



Attachment, attention, and cognitive control: Attachment style and performance on general attention tasks

Omri Gillath^{a,*}, Barry Giesbrecht^b, Phillip R. Shaver^c

^a Department of Psychology, University of Kansas, Lawrence, KS 66045-7556, United States

^b University of California, Santa Barbara, California

^c University of California, Davis, California

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ABSTRACT

Three studies examined the effects of attachment style on performance in non-attachment-related attention tasks; one study also assessed the effect of priming memories of experiences of attachment security or insecurity on attentional performance in a flanker task. In Study 1, participants performed a psychological refractory period (PRP) task assessing their ability to switch attention rapidly from one decision to another; in Studies 2 and 3 they performed a flanker task assessing their ability to resist distracters. Avoidant attachment predicted better performance on both tasks, and the effects remained even after controlling for neuroticism, general anxiety, and BIS/BAS scores. Study 3 showed that thinking in detail about a past experience of insecurity eliminated avoidant participants' superior performance. In sum, avoidant people are generally skilled at regulating their attention, even on non-attachment-related tasks, but their performance is hampered by reminders of experiences of insecurity.

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One of the unique features of Bowlby and Ainsworth's attachment theory when it was first proposed was its emphasis on cognitive processes not previously included in psychoanalytic theories (e.g., Bowlby, 1982). For example, Bowlby explained the lasting effects of early experiences with parents in terms of conscious and unconscious "internal working models" of self and relationship partners, an idea that has now been elaborated and extensively tested in many studies (e.g., Baldwin, Fehr, Keedian, Seidel, & Thompson, 1993; Bartholomew & Horowitz, 1991; see Mikulincer & Shaver, 2007, chap. 6, for a review, and Mikulincer, Shaver, Sapir-Lavid, & Avihou-Kanza, *in press*, for recent data). Bowlby (1980) also reconceptualized Freudian defense mechanisms in terms of "segregated" cognitive systems and defensive attentional strategies. These ideas have also been elaborated and tested in both interview studies (Hesse, 2008; Main, 1995) and laboratory experiments demonstrating attachment-style differences on attachment-related cognitive tasks (e.g., Edelstein et al., 2005; Fraley, Garner, & Shaver, 2000; Mikulincer, Dolev, & Shaver, 2004).

The observed differences in attention and memory might reflect selective processing, which could be either exclusive to attachment-related information or more general, involving pre-attentive mechanisms or information-processing strategies that can be applied to both attachment and non-attachment-related information. In the studies reported here, we examined the possibility that indi-

vidual differences in attachment style might be associated with attentional abilities and strategies even in non-attachment-related situations and tasks, because attentional skills might be quite broad in application.

Mikulincer and Shaver (2007) proposed a dynamic model of the "attachment behavioral system" (the innate system proposed by Bowlby, 1982, based on work by ethologists). The model depicts what Main (1990) called the "primary attachment strategy" – seeking support from a trusted caregiver when one is upset or threatened, with the expectation that he or she will provide protection and assistance. The model also includes two "secondary attachment strategies" that reflect histories of troubled relationships with inadequately responsive or unsupportive attachment figures. One of these secondary strategies – "hyperactivation" of the attachment system, or "anxious" attachment – involves heightened vigilance regarding attachment figures' availability and responsiveness, and rapid escalation of emotions and help-seeking when threats are encountered. This strategy is thought to be learned early in life as a way of making certain that an inconsistent, distracted, or unreliable caregiver pays attention and provides adequate protection and support (Ainsworth, Blehar, Waters, & Wall, 1978).

The other secondary strategy – "deactivation" of the attachment system, or "avoidant" attachment – involves down-regulation or suppression of thoughts and emotions associated with personal vulnerability or dependency on attachment figures. The goal of this strategy is to maintain an extreme degree of independence, invol-

* Corresponding author. Fax: +1 785 864 5696.

E-mail address: ogillath@ku.edu (O. Gillath).

nerability, and autonomy (which Bowlby, 1982, called “compulsive self-reliance”). This strategy is learned in the context of a caregiver who provides better care when one does not complain, make requests, or seem overly needy or whiny, and does not insist on close bodily contact (Ainsworth et al., 1978).

Studies focusing on these secondary strategies in adulthood and their effects on attention and cognition have found that people with an anxious attachment style tend to focus their attention on, and have difficulty disengaging from, attachment-related stimuli and information (e.g., Mikulincer, Birnbaum, Woddis, & Nachmias, 2000; Mikulincer, Gillath, & Shaver, 2002). Anxious individuals also find it difficult to disengage from their own negative thoughts and memories (Mikulincer & Orbach, 1995). When asked to retrieve childhood memories of a particular negative emotion (e.g., fear, sadness, or anger), they quickly comply, and once one such memory is retrieved, a host of others arise uncontrollably. When asked to imagine their romantic partner leaving them and then, a few minutes later, to stop thinking about it, they have difficulty letting go of the imagined scenario, and their skin conductance level and emotion-related brain activity remain high (Fraley & Shaver, 1997; Gillath, Bunge, Shaver, Wendelken, & Mikulincer, 2005).

Individuals with an avoidant attachment style tend to shift their attention away from stimuli depicting or evoking attachment-related themes (e.g., pictures of one’s mother, pictures of people separating; Kirsh & Cassidy, 1997; Main, Kaplan, & Cassidy, 1985), to take longer to identify attachment-related information under certain conditions (Mikulincer et al., 2002), and to have greater difficulty encoding or recalling such information (Edelstein et al., 2005; Fraley et al., 2000; Mikulincer & Orbach, 1995). The ability of avoidant people to ignore such information disappears, however, when a cognitive or emotional “load” is imposed (e.g., Berant, Mikulincer, & Shaver, 2008; Mikulincer et al., 2004), suggesting that the control of attention takes cognitive effort, even though avoidant people have presumably practiced defensive attentional control for years. Theoretically this is thought to be the case because the underlying attachment needs are never really extinguished, so the defenses against them require constant cognitive effort, unlike more emotionally neutral forms of practiced cognitive skills.

The ability of avoidant individuals to block, or disengage from, attachment-related information (including their own thoughts and feelings, if these threaten a compulsively self-reliant stance), clearly suggests the operation of a pre-attentive mechanism or cognitive-control strategy (Niedenthal, Brauer, Robin, & Innes-Ker, 2002), but so far it has remained unclear whether this strategic use of attention is limited to attachment-related material or is more general, as might be the case if it has been extensively practiced for years or was rooted in a temperament that made avoidance a viable strategy from early on. We were therefore motivated to examine the association between avoidant attachment and performance on standard content-neutral attention tasks.

The studies reported here are based on attention tasks – the psychological refractory period (PRP) paradigm (e.g., Miller & Alderton, 2006; Pashler, 1994) and the flanker task (Eriksen & Eriksen, 1974; Uwe, 2005) – that have been extensively studied by cognitive researchers with no special interest in attachment theory. These attention tasks assess a person’s ability to make two consecutive judgments quickly without losing track of either one (the PRP task, as described further below) and to focus attention on task-relevant information while resisting distracters (the flanker task, as also described below). If more avoidant individuals perform better than their less avoidant peers on these tasks, it suggests that their attentional skills are fairly general.

We used two such tasks while also measuring participants’ dispositional tendencies to use either hyperactivating (i.e., anxious) or deactivating (i.e., avoidant) strategies in regulating their emotions and behavior in close interpersonal relationships. These tendencies were assessed with a two-dimensional measure of attachment style, the Experiences in Close Relationships inventory (ECR; Brennan, Clark, & Shaver, 1998). This self-report measure comprises two highly reliable 18 item scales, one measuring attachment anxiety and the other measuring avoidant attachment. The ECR has high construct validity, being able to predict theoretically expected outcomes in hundreds of published studies (see Mikulincer & Shaver, 2007, for a review). In general, we expected avoidance to be associated with more effective and faster allocation of attention (Hypothesis 1), because this association has been obtained in studies of non-attachment-related words and fairly general facial expressions (e.g., Fraley, Niedenthal, Marks, Brumbaugh, & Vicary, 2006; Niedenthal et al., 2002). We also explored the possibility (Hypothesis 2) that this skill might be disrupted or diminished in the presence of reminders of past experiences of insecurity. If true, this would support the theoretical assumption that attentional skill is part of a defensive strategy that can be undermined or interfered with by a cognitive or emotional load (e.g., Mikulincer et al., 2004). We advanced no specific predictions about attachment anxiety, because studies related to this dimension have generally focused on attachment-related stimuli, to which anxious people seem to gravitate uncontrollably. Nothing is known about whether this tendency toward fixation and rumination extends to neutral attention tasks. Finally, we included several control measures of individual differences that might provide alternative interpretations of our results.

Study 1

In Study 1, we examined associations between the two attachment dimensions – anxiety and avoidance – and performance in the well-studied psychological refractory period (PRP) task (e.g., Miller & Alderton, 2006; Pashler, 1994). In this task, participants are presented with two simple stimuli separated by a variable but brief stimulus onset asynchrony (SOA). They are instructed to make a speeded decision about each stimulus (e.g., first between two possible colors of a square and then between two letters of the alphabet). By pressing one of two keys in each case (four keys in all), participants indicate which stimulus appeared in each of two temporal ‘slots’ or positions (the first and the second). For example, either a yellow or a blue square might appear in the first temporal slot and either an X or an O in the second slot. The participant would attempt to press, as fast as possible, one of two keys just after the first stimulus appeared to indicate whether it was the yellow or the blue square, and then push one of the remaining two keys just after the second stimulus, to indicate whether it was an X or an O.

Typically, the response time to the first discrimination (in the first time slot, hereafter called Task 1) is unaffected by the SOA between the two tasks, whereas the response time to the second discrimination task (Task 2) is systematically related to the SOA. That is, at short SOAs, the response time is long, and as the SOA increases the response time to Task 2 decreases. This systematic slowing, referred to as the psychological refractory period (PRP) effect, is thought to reflect a capacity limitation of the attentional system when a person is choosing a response (Pashler, 1994).

Based on previous attachment research it seemed likely that more avoidant individuals would be better able to quickly allocate or shift attention at will in the PRP task. If this is indeed the case, more avoidant participants should exhibit a smaller PRP effect (Hypothesis 1). Because we are generally interested in both kinds

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