivating
strategy, while preoccupied individuals seem hypervigilant when confronted with threatening stimuli.

In attachment theory the internal working model is considered a cognitive schema. A cognitive schema is basically defined as "...a stored body of knowledge which interacts with the encoding, comprehension and/or retrieval of new information in its domain, by guiding attention, expectancies, interpretation and memory search" (Williams et al., 1997, p. 211). In addition, the majority of cognitive researchers agree that a schema should have a consistent internal structure, used as a template to organize new information; it should contain prototypical representations of environmental regularities; and it should be of a modular nature, in the sense that activation of any part will tend to activate the whole schema (Williams et al., 1997). In this light, our findings indicate that there are two attachment schemata: an autonomous and an insecure one. The insecure attachment schema can lead to a dismissing or a preoccupied strategy to handle attachment-related threat.

Summarizing the answers to our first three research questions, we can provisionally conclude that the two insecure attachment groups do not differ from each other in encoding and retrieving (threatening) information, but differ in their response selection and response performance when confronted with attachment-related threat. Corroborating evidence for these findings is found in studies of young children. It has been shown that insecurely attached children experience similar autonomic arousal in the Strange Situation Procedure, but differ in their overt behavioral reactions to separation stress (Sroufe & Waters, 1977; see also Fox & Card, 1999). In home observations, it was found that infants classified as insecurely attached were more emotionally upset with their mothers than securely attached children, but the two insecure groups did not differ from each other in home behavior (Ainsworth et al., 1978).

When coding the AAI, insecure adults are primarily differentiated from autonomous ones by the incoherences in their discourse. In applying the AAI classification system, preoccupied and dismissing respondents are assigned similar (low) scores for coherence, although the indices these scores are derived from are typically different. We propose that these indices reflect the strategy with which respondents approach the interview (Main & Goldwyn, 1994), but this does not necessarily imply that there are two insecure attachment schemata. We suggest that dismissing and preoccupied individuals have different learning histories from which their respective strategies to handle distress and anxiety are developed. However, these strategies are both based on the same childhood issue: their caregivers' behavior towards them being inconsistent with their primary attachment needs as a child. Dismissing individuals have learned to restrain their emotional expression, while preoccupied individuals have learned to heighten their emotional expression. To distinguish basic security versus insecurity from dimensions in insecurity, attachment Q-sort systems have been developed to (Waters & Deane, 1985; Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993). Fyffe & Waters (1997) applied discriminant analyses to the continuous AAI subscale scores and found that they also yield two dimensions: secure versus insecure and dismissing versus preoccupied. Although psychometric issues of these alternative measures still need further research, in a future study the application of continuous attachment measures might further our knowledge of the effect of attachment organization on information processing.
4. Do information-processing biases determined by attachment (in)security differentiate agoraphobic patients from non-agoraphobic anxiety disorder patients? In the clinical samples, we found no significant relation between attachment representation and agoraphobia. Put otherwise, attachment insecurity does not differentiate agoraphobics from non-agoraphobic anxiety patients. Performance on the attention and memory tasks did not differ between agoraphobic and non-agoraphobic anxiety patients. On the lexical decision task, agoraphobic participants displayed an attentional bias for a stimulus concerning being abandoned by an adult relationship partner. On the Defense Mechanism Test, agoraphobics (compared to non-agoraphobic anxiety patients) displayed a better recognition of separation threat compared to general threat. These findings are in line with a variety of experimental findings that anxious individuals deploy more processing resources to threatening information, which shows in attention being directed toward potential sources of threat (Mathews & MacLeod, 1994). Our findings corroborate the proposition that separation is a relevant theme in agoraphobia (Bowlby, 1973; Shear, 1996). However, insecurely attached agoraphobics less often recognized the separation threat in the DMT than autonomous agoraphobics and non-agoraphobic anxiety patients (regardless of their attachment classification). We suggest that attachment insecurity may be an extra burden in agoraphobics and therefore may have a stronger effect on emotion regulation, leading to a negative response bias when confronted with separation threat.

Although we did not employ matched nonclinical and anxiety disorder samples, we will reflect on similarities and differences between the two groups in performance on the various tasks.

We found a general response inhibition on the Stroop task in insecurely attached nonclinical participants, and avoidance of the processing of threatening stimuli on the Stroop task and on the free-recall memory task in insecurely attached anxiety patients. Questions have been raised about whether selective information processing in anxiety consists of an automatic bias towards the processing of threatening information, or whether anxiety may also be associated with cognitive avoidance, which indicates the activation of fear is prevented (Williams et al., 1996). We suggest that, in the clinical sample, the insecurely attached participants showed faster response times to threatening stimuli to avoid arousal, while the autonomous anxiety patients showed the color-naming interference of threatening stimuli usually found in anxiety patients. In the nonclinical sample, the undifferentiated response inhibition of insecurely attached participants points at a general inability to maintain attentional focus; their anxious arousal or defensive withdrawal seems to interfere with reaction time performance (see also de Ruiter & Brosschot, 1994).

On the lexical decision task, we found quite similar main and interference effects for the dismissing group in both the nonclinical and the anxiety disorder sample. On the Defense Mechanism Test, we found superior recognition of separation threat in both nonclinical and anxiety-disordered preoccupied participants, consistent with their assumed hyperactivating strategy. Nonclinical dismissing participants also showed superior recognition of separation threat, while anxiety-disordered dismissing participants reported the separation threat less often than the autonomous group. Apparently, a dismissing state of mind in combination with an anxiety disorder leads to a negative response bias when confronted with separation threat.
Sample characteristics

The AAI distributions within our samples are reflected on in the different chapters. Overall, it is striking that we found less unresolved AAI classifications than other studies have found (van IJzendoorn & Bakermans-Kranenburg, 1996). We consider this a possible case of self-selection: as participation in our experiments was voluntary and required a lot of time and energy from the respondents, unresolved individuals may have been less inclined to expose themselves to intensive interviewing and testing.

In line with other studies, we found higher rates of attachment insecurity in clinical than in nonclinical samples (see van IJzendoorn & Bakermans-Kranenburg, 1996). However, in contrast to the findings of other studies (Fonagy et al., 1996; Manassis et al., 1994), we found a higher prevalence of dismissing attachment classifications in our anxiety disorder samples. Theoretically, anxiety disorders are expected to be associated with preoccupied attachment: anxiety regarding the availability of the attachment figure leads to fearing the absence of a secure base (Bowlby, 1973). However, it has been suggested that "...differences in internalizing versus externalizing symptomatology will be more relevant to attachment states of mind than the general label of 'anxiety disorder'" (Dozier et al., 1999, p. 505). Although only anecdotal, when administering the diagnostic interviews it did strike two of our interviewers that some agoraphobics indicated they preferred to be alone rather than in the company of a significant other, while no signs of social phobia were found in these interviews. In future clinical studies, attention should be given to possible heterogeneity within disorders, especially along the internalization-externalization dimension (see Dozier et al., 1999).

Methodological limitations

In each of the chapters, the specific limitations of the different tests and experimental conditions have been discussed. There is, however, a general issue that we want to address here. We set out to demonstrate that the three states of mind with regard to attachment in adults, as assessed by means of the AAI, have a different effect on information processing. One cannot expect to find these differences if the three groups are not perfectly distinguished. In the AAI, there is a certain overlap between the three classifications; they correlate positively on some of the subscales. Furthermore, the scale scores, important in the bottom-up process of classification, are not (yet) reliable. Also, intercoder agreement on the AAI is about 80% (van IJzendoorn & Bakermans-Kranenburg, 1997). This indicates that one out of every five AAI's in our studies may have been classified incorrectly. Although we used reliable coders and double-coders, this problem is never fully accounted for.

Concluding remarks

Attachment theory proposes that unfortunate rearing experiences influence development in the areas of emotional, cognitive and behavioral functioning. Specific features of the relationships with primary caregivers in infancy are mentally organized into a cognitive
representation: a knowledge base representing the most salient aspects of attachment-related experiences. This is efficient in view of the vast amount of information that presents itself for processing in daily life, but may also constrain processing flexibility: the internal structure of the schema regulates perception and interpretation in accordance with the configuration of the representation. Insecure attachment representations are thought to function on an automatic level, but may also influence deliberate efforts to regulate emotional arousal (Bretherton & Munholland, 1999). As yet, there is no experimental evidence that the two insecure attachment strategies result from two different insecure attachment schemata; there is, however, substantial evidence that the two types of insecure attachment behavior observed in children are also evident in regulatory processes in adults (e.g. Cassidy, 1994).

In this thesis, we have presented provisional evidence for differences in information processing between autonomous and insecure states of mind with regard to attachment. Our results indicate that dismissing and preoccupied individuals do not differ in encoding and retrieval processes, but apply different strategies in their response selection and response performance when confronted with attachment-related threat. A question that remains is to what extent attachment insecurity and psychopathological anxiety regulate cognitive processing. We want to stress the fact that our studies are exploratory and necessitate further study and replications in refined experimental conditions. We recommend that future investigators of attachment-related information processing in adults employ matched nonclinical and anxiety disorder samples to further study the association of anxiety disorders with attachment insecurity and its effect on information processing; address the issue of heterogeneity within psychiatric disorders; and apply continuous measures to differentiate between dimensions of attachment security and attachment strategy.