Attachment-related information processing: exploring the effect of attachment organization on cognitive regulation in adults
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Chapter 4

Attachment-related expectations about adult relationships

To examine the assumption that relationship expectations are congruous with adult attachment representations as assessed with the Adult Attachment Interview, we applied a primed lexical decision task in a nonclinical (n = 34) and in an anxiety disorder (n = 37) sample. Only dismissively attached individuals showed significant reaction time interference. When confronted with stimuli referring to a potential partner's reaction, dismissing nonclinical participants were most distracted from their task by stimuli related to behaving independently in a relationship. Anxiety-disordered dismissing participants were most distracted by stimuli related to being upset. Dismissingly attached individuals may loose processing capacity through their efforts to deactivate their attachment-related affective arousal. Also, they seem to focus on task-performance rather than on task-content.

We are grateful to Dr. Mark W. Baldwin, who provided us with the details of the software used by him and his co-workers in their 1993 study. Thanks are also due to Drs. Joost Beek and his co-workers of the Johan Weyer Instituut for recruiting the patients who participated in Experiment 2.
Attachment theory (Bowlby, 1973, 1984) proposes that the internal working model of attachment, as developed in early childhood, continues to influence subsequent relationships in adolescence and adulthood. Although attachment research initially concerned observations of parent-child interactions (e.g., Ainsworth, Blehar, Waters, & Wall, 1978), Bowlby (1984) certainly thought childhood attachment experiences to be relevant for affectional bonds throughout the life cycle. In the past two decades, attachment theory has generated a vast amount of research, and developmental, clinical and social psychologists nowadays apply attachment theory in studies dealing with every age period (see Cassidy & Shaver, 1999). In the studies described in this paper, we investigate whether expectations about adult relationships are congruous with attachment representations as developed in childhood experiences with primary caregivers (Experiment 1), and we examine the relation between anxiety disorders and attachment-related expectations about relationships (Experiment 2).

Attachment theory describes social-emotional development in terms of affect regulation and it’s influence on cognition and behavior. Early in life, children start developing a working model (or mental representation) of the relationships with their major attachment figures and of themselves in those relationships (Bowlby, 1973). Central to the working models are expectations about the availability of the attachment figure in stressful situations and a judgement of how worthy one is in the eyes of the attachment figures. These two models -- the model of the attachment figure and of the self -- are suggested to be complementary and mutually confirming (Verschueren, Marcoen, & Schoefs, 1996). Sensitive and responsive parents are thought to contribute to the development of a secure internal working model of attachment, while inconsistently responsive or irresponsive parents are supposed to contribute to insecure attachment representations. Main (1990) conceived of insecure infant attachment patterns as conditional strategies: children of consistently irresponsive or inconsistently responsive parents develop a behavioral strategy that may permit the maintenance of proximity and self-organization under conditions of rejection by or preoccupation of the parent. Conditional, as opposed to primary attachment strategies are less flexible because of the attentional control needed to let them override the supposedly continually active primary attachment behavioral system (Main, 1995). Over time, the expectations incorporated into the working model come to form a cognitive attachment schema that guides the interpretation of ambiguous relational events and organizes the vast amount of potentially relevant incoming information along its guideline (Main, Kaplan, & Cassidy, 1985). Consequently, insecure mental representations are assumed to regulate information processing to sustain the conditional attachment organizations.

In this paper, we investigate expectations about the behavior of a potential partner in an adult relationship, assuming that secure and insecure mental models of attachment will regulate these expectations in different ways. Bowlby (1980) argued that humans defensively exclude information from further processing when the affective content refers to past suffering. Nowadays, one speaks of selective attention when some information is excluded from further processing because priority is given to other information that fits the cognitive representation (MacLeod & Mathews, 1991). The process of information exclusion, usually referred to as biased information processing, has been subject of a vast
amount of research by cognitive psychologists in the past two decades. Information processing paradigms have been applied to different emotional states, experimentally investigating whether specific biases in the processing of threatening information may go together with specific affective symptoms or syndromes. There is strong support for the hypothesis that vulnerability to anxiety is associated with a selective processing bias operating within the cognitive system in a manner that favors threat-related information (for a review, see Mathews & MacLeod, 1994). We have recently applied the information processing paradigm to the study of insecurely attached nonclinical individuals (Zeijlmans van Emmichoven, de Ruiter, & Brosschot, 2000) and of anxiety disorder patients (Zeijlmans van Emmichoven, van IJzendoorn, & de Ruiter, 2000) to investigate biases in the processing of emotionally threatening material (anxiety-provoking words) as a function of attachment security in adults. However, little is yet known about the effect of different attachment representations on the processing of potentially threatening relationship information (e.g., stimuli like being rejected, being ignored). People develop cognitive structures representing regularities in patterns of interpersonal relatedness (Baldwin, 1992). If relationship expectations are congruous with pre-existing representations, as is predicted from attachment theory (Bowlby, 1973), systematic patterns in the cognitive processing of relationship information may be evident.

Baldwin, Fehr, Keedian, Seidel and Thomson (1993) investigated the effect of adult attachment style on relationship expectations. Using an experimental paradigm, they found that the way relationship information is processed could be linked to attachment style. They examined the type of interpersonal outcomes an individual automatically associates with various relationship-related behaviors by means of a lexical decision task. In this task, a letter string is presented to the participants with the instruction to decide as fast as possible whether the string offered is a word or a nonword. Research has shown that participants generally recognize words more quickly when they are set in a relevant context, for example, when the target words are preceded by a related prime (for a review, see Neeley, 1991). The prime activates a cognitive schema, which presumably facilitates access to information relevant for that schema. Priming or activating a representation makes it more accessible and more likely to influence a later, seemingly unrelated, task by inducing a bias in the processing of the unrelated task.

Baldwin et al. (1993) reasoned that a primed lexical decision task could reveal the if-then structure of interpersonal expectations. Priming the if element of the contingency was expected to increase the activation of the expected outcome as well. Offering participants a context sentence before asking them to make a lexical decision, they found that participants were quicker to identify a word that gave a logical outcome to a priming sentence when the word fitted their attachment style. Securely attached individuals were quicker to identify words representing positive interpersonal outcomes, for example, "If I depend on my partner then my partner will ... support". Insecurely attached individuals, however, were quicker to identify negative outcome words, for example, "If I depend on my partner then my partner will ... leave". The if-then format of the primed lexical decision task directly focuses on the procedural aspect of relationship expectations. The priming of the schemata by offering context sentences activates scripts that function outside awareness, and makes them more accessible. The activated script is then supposed to regulate the processing of
information, on a relatively automatic level of consciousness, in a direction that fits the script.

Like Baldwin et al.’s (1993) study, most investigations of adult attachment relationships have originated from the social-psychological discipline. Hazan and Shaver (1987) were the first who explicitly proposed and studied linkages between working models of attachment as developed in childhood and adult partner relationship styles. Their work lead to numerous social-psychological studies on the relation between childhood and adult attachment bonds (for an overview, see Feeney & Noller, 1996; Feeney, 1999). Hazan and Shaver (1987) developed a self-report measure of adult attachment, based on the childhood attachment classifications as defined by Ainsworth et al. (1978): respondents can rate themselves as secure, avoidant or ambivalent in partner relationships. In this social-psychological tradition, other self-report (and related interview) measures of partner attachment were developed to overcome the limitations of Hazan and Shaver’s (1987) three-group categorical measure. These measures have in common that they are directed at the attachment style adults maintain in affectional relationships.

In the developmentally oriented tradition of attachment research, another measure of adult attachment was developed: the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985). This interview is based on the notion that attachment representations operate at least partly outside awareness and consequently cannot be fully assessed through self-report. In the AAI, respondents are asked about their childhood attachment relationships in general and in specific situations, and about the way they think their experiences have influenced the development of their adult personality. The verbatim transcript of the AAI is examined on a literal level; the scoring system (Main & Goldwyn, 1994) relies primarily on structural dimensions (like consistency in the discourse of the respondent) by focusing on coherence and contradictions in the course of the interview, rather than on the content of the narrative. The AAI thus assesses a general mental representation of attachment and the classifications do not rely on retrospection by the respondent. The AAI leads to three classifications for a respondent’s state of mind with regard to attachment, that also show similarity to Ainsworth et al.’s (1978) classifications of childhood attachment behavior. Respondents identified as autonomous on the AAI are characterized by their valuing of attachment, and by talking about their attachment experiences in a balanced, clear and coherent way. Dismissing attachment is revealed in the AAI by a claim for limited recall of attachment experiences. These respondents show restricted feelings regarding attachment experiences and often contradict themselves when presenting a general idealizing view of their attachment figures that cannot be corroborated by positive episodic memories. Individuals classified as preoccupied on the AAI typically talk in a very incoherent way about their past and show confusion about or continuing anger with their major attachment figures.

Although both assessment methods are grounded in the Bowlby-Ainsworth attachment theory, attachment style measures are considered to be fundamentally different from and not interchangeable with the AAI (Crowell & Treboux, 1995; Crowell, Fraley, & Shaver, 1999). In the social-psychological tradition, attachment is an interpersonal concept, and attachment style measures focus on feelings in current relationships that respondents directly report on. In the developmental tradition, attachment is an intrapersonal concept, and the AAI focuses on the partly unconscious dynamics of the internal working models. In the experiments described here, we studied expectations and not actual relationships, and
attached expectations

assumed the AAI would best indicate the direction of expectations about a potential partner's behavior in attachment-related situations. Also, we considered the AAI more suitable for an information-processing paradigm, because we consider mental attachment representations to be cognitive schemata that have a partly automatic effect on cognitive processing.

The present studies were designed to investigate the effect of the mental attachment representation on expectations about partner relationships. Experiment 1 was devised to closely resemble Baldwin et al.'s (1993) second study. Our expectations are based on the hypotheses about the characteristic information processing styles of persons with various attachment representations. Attachment representations are thought to regulate the way in which individuals cope with negative affects. Dismissing individuals minimize or deactivate their negative emotions, turning their attention away from negative attachment experiences, whereas preoccupied individuals maximize or hyperactivate their negative emotions, being easily overwhelmed by negative attachment experiences (see Kobak & Sceery, 1988; Cassidy, 1994). Autonomous individuals maintain a balance between expressing their concerns and emotions, and orienting towards other aspects of their environment. When presented with a positive reaction of a partner in an emotionally difficult situation by means of a primed lexical decision task, we expect dismissing participants to show relatively short reaction times because the situation most closely resembles the conscious picture they paint of their experiences in emotionally difficult situations. Put otherwise: the situation presented is congruous with their idealizing stance. Preoccupied participants are expected to show longer response latencies to a positive interaction, because it is contrary to their expectations and distracts them from their task. When presented with a negative outcome of a relationship interaction, we expect preoccupied participants to show relatively short reaction times because the situation matches their preoccupation with disagreeable emotional experiences. Dismissing participants, on the other hand, are expected to be unpleasantly surprised when confronted with a negative interaction, because this refers to what they prefer not to notice. This will make their response latencies longer. Autonomous participants are expected to react equally fast to both positive and negative outcome targets, because they are supposed to be able to handle both positive and negative affects equally adequate. Because the lexical decision task is directed at interpersonal expectations, and to be able to assess the predictive power of attachment representations as assessed with the AAI versus self-report attachment-style measures, we administered both the AAI, the Relationship Questionnaire (Bartholomew & Horowitz, 1991) and the Adult Attachment Scale (Collins & Read, 1990). It was expected that there would be a strong convergence between the two attachment style measures. In view of Baldwin et al.'s (1993) results, we predict that individuals self-classified as securely attached will show shorter response latencies on positive interpersonal outcome words, while participants self-classified as insecurely attached will show the shortest reaction times to negative interactions. To be able to differentiate between the effect of high levels of trait and/or state anxiety (known to increase the tendency to selectively process threatening information; cf. MacLeod, 1996) and the effect of attachment insecurity per se, response latencies are controlled for influence of trait and state anxiety.
Experiments

Method

Participants and Procedure

Forty-six psychology students who had been interviewed with the AAI in a previous experiment (Zeijlmans van Emmichoven & Olff, 2000) were invited to participate in Experiment 1. Of this group, 34 individuals (13 men, 21 women; mean age 24 years, range 17-50) responded to a letter or phone call asking them to take part in this "retest," which took place about two months after the AAI had been conducted. The non-response group did not differ significantly from the responders in AAI distribution, age, sex, relationship status, state and trait anxiety.

Respondents individually visited our lab and completed the State-Trait Anxiety Inventory, the lexical decision task, the Relationship Questionnaire and the Adult Attachment Scale. The whole session took approximately 30 minutes. Participants received either Hfl. 10 or course credit for their participation.

Measures

Adult Attachment Interview. The AAI is a semi-structured interview with 21 questions plus standardized probes. Respondents are asked for descriptions of their childhood relationships with their parents in general, and in specific situations like illness, distress, and separation. Furthermore, they are asked about memories of rejection and threat by the parents, and about abuse by and loss of important figures. Respondents are also asked how they think their childhood experiences have influenced them and (if relevant) their behavior towards their own children, and they are asked about their current relationship with their parents.

The coding system of the AAI does not depend on what respondents say they remember, but on how they speak about their experiences in terms of coherence (Main & Goldwyn, 1994). By means of the AAI, respondents can be classified into one of three states of mind with respect to attachment. Individuals rated autonomous on the AAI are characterized by free access to attachment-related memories, a coherent organization of information relevant to attachment and a clear insight in the effects of their experiences, whether good or bad, on their personality development and their current behavior. The topic of attachment is open to them, shown by a balanced view on and a thoughtful narrative about their experiences. Individuals classified as dismissing on the AAI tend to present a positive picture of their parents or their childhood experiences on a semantic level, while on an episodic level they may claim lack of memory for matching positive incidents or contradict themselves by implicitly telling about experiences with rejection or neglect. They generally deny the influence of past experiences on their current functioning and emphasize their personal independence. Individuals are classified as preoccupied on the AAI when they show a prevailing involvement with their past experiences and their current relationships with their attachment figures. This is sometimes expressed through excessive anger, sometimes through predominant passivity in their language use. Their discourse is incoherent owing to unclear and irrelevant speech. Finally, respondents can be classified as unresolved with respect to loss or trauma. This shows through incoherent thoughts or speech when questioned about the circumstances of the loss or trauma, or by a history of
extreme behavioral reactions to loss or trauma that remains unintegrated. In addition to a primary \textit{unresolved} classification, these respondents receive a secondary classification as autonomous, dismissing or preoccupied with respect to attachment.

Stability, discriminant validity and predictive validity of the AAI have been shown to be satisfactory (Bakermans-Kranenburg \& van IJzendoorn, 1993; van IJzendoorn, 1995). Adult attachment classifications show a reasonable test-retest reliability over 2- and 12-month periods, and are independent of IQ, autobiographical memory, verbal ability, social desirability, interviewer, and coder (Bakermans-Kranenburg \& van IJzendoorn, 1993; Sagi et al., 1994; Benoit \& Parker, 1994).

The AAI’s of the participants in this study were coded according to the manual (Main \& Goldwyn, 1994) by I.A. Zeijlmans van Emmichoven, who was trained by M. Main and E. Hesse in Leiden, the Netherlands, in 1995, and has an intercoder reliability over 83% with M. Main. Eleven of the AAI’s (32%) were double-coded by Dr. C. Schuengel, who was trained in Regensburg, Germany, in 1993 and in Leiden, the Netherlands, in 1995. Percentage of agreement on these 11 cases was 91% (\(\kappa = .86\)) both for the 3-category and the 4-category classification. A difference in classification of one interview was discussed to agreement.

\textbf{Lexical decision task.} The lexical decision task was run on a 386 microcomputer with a high-resolution VGA color monitor. A small response panel with keys marked ‘yes’ and ‘no’ was connected to the computer. The stimuli were displayed in light gray letters on a dark Grey background. The light level in the room was set somewhat low.

Stimuli: The lexical decision task comprised three attachment-related and three neutral context sentences. A sentence could be followed by a positive, a negative or a neutral outcome target, or by one of three nonwords. Target words were matched for length and frequency (Uit den Boogaart, 1975). The attachment-related sentences were chosen to represent three crucial domains in interpersonal situations: being upset, feeling insecure, and behaving independently. The outcome targets were either positive (comfort, support, appreciate) or negative (reject, ignore, disapprove). For each attachment-related domain a neutral (non-interpersonal) sentence with a neutral outcome target served as control. Finally, each outcome target was matched with a nonword: a common verb with the first letter changed. Every sentence was combined with a positive, a negative, a neutral and three nonword targets. Each combination was presented twice, resulting in a total of 72 trials. For each participant the task was newly randomized, with the restriction that the same domain could not appear in successive trials.

Procedure: The task started out with 9 practice trials for lexical decisions. Participants were instructed to decide as fast as possible whether a target was a normal Dutch word by pressing the ‘yes’ or the ‘no’ key on a response panel. Before the stimuli were offered, a fixation mark (==) was presented for 500 msec. in the center of the computer screen. The targets appeared in the same spot in 6-mm high capitals. The words remained on the screen until the person reacted, with a maximal allowed reaction time of 1500 msec. When a participant made more than one mistake, instructions and practice trials were repeated once. Next, participants were informed they would have to perform another task simultaneously: they were shown sentences about situations in a close relationship and were instructed to read them carefully and memorize them for a later recall task, alternated with the
"original" task of making lexical decisions. Nine practice trials for the combined task followed. The sentences appeared word by word (600 msec per word) in the center of the computer screen; after 1000 msec, the fixation mark and the target word followed. Participants initiated each new trial by pressing any button on the response panel. When they made more than one mistake, instructions and practice trials were repeated once. Finally, participants were offered the 72 trials of the proper task. In the end, participants were informed that after all they would not be required to perform a memory task.

**Questionnaires.** The State-Trait Anxiety Inventory (STAI; Dutch version: van der Ploeg, Defares, & Spielberger, 1979) contains 20 statements about trait anxiety and 20 statements about state anxiety. Respondents indicate on a four-point scale how strongly the statements apply to them. Internal consistency (alpha) in this study was .91 for trait anxiety and .90 for state anxiety. The psychometric qualities of the STAI have been found satisfactory, and the manual provides norm scores.

The Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991) is a self-classification method consisting of four vignettes describing possible feelings in partner relationships. Respondents indicate which vignette describes them best. The RQ is based on Hazan and Shaver's (1987) three-category typology, which closely resembles Ainsworth's et al.'s (1978) descriptions of children's behavior in the Strange Situation as secure, avoidant or ambivalent. By dividing attachment styles along two dimensions (model of self and model of other), Bartholomew and Horowitz describe two types of avoidant attachment style: dismissing of intimacy or fearful of intimacy. This results in four categories: secure, preoccupied, dismissing, and fearful with respect to attachment. Our choice for the RQ instead of Hazan and Shaver's measure is based on the idea that the categories of the RQ show more analogy to the AAI coding system, while there is known to be a strong correlation between the RQ and Hazan and Shaver's classification method (Crowell & Treboux, 1995). Scharfe and Bartholomew (1994) report moderate stability of the RQ.

The Adult Attachment Scale (AAS; Collins & Read, 1990) was also developed from Hazan and Shaver's typology and consists of 18 statements about feelings in close relationships. Respondents indicate on a five-point scale how strongly the statements apply to them. The item scores are added up on three scales: closeness, which concerns the extent to which respondents are comfortable with closeness and intimacy; dependence, which concerns the extent to which people trust others and depend on them to be available when needed; and anxiety, which concerns the respondent's fear of being abandoned and not being loved in partner relationships. Internal consistency (alpha) in our study was .75 on the dependence subscale, .57 on the anxiety subscale and .72 on the closeness subscale. Overall, alpha was .70 for the whole AAS.

**Results**

**AAI Distribution**

Thirteen participants (38.2%) were classified as autonomous, 13 (38.2%) as dismissing and 8 (23.5%) as preoccupied. The AAI distributions are shown in Table 1. The three-way AAI distribution in our sample did not differ significantly from the AAI distribution usually found in nonclinical adolescent and young adult samples (van IJzendoorn & Bakermans-
Attachment-related expectations

Kranenburg, 1996; Kroonenberg, 1998). The four-way distribution, however, differed significantly from the normscores ($\chi^2 (3) = 21.02, p < .01$) as only one of the participants had a classification for unresolved loss. As a check, all analyses were performed excluding this participant. As this made no difference in the results, she was then classified as preoccupied. There were no differences between the AAI groups for age, sex, or relationship status.

<table>
<thead>
<tr>
<th></th>
<th>Experiment 1</th>
<th></th>
<th>Experiment 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dismissing</td>
<td>13</td>
<td>38.2%</td>
<td>9</td>
<td>29.0%</td>
</tr>
<tr>
<td>Autonomous</td>
<td>13</td>
<td>38.2%</td>
<td>8</td>
<td>25.8%</td>
</tr>
<tr>
<td>Preoccupied</td>
<td>8</td>
<td>23.5%</td>
<td>14</td>
<td>45.2%</td>
</tr>
<tr>
<td>Dismissing</td>
<td>13</td>
<td>38.2%</td>
<td>8</td>
<td>25.8%</td>
</tr>
<tr>
<td>Autonomous</td>
<td>13</td>
<td>38.2%</td>
<td>8</td>
<td>25.8%</td>
</tr>
<tr>
<td>Preoccupied</td>
<td>7</td>
<td>20.6%</td>
<td>8</td>
<td>25.8%</td>
</tr>
<tr>
<td>Unresolved</td>
<td>1</td>
<td>2.9%</td>
<td>7</td>
<td>22.6%</td>
</tr>
</tbody>
</table>

Table 1. Distributions of 3-way and 4-way AAI classifications in both experiments

**STAI**
The mean score for state anxiety was 37 ($SD = 7.6$). This is slightly higher than the normative scores for university students (7th decile). The mean score for trait anxiety was 38 ($SD = 7.6$). This is also slightly higher than the normative scores for university students (males: 7th decile; females: 6th decile). There was no significant relation between the trait and state scores on the STAI on one hand, and the AAI and RQ classifications on the other hand. There was a significant negative correlation between the STAI trait and the AAS scales closeness ($r = -.56, p < .01$, two-tailed) and dependency ($r = -.35, p < .05$, two-tailed). There was no significant relation between both STAI scores and the response latencies on the lexical decision task for any of the stimulus types. For this reason the STAI was left out of further analyses.

**Relationship Questionnaires**
On the RQ, 11 respondents (32.4%) classified themselves as secure, 8 (23.5%) as fearful, 6 (17.6%) as preoccupied and 9 (26.5%) as dismissing. This distribution did not differ significantly from the distribution reported by Bartholomew and Horowitz (1991; Kroonenberg, 1998). There was no significant relation between the self-classifications of the RQ and the interview-based classifications of the AAI ($\chi^2 (6) = 2.24, ns$). When we reduced RQ classifications and AAI classifications to the level of secure versus insecure, there also was no significant relation ($\chi^2 (1) = .36, ns$). The mean scores on the three AAS scales did not differ significantly from the normscores (Collins & Read, 1990; Kroonenberg, 1998). AAS scale scores were not related to AAI classifications (anxiety: $F (2,33) = 0.38, ns$; closeness: $F (2,33) = 1.49, ns$; dependency: $F (2,33) = 2.05, ns$). The scores on the AAS were significantly related to RQ self-classifications: respondents who classified themselves as preoccupied on the RQ scored significantly higher on the AAS subscale “anxiety”; and
respondents who classified themselves as secure on the RQ scored significantly higher on the AAS subscales “dependency” and “closeness” (see Table 2).

<table>
<thead>
<tr>
<th></th>
<th>Secure</th>
<th>Fearful</th>
<th>Preoccupied</th>
<th>Dismissing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>1.9 (.46)\textsuperscript{b}</td>
<td>2.5 (.68)</td>
<td>3.0 (.64)\textsuperscript{a}</td>
<td>1.8 (.34)\textsuperscript{b}</td>
</tr>
<tr>
<td>Dependency</td>
<td>4.0 (.69)\textsuperscript{a}</td>
<td>2.0 (.53)\textsuperscript{b}</td>
<td>3.3 (.36)</td>
<td>3.0 (.77)\textsuperscript{b}</td>
</tr>
<tr>
<td>Closeness</td>
<td>4.3 (.32)\textsuperscript{a}</td>
<td>3.0 (.91)\textsuperscript{b}</td>
<td>3.7 (.57)</td>
<td>3.4 (.61)\textsuperscript{b}</td>
</tr>
</tbody>
</table>

Table 2. Mean AAS scale scores (SD’s in brackets) for RQ classifications in Experiment 1

*Note. a > b; p < .000; n = 34*

**Lexical Decision Task**

Results on the LDT were checked for response errors (responding "word" to nonwords or vice versa) and missing values (response latencies over 1500 msec.). There were less than 2% missing values and less than 3% response errors; these were excluded from the analyses and only correct responses were analyzed.

![Graph](image)

**Figure 1.** Mean reaction times (in msecs) for positive and negative target words on the LDT for participants in Experiment 1, classified by means of the Relationship Questionnaire.
When the lexical decision reaction times were analyzed with a repeated-measures analysis of variance (ANOVA)\(^1\) with RQ classification as between-subject factor and domain, context sentence and target word as within-subject factors, no significant effects were revealed (see Figure 1). Also, there was no significant relation between the scale scores on the AAS and the response latencies on the LDT. Furthermore, there was no relation between relationship status and LDT-scores.

Next, response latencies to word targets were subjected to a repeated-measures analysis of variance (ANOVA)\(^1\) with one between-subjects factor (AAI classification) and three within-subject factors: domain (being upset, feeling insecure, and behaving independently), context sentence (attachment-related or neutral) and target word (positive, negative or neutral).

Our hypothesis that dismissing individuals would show the longest response latencies on interpersonally primed negative outcome targets, while preoccupied individuals would show the longest response latencies on interpersonally primed positive outcome targets, was not supported: there was no interaction effect for AAI classification x context sentence x target word. Mean reaction times on the LDT are presented in Table 3 and, specified by domain, in Figure 2.

<table>
<thead>
<tr>
<th>Context sentence</th>
<th>Outcome target</th>
<th>Dismissing ((n = 13))</th>
<th>Autonomous ((n = 13))</th>
<th>Preoccupied ((n = 8))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment-related</td>
<td>Positive</td>
<td>770 (135)</td>
<td>697 (109)</td>
<td>677 (119)</td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>816 (147)</td>
<td>706 (92)</td>
<td>665 (109)</td>
</tr>
<tr>
<td></td>
<td>Negative</td>
<td>847 (188)</td>
<td>711 (103)</td>
<td>675 (133)</td>
</tr>
<tr>
<td>Neutral</td>
<td>Positive</td>
<td>831 (178)</td>
<td>674 (102)</td>
<td>669 (87)</td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>814 (166)</td>
<td>692 (129)</td>
<td>682 (163)</td>
</tr>
<tr>
<td></td>
<td>Negative</td>
<td>843 (204)</td>
<td>717 (86)</td>
<td>731 (147)</td>
</tr>
</tbody>
</table>

Table 3. Mean reaction times in msecs (SD's in brackets) for positive, neutral and negative target words on the LDT for participants in Experiment 1

There was a significant main effect for AAI classification (\(F (2,33) = 4.26, p < .05\)). Post-hoc analyses (Tukey's HSD) revealed that dismissing participants reacted consistently slower on most trials. When covarying out the baseline mean reaction times for neutral target words, the main effect for AAI classification disappeared and the AAI classification x domain x context sentence x target word interaction effect was then significant (\(F (4,68) = 3.18, p < .05\)). Post-hoc analyses (Tukey's HSD) revealed that this effect occurred when participants were primed with the context sentence of behaving independently. When primed with this attachment-related context sentence, dismissing individuals showed significantly longer response latencies on the positive outcome target than preoccupied participants (\(F (2,33) = 5.97, p < .01\)). On the negative outcome target primed with this attachment-related context sentence, dismissing participants showed significantly longer response latencies than did autonomous individuals (\(F (2,33) = 4.09, p < .05\)). In the context of being upset,
dismissing participants showed significantly longer response latencies on the negative target \( F(2,33) = 3.49, p < .05 \). When unprimed (context sentences being unrelated to an interpersonal situation) dismissing participants showed significantly longer response latencies on positive targets than did autonomous and preoccupied individuals \( F(2,33) = 5.62, p < .01 \).

![Figure 2. Mean reaction times (in msecs) for positive and negative target words on the LDT for participants in Experiment 1.](image)

**Discussion**

The present experiment was designed to investigate the association between adult attachment organization and relationship expectations. We expected priming sentences to facilitate reaction times on a subsequent lexical decision task when the combination of sentence and word fitted the presumed characteristics of the different attachment representations. Our hypothesis that participants would show shorter response latencies when the connection between context sentence and outcome word was congruous with their attachment schema and longer response latencies when the connection between context sentence and outcome word was contrary to their attachment schema was not clearly supported.

Overall, dismissing respondents reacted slower on most trials, whatever the emotional valence of the stimuli offered. After statistically controlling for variability in overall response speed, some interesting differences turned up. As expected, after an
Attachment-related priming sentence dismissing participants took longer to identify two negative interpersonal outcome words, but they also took longer to identify one of the positive outcome words. The effect of a dismissing state of mind on lexical decision making was most pronounced in the domain of behaving independently, where dismissing respondents took longer to respond to both the positive and the negative outcome word. This can be interpreted in light of the AAI, where dismissing respondents are characterized by an unrealistic emphasis on their personal independence, even when questioned about childhood memories of being rejected by their attachment figure(s). Note, however, that Dozier and Kobak (1992) showed that skin conductance levels increased in dismissing participants when they were asked about difficult attachment experiences in the course of the AAI, even while these participants verbally reported extremely positive parental interactions or played down the importance of early negative experiences with separation or rejection. Longer response latencies on the LDT when confronted with the domain of behaving independently in a relationship may be in line with these findings: dismissing participants may have slowed down on the response task because of autonomous arousal which may have cost them processing capacity. There could also be a carry-over effect from mixing the stimulus types: once the attachment representation is activated, dismissing individuals tend to show a deactivating strategy (Dozier & Kobak, 1992) which may interfere with their task achievement, while autonomous and preoccupied individuals can remain focused on their task because they experience no problems with the stimuli (as is expected from the autonomous respondents), or because they are excessively focused anyway on everything that has to do with attachment (as is hypothesized about preoccupied respondents).

Reflecting on the divergence between our experiment and Baldwin et al.’s (1993) LDT study, several issues can addressed. In our study, we compared two types of attachment classification instruments originating from the two different research traditions. We found no association between the attachment style measures and the AAI, which is congruous with the different theoretical models of attachment in adults underlying these measures, as well as with previous studies (see Bartholomew & Shaver, 1998; Crowell et al., 1999). Scores on the Relationship Questionnaire and the Adult Attachment Scale were not related to our LDT results. A possible explanation may lie in the fact that we used stimuli for the LDT that were not directly related to the AAI, while Baldwin et al. offered context stimuli that were closely linked to their classification measure. The domains of dependency, closeness and trust they used as context sentences are similar to the dimensions that Collins and Read (1990) developed, based on Hazan and Shaver’s (1987) categorical measure that Baldwin et al. used as their attachment self-classification method. In a short time-span, their participants "revealed" their expectations in these domains and classified themselves in the same domains, which may have facilitated the convergence Baldwin et al. found. On the other hand, based on research and theory from the developmental tradition, we had specific hypotheses about the way individuals with different attachment representations were expected to perform on the LDT, that were not convincingly endorsed by our results.

Even though adult attachment behavior is presumed to be linked to attachment-related experiences from childhood, and behavior in adult relationships involves the attachment system in the development of an enduring bond (Hazan & Zeifman, 1999; Crowell et al., 1999), Owens et al. (1995) found only a moderate concordance found between AAI-based
classifications and the representations of attachment to an adult love partner. Owens et al. note that individuals may have multiple, yet related working models of close relationships, and Bartholomew and Shaver (1998) remark that, although a single representational model of attachment may underlie responses to different attachment measures, an individual's specific pattern of attachment can vary according to the type of relationship under investigation. In future experimentally controlled studies of expectations about adult relationships, it may be useful to compare classifications based on the AAI, the AAI-based Current Relationships Interview (CRI; see Crowell et al., 1999) and interview measures of partner attachment that do not rely on self-report (see Crowell et al., 1999).

We found strong associations between RQ classifications and AAS scale scores, consistent with their common theoretical background and similar to what Collins and Read (1990) report on the relation between the AAS and the Hazan and Shaver (1987) measure. Furthermore, we found that high trait-anxious individuals, compared to low trait-anxious respondents, thought themselves less comfortable with closeness and intimacy, and were less trusting of a partner to be available when needed (according to their scores on the AAS).

It is a well-established finding that high trait anxiety and clinical anxiety influence information processing (see Mathews & MacLeod, 1994). Furthermore, anxiety disorders are known to go together with fears concerning interpersonal issues. To investigate the relation between attachment insecurity, anxiety disorder and relationship expectations, we applied the LDT paradigm in an anxiety disorder sample.

**Experiment 2**

**Introduction**

Attachment insecurity has been pointed out as a risk factor for the development of psychopathology (Bowlby, 1973; see also Dozier, Stovall, & Albus, 1999). It is presumed that the processing of attachment-related information by insecurely attached individuals is biased because of the secondary (insecure) strategies that regulate the expression of attachment-related affect (Bretherton & Munholland, 1999). Consequently, this cognitive bias is also thought to regulate expectations about relationships. Secure attachment may be protective against the development of psychopathology, because securely attached individuals tend to be ego-resilient, able to elicit social support and expecting to be supported by others when in need, while insecurely attached individuals tend to be less ego-resilient and less socially competent (Kobak & Scerey, 1988).

In the past decade, a higher rate of insecure attachment classifications has been found in psychiatric than in nonclinical samples (van IJzendoorn & Bakermans-Kranenburg, 1996). In anxiety disorder samples, for example, high rates of preoccupied and unresolved attachment representations were found (Fonagy et al., 1996; Manassis, Bradley, Goldberg, Hood, & Swinson, 1994). Bowlby (1973) suggested a relation between agoraphobia and insecure attachment, viewing agoraphobia as a disorder of anxious attachment caused by disturbed family interaction patterns. A meta-analysis revealed that agoraphobics report significantly more childhood separation-anxiety and parental overprotection compared to panic disorder patients without agoraphobia and normal controls (de Ruiter & van IJzendoorn, 1992). A review by Fokias and Tyler (1995) also showed that the role of social
Attachment-related expectations

support in the development and maintenance of agoraphobia is a large one. Personality patterns of dependency on significant others and an avoidant coping style, combined with distressing life events and prolonged interpersonal conflict, seem to play an important role in the vulnerability for development and maintenance of agoraphobia (Kleiner & Marshall, 1987).

In cognitive-experimental clinical studies, it has often been found that anxiety disorder patients are characterized by an information-processing bias, attending more and faster to stimuli that are relevant for their affective state, especially when the information provided refers to something they experience as threatening (for a review, see Williams, Mathews, & MacLeod, 1996). This kind of research has generally used stimulus material developed around the objects and situations anxiety patients fear. In the cognitive-behavioral study of agoraphobia, however, interpersonal elements of the fears have been underexposed. A characteristic criterion for agoraphobia (DSM-IV; APA, 1994) is that patients are extremely concerned with their expectations of potential helpers' unavailability in case of their feeling unwell or panicking. Other anxiety disorders also have social components; for example a strong fear of being criticized in social phobia, excessive feelings of responsibility in obsessive-compulsive disorder, excessive worrying in generalized anxiety disorder. The poor expectations about the availability of help by a trusted other, however, are specific for agoraphobics. Shear (1996) brings together cognitive-behavioral and psychodynamic theorizing about anxiety disorders by showing how attachment cognitions probably play a role in the etiology and maintenance of panic disorder and agoraphobia. She states that a purely neurobiological view of anxiety is too narrow, and makes out a case for the revaluation of the attachment-separation paradigm in the study of panic disorder and agoraphobia.

Investigating whether attachment-related expectations in agoraphobic patients show a different pattern than in individuals with other anxiety disorders, we may contribute to the understanding of the role of insecure attachment in psychopathology, especially in the attachment-security cognitions of agoraphobics. We hypothesize that the expectations incorporated in the attachment representation of anxiety disorder patients will make them show a stronger differential effect on the LDT than the nonclinical individuals participating in Experiment 1, because anxiety disorder patients are expected to be more concerned with reactions of important others. Like in Experiment 1, we expect dismissing respondents be slower to identify primed negative outcome words and preoccupied respondents to be slower to identify primed positive outcome words on the lexical decision task. These hypotheses may be more valid for a clinical sample, because anxiety disorder patients are likely to be more concerned with attachment issues due to their suffering of an incapacitating disorder with a strong interpersonal factor. Furthermore, we expect to find a higher rate of insecure attachment representations in the clinical sample, especially unresolved classifications and, in the three-way categorization, more preoccupied classifications (Fonagy et al., 1996; Manassis et al., 1994; de Ruiter & van IJzendoorn, 1992).
Method
Participants and Procedure
Thirty-seven individuals participated in this study. The sample consisted of 12 men and 25 women, mean age 39 (range 20-55). They were all anxiety disorder outpatients referred for treatment to a local psychiatric hospital. The interviewing and testing in most cases took place in the period between the intake procedure and the start of cognitive-behavioral psychotherapy.

Participants were tested individually at our lab. Participation consisted of three 1.5-hour sessions, at which the Anxiety Disorders Interview Schedule-Revised, the AAI, the lexical decision task, a perception task not reported on here, and the STAII were administered. Respondents received Hfl. 50 for their participation.

Data from 6 participants were excluded from all analyses. Their results on the lexical decision task were unfit for analysis because of error rates over 25% (2 persons were not familiar enough with the Dutch language) or more than 25% missing values (2 persons had less than optimal eyesight; 2 persons did not understand the (repeated) instructions).

The remaining sample consisted of 11 men and 20 women (mean age 38). All participants met DSM-IV criteria for an anxiety disorder as primary diagnosis (panic disorder with agoraphobia, n = 18; panic disorder, n = 4; social phobia, n = 2; obsessive-compulsive disorder, n = 5; generalized anxiety disorder, n = 1; anxiety disorder not otherwise specified, n = 1). All diagnoses were afterwards compared with the psychiatric assessments from the outpatient clinic. There were no disagreements on the primary diagnosis being an anxiety disorder and there were no disagreements on the agoraphobia diagnoses.

Twenty-three of the participants received medication at the time of testing: 19 were using an antidepressant, 1 was using a benzodiazepine and 3 were using both an antidepressant and a benzodiazepine. Eleven participants had started the psychotherapy program, the other 20 were seen by a psychiatrist for medication.

Measures
Adult Attachment Interview. The AAI’s of the respondents in this study were coded according to the manual (Main & Goldwyn, 1994) by I.A. Zeijlmans van Emmichoven. Ten of the AAI’s (32%) were double-coded by Dr. M.H. van IJzendoorn, who was trained in Charlottesville, U.S.A., in 1988 and in Leiden, the Netherlands, in 1991 and 1995. Percentage of agreement on these 10 cases was 70% (kappa = .52) both for the 3-category and the 4-category classification. Differences in the classification of 3 interviews were discussed to agreement. Ten more AAI’s (32%) were double-coded by Dr. C. Schuengel. Percentage of agreement on these cases was 100% for the 3-category classification and 90% (kappa = .80) for the 4-category classification. The difference in the classification of one unresolved case was discussed to agreement.

Anxiety Disorders Interview Schedule-Revised. The ADIS-R (Dutch version by de Ruiter, Bouman, & Hoogduin, 1993) is a semi-structured interview schedule that provides a differential diagnosis for the DSM-III-R categories anxiety disorders, mood disorders, somatoform disorders and substance abuse. The ADIS-R also globally screens for psychotic episodes. Respondents are questioned about medication use and medical history. The diagnostic interviews in this study were conducted by a clinical psychology intern who was
trained in the use of the ADIS-R and in adjustments of the interview to DSM-IV criteria (APA, 1994).

**Lexical decision task.** The lexical decision task was conducted in the same way as in Experiment 1. Again, it comprised three attachment-related and three neutral context sentences. One context sentence from Experiment 1 was changed to a different attachment-related situation expected to be more relevant for anxiety disorder patients. This resulted in the following three domains of attachment-related situations: being upset, needing help, and behaving independently. The outcome targets were either positive (comfort, take care of, support) or negative (reject, leave, ignore). The neutral and nonword stimuli were the same as in Experiment 1. Again, each combination was presented twice, resulting in a total of 72 trials. The procedure was exactly the same as in the previous experiment.

**Questionnaire.** Like in Experiment 1, the STA I was administered. Internal consistency (alpha) in this study was .82 for trait anxiety and .93 for state anxiety. In view of the results of Experiment 1 we saw no reason to administer the relationship questionnaires.

**Results**

**AAI Distribution**

Eight respondents (25.8%) were classified as autonomous, 9 (29%) as dismissing, and 14 (45.2%) as preoccupied. Six preoccupied respondents had a classification for unresolved loss, as had 1 dismissing participant. The three-way and four-way AAI distributions are shown in Table 1. Both distributions were compared with the AAI distribution usually found in clinical samples (van Ijzendoorn & Bakermans-Kranenburg, 1996; Kroonenberg, 1998). The three-way distribution in our sample was not significantly different from comparison distributions. The four-way distribution, however, included significantly more autonomous individuals than the comparison distributions ($\chi^2 (3) = 24.19, p < .01$). There was no significant relation between attachment representation and being diagnosed as agoraphobic (see Table 4). There were no differences between the AAI groups for age, sex, or relationship status. A significant difference between AAI groups was found for having started psychotherapy or not. While most preoccupied respondents (86%) and many of the autonomous respondents (63%) had started psychotherapy, many of the dismissing participants (67%) had not ($\chi^2 (2) = 6.58, p < .05$). Most unresolved respondents (86%) had started psychotherapy; other differences pointed in the same direction in the four-way distribution ($\chi^2 (3) = 8.69, p < .05$).

<table>
<thead>
<tr>
<th></th>
<th>Dismissing</th>
<th>Autonomous</th>
<th>Preoccupied</th>
<th>Unresolved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agoraphobics</td>
<td>7 (6)</td>
<td>4 (4)</td>
<td>7 (5)</td>
<td>0 (3)</td>
</tr>
<tr>
<td>Non-agoraphobics</td>
<td>2 (2)</td>
<td>4 (4)</td>
<td>7 (3)</td>
<td>0 (4)</td>
</tr>
</tbody>
</table>

Table 4. Distribution of attachment classification by agoraphobia diagnosis in Experiment 2 (4-way AAI distribution in brackets).
Chapter 4

The analyses reported below were also performed with the participants classified in four AAI groups; this made no difference in the results. To increase statistical power, the unresolved individuals where then grouped according to their secondary attachment classification.

**STAI**
The mean score for state anxiety was 39 ($SD = 7.9$). Both male and female participants scored lower (2nd decile) than the normative scores for psychiatric outpatients. The mean score for trait anxiety was 50 ($SD = 10.7$). This is not significantly different from the normative scores for trait anxiety in clinical samples (males: 6th decile; females: 5th decile). There was no significant relation between the trait and state scores on the STAI on the one hand, and the AAI classifications on the other hand. Also, there was no significant relation between both STAI scores and being diagnosed as agoraphobic or not. Finally, there was no significant relation between both STAI scores and the response latencies on the lexical decision task for any of the stimulus types. For this reason the STAI was left out of further analyses.

**Lexical decision task**
Results on the LDT were checked for response errors (responding "word" to nonwords or vice versa) and missing values (response latencies over 1500 msec.). There were less than 6% missing values and less than 8% response errors; these were excluded from analyses and only correct responses were analyzed. Mean reaction times on the LDT are presented in Table 5 and, specified by domain, in Figure 3. All results on the LDT were controlled for influence of medication use. There were no differences in reaction times between participants using (different kinds of) medication or no medication at all. Also, there was no relation between relationship status and LDT-scores.

<table>
<thead>
<tr>
<th>Context sentence</th>
<th>Outcome target</th>
<th>Dismissing ($n = 9$)</th>
<th>Autonomous ($n = 8$)</th>
<th>Preoccupied ($n = 14$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment-related</td>
<td>Positive</td>
<td>877 (126)</td>
<td>738 (127)</td>
<td>708 (100)</td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>880 (158)</td>
<td>765 (114)</td>
<td>741 (119)</td>
</tr>
<tr>
<td></td>
<td>Negative</td>
<td>913 (93)</td>
<td>785 (78)</td>
<td>763 (126)</td>
</tr>
<tr>
<td>Neutral</td>
<td>Positive</td>
<td>827 (139)</td>
<td>749 (92)</td>
<td>727 (105)</td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>803 (93)</td>
<td>741 (150)</td>
<td>720 (104)</td>
</tr>
<tr>
<td></td>
<td>Negative</td>
<td>902 (163)</td>
<td>792 (126)</td>
<td>789 (120)</td>
</tr>
</tbody>
</table>

Table 5. Mean reaction times in msecs (SD's in brackets) for positive, neutral and negative target words on the LDT for participants in Experiment 2.

Response latencies to word targets were first subjected to a repeated-measures analysis of variance (ANOVA) with one between-subjects factor (AAI classification) and three within-subject factors: domain (being upset, needing help, and behaving
independently), context sentence (attachment-related or neutral) and target word (positive, negative or neutral).

Our hypothesis that dismissing participants would show the longest reaction times to interpersonally primed negative outcome targets, while preoccupied participants would show the longest response latencies on interpersonally primed positive outcome targets, was not supported: there were no interaction effects for AAI classification x context sentence x target word. There was, however, a significant interaction effect for AAI classification x domain x sentence \( (F(4, 62) = 4.04, p < .01) \). Post-hoc analyses (Tukey’s HSD) revealed that dismissing respondents reacted slower than autonomous and preoccupied ones on targets primed by the attachment-related context sentence “being upset”, whether the target was positive, negative or neutral. There was also a significant main effect for AAI classification \( (F(2, 30) = 3.82, p < .05) \) which was caused by dismissing individuals reacting generally slower on most trials. After covarying out the baseline mean reaction times for neutral target words, the main effect for AAI classification disappeared and the AAI classification x domain x context sentence interaction effect was then only marginally significant \( (F(4, 62) = 2.18, p = .08) \).
Next, reaction times were subjected to a repeated-measures analysis of variance (ANOVA)\(^1\) with two between-subjects factors (AAI classification, agoraphobia diagnosis) and three within-subject factors (domain, context sentence and target word). Again, reaction times to neutral target words were covaried out. There was a significant interaction effect for agoraphobia diagnosis x target \((F(1,31) = 4.56, p < .05)\). Post-hoc analyses (t-tests with Bonferroni correction) revealed that agoraphobics reacted faster than non-agoraphobic anxiety patients to one of the negative targets (being left; \(t(29) = 2.52; p < .01\)), whether primed with an attachment-related sentence or not. The interaction effect for AAI x domain x priming sentence remained marginally significant \((F(4,62) = 2.41, p = .06)\), and the AAI main effect remained significant \((F(2,30) = 4.44, p < .05)\). A marginally significant agoraphobia x AAI interaction effect was found, but this is not interpretable due to the very small subgroups (e.g., only 2 participants were classified as dismissing and diagnosed as non-agoraphobic).

**Discussion**

Investigating the association between attachment insecurity, anxiety disorder and relationship expectations, we expected the identification of primed targets on the lexical decision task to be facilitated when the combination of prime and target was congruous with the attachment schema. Our hypotheses that dismissing respondents would react slower to primed negative targets and preoccupied ones would react slower to primed positive targets were not supported. Like in Experiment 1, dismissing participants reacted slower on most trials, whatever the valence of the outcome word. However, this effect was most pronounced in the context of being upset, where dismissing individuals took longer to identify both the positive and the negative interpersonal outcome word. This can be understood in light of their strategy during the AAI. When, in the course of the interview, dismissing respondents are asked if they remember what used to happen when they were upset as a child, they tend to answer that they were never upset or that they do not remember. Anxiety disorder patients are, by the nature of their disorder, often upset. The combination of an anxiety disorder and a dismissing attachment representation may make these individuals extremely sensitive to being upset; the conflict they experience may cost them processing capacity.

Consistent with the attachment-theoretical view that agoraphobia is more a fear of being left alone than a fear of becoming unwell, agoraphobic participants where significantly faster to recognize the target "being left". This is in line with the well-established empirical finding that anxiety disorder patients are characterized by an attentional bias for threat stimuli, as has been found with a variety of cognitive tasks (for an overview, see Williams et al., 1996).

The unexpected finding that dismissing respondents made significantly less use of psychotherapy is consistent with Dozier (1990), who reports that avoidant tendencies in adults with serious psychopathological disorders are associated with greater rejection of treatment providers and poorer use of treatment.

Comparing our AAI three-way distribution to AAI classifications in the anxiety disorder samples of Fonagy et al. (1996) and Manassis et al. (1994), we found no significant difference, but their four-way distribution included considerably more unresolved respondents than ours. The way our participants were recruited may explain this: they were
free to choose whether they wanted to take part in the study after having been informed about it as fully as possible, and declining had no effect on the treatment offered. This procedure may make unresolved patients think twice about participating in an experiment, as their lives are already troubled enough by their disorder. Of the unresolved participants in our anxiety disorder sample, 88% had a secondary (forced) classification as preoccupied; this is in line with Fonagy et al. (1996) who found that three-quarters of their unresolved anxiety disorder patients had a secondary preoccupied classification.

**General Discussion**

On the basis of attachment-theoretical assumptions, we expected response latencies on the lexical decision task to be related to what respondents exhibit in the Adult Attachment Interview, where dismissing attachment tends to go together with an idealizing stance and a minimizing affective expression, and preoccupied attachment tends to go together with anger or passive involvement and a maximizing of affective expression. Our hypotheses on the relation between these attachment strategies and performance on the lexical decision task were not convincingly supported. Generally, dismissing individuals in both experiments reacted slower on most trials. When confronted with stimuli referring to a potential partner's reaction, dismissingly attached nonclinical participants were most distracted from their task by stimuli related to behaving independently and anxiety-disordered dismissingly attached participants were most distracted by stimuli related to being upset.

Before we interpret the meaning of our finding that dismissingly attached participants generally reacted slower, we have to evaluate possible shortcomings in our experimental set-up. Even though our participants were instructed to carefully read the priming sentences and remember them for a memory task, we cannot make sure whether they attended closely to the sentences, especially after having discovered that the same sentences kept coming back. Actually, at debriefing most participants admitted not having attended to the content of the sentences after the first couple of trials, but to have focused on the cue for the lexical decision. However, this does not necessarily indicate that the sentences did not influence their reactions, as we know from many reaction-time experiments that even subliminally presented stimulus material can influence a later, seemingly unrelated task, especially when the stimulus content is specifically related to the participant's emotional preoccupations (e.g., MacLeod & Hagan, 1992; van den Hout, Tenney, Huygens, Merckelbach, & Kindt, 1995). Another point of experimental uncertainty is that we cannot know whether participants really identify with the relationship situation as presented. A more penetrating induction may be needed to prime the attachment representation. On the other hand, by mixing stimulus types we may have triggered the representation in a global way, which may have prevented a differential effect of stimulus content on different attachment representations. This may also be an explanation of the finding that dismissing participants were slower on the LDT regardless of the nature of the stimuli: once their attachment representation is triggered, they may loose processing capacity through their efforts to deactivate attachment arousal and consequently slow down on the task requested of them. Their desire to minimize attachment concerns may direct their attention away from a task that unwittingly triggers the attachment
representation. In future experiments, this limitation can be overcome by presenting the stimuli blocked by attachment valence instead of in a randomized sequence.

An attachment-theoretical explanation of our main finding that dismissing participants generally reacted slower on the lexical decision task may be that they tend to focus on task-performance rather than on task-content. One of the most striking characteristics when conducting the AAI is that dismissing respondents tend to attend to the interview-context by superficially collaborating to the task required, while giving away as little information as possible (see Hesse, 1999). This is comparable to the behavior of insecure-avoidant children in the Strange Situation who attend to their environment instead of to their attachment figure, thus keeping the attachment-system deactivated. By trying to perform well on the task, the dismissing participants in our experiments may have slowed down in their responses because they did their task very carefully. Their effort to perform well may overrule content-specific differences in the stimuli offered. This phenomenon is generally known as the speed-accuracy trade-off.

As discussed before, the specific findings of dismissing nonclinical participants being distracted from their task when primed in the domain of behaving independently in a relationship, and both nonclinical and anxiety-disordered dismissing participants being distracted when primed in the context of a partner's reaction to their being upset, is consistent with the incoherences they show in their discourse during the AAI. In Experiment 1, these effects were only found after covarying out the reaction times to neutral targets. We do not want to put too much meaning to these findings; the main effect of a dismissing attachment representation slowing down reaction times on the LDT may be the most impressive outcome of Experiment 1. In the clinical experiment, however, the finding that dismissing respondents react significantly slower when primed in the context of being upset in a relationship, whatever the reaction of the partner, stands strongly and may, as said before, be a result of both suffering of an anxiety disorder and being dismissively attached.

Our finding that preoccupied participants did not react significantly different from securely attached individuals may be a consequence of the nature of the lexical decision task. An insecure attachment representation can be activated both by the absence of safety as well as by the presence of danger (Shear, 1996). It is possible that in a task like the LDT, a preoccupied attachment representation is not a "handicap", because preoccupied individuals already tend to focus excessively on attachment-relevant stimuli. A study of attachment-related information processing in preschoolers found that insecure-avoidant children turned their attention away from attachment-related stimuli, but no evidence was found for insecure-ambivalent children turning their attention selectively toward these stimuli (Kirsh & Cassidy, 1997).

The agoraphobics in Experiment 2 presented a phenomenon that has often been found in cognitive research: a bias for processing relevant threatening information. Their attention seemed to be drawn towards the stimulus "being left", which is consistent with their fear to be alone and indeed in our study discriminates them from patients with other anxiety disorders. Although in our sample agoraphobia and insecure attachment were not significantly related, this finding endorses Shear's (1996) plea for a reevaluation of attachment-theoretical ideas in the cognitive-experimental study of agoraphobia.

The clinical sample was quite small to start with, which happens often when anxiety disorder patients, especially agoraphobics, are requested to come to a research center that is
not located near their treatment center. Loosing 16% of our data, the sample may have become too small to find a significant association between attachment representations and diagnosis. However, a post-hoc power analysis (Buchner, Faul, & Erdfelder, 1996) revealed that there was a large enough effect size ($w = .48$; power = .60) to find a relation between attachment classification and being diagnosed as agoraphobic or not. When looking at Table 4, it is noteworthy that 78% of our clinical dismissing participants were diagnosed as agoraphobic; this is contrary to other reports where agoraphobic patients most often are preoccupied and/or unresolved (Fonagy et al., 1996; Manassis et al., 1994). In a previous sample, we also found a majority (60%) of dismissing anxiety disorder patients being diagnosed as agoraphobic (Zeilmans van Emmichoven, van IJzendoorn, & de Ruiter, 2000). These interesting findings, however, come from small samples and future empirical research will have to determine what the distributions really look like.

In conclusion, we suggest that our study corroborates the evidence for a deactivating strategy in dismissing individuals. We propose that the primed lexical decision paradigm discriminates dismissing from both autonomous and preoccupied participants because they are faced with situations in an attachment relationship that they are inclined to disregard in daily life. The lexical decision task requires them to attend closely to attachment-relevant stimuli, thereby activating the attachment representation. Through their effort to deactivate the arousal, dismissing individuals loose processing capacity, which interferes with their response speed.

We recommend that future investigations of expectations about adult relationships compare matched nonclinical and anxiety disorder samples to further study the association between agoraphobia and attachment insecurity and their influence on attachment-related information processing.

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1 Because of the small sample and because the data did not completely fulfil the assumptions of normality and homogeneity as required for parametric statistical techniques, reaction times to word targets were first analyzed with the Kruskall-Wallis one-way analysis of variance by ranks. Between-group differences were further analyzed with the multiple comparisons inequality (Siegel & Castellan, 1988). These statistical tests led to the same conclusions as the ones reported.