1. Introduction

One of the core ideas in adult attachment theory is that some individuals are motivated to deactivate their attachment systems. These individuals, often referred to as "avoidantly attached," are less likely to forge close emotional bonds with others (e.g., Fraley & Shaver, 1997), and, when given the opportunity to do so, are capable of suppressing attachment-related thoughts and feelings (e.g., Fraley & Shaver, 1997; Mikulincer, Dolev, & Shaver, 2004).

How is it that relatively avoidant people are able to minimize attachment-related experiences? Drawing on Bowlby's (1980) discussion of cognition and defense, Fraley, Garner, and Shaver (2000) argued that there are at least two ways in which attachment-relevant information can be excluded from awareness. One way is through the use of pre-emptive strategies. These kinds of defenses are used to minimize attention to events that have the potential to activate undesirable thoughts or emotions. An avoidant individual may, for example, choose not to get involved in a close relationship for fear of rejection, avert his or her gaze from an unpleasant sight, or "tune out" of a conversation that touches upon affective themes. In each of these cases, pre-emptive strategies serve to limit the amount of information an individual experiences regarding the event. Another way to exclude affective information from awareness is by failing to retrieve, dwell upon, or search for meaning in the various experiences a person has already had. For example, following a breakup, an avoidant person may suppress memories of his or her former partner as a means for circumventing the reemergence of painful emotions. Fraley et al. (2000) referred to such tactics as postemptive strategies to emphasize the notion that these defenses help to prevent the activation of information that has already been represented in the system.

One of the assumptions of attachment theory is that, with repeated experience, both kinds of defensive strategies have the potential to operate in a relatively automatic fashion. That is, much in the way that experienced bike riders are able to execute certain behaviors (pedaling, gating, shifting weight on turns) without excessive executive control, defensive strategies come to operate relatively automatically in a manner that demands very little higher-order cognitive supervision (Bowlby, 1980). The idea that defensive processes might play a role in human behavior without people's awareness has a long and controversial history in psychology (see Westen, 1998). The proposition has become less contentious in recent decades, however, due to advances in cognitive methods for assessing cognition, memory, and behavior. One of the most recent developments that has implications for understanding attachment and defense is that of embodied cognition.

According to proponents of theoretical models of embodied cognition, cognitive processes are not localized to the cortical areas of the brain per se, but are reflected or instantiated in the body more broadly speaking (Barsalou, 1999; Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005). Indeed, many models of embodied cognition postulate that high level cognitive processes involve partial reactivations of sensory-motor states, and that those sensory-motor states are essential components of the representation in question (e.g., Barsalou, 1999).

A growing number of studies in personality and social psychology have been inspired by this emerging framework (see Niedenthal et al., 2005, for a review). Indeed, several investigators have sought to understand the ways in which motor-level...
components of basic motivational processes, such as approach and avoidance, are implicated in higher-order cognition concerning attitude objects. In one early study on this topic, Cacioppo, Priester, and Bernston (1993) instructed participants to place their hands under or on a table, either pressing upward or downward, while viewing Chinese ideographs. Motor movements associated with approach (i.e., pushing upward—a state consistent with approach or pulling something towards the self) led participants to evaluate ideographs more positively, whereas movements associated with avoidance (pushing downward—a state consistent with avoidance or pushing something away from the self) caused participants to rate ideographs more negatively.

In a related study, Chen and Bargh (1999) had participants view the names of various attitude objects on a computer display while responding to each stimulus by either pushing or pulling a lever. In one study the participants were randomly assigned to compatible or incompatible conditions. In the compatible condition, participants were instructed to pull the lever in response to positively valenced attitude objects or to push the lever in response to negatively valenced objects. In a second study, participants were simply asked to push or pull the lever in response to items appearing on the screen, with the instruction to push or pull being counterbalanced across blocks of trials. In both kinds of experiment, Chen and Bargh (1999) found that people were faster to pull the lever (an approach behavior) in response to positive words compared to negative words and faster to push the lever (an avoidance behavior) in response to negative words as opposed to positive words (see also Neumann & Strack, 2000).

Taken together, these kinds of studies provide evidence for an automatic, nonconscious association between attitudes and the motor components underlying approach and avoidance behavior. The Cacioppo et al. (1993) study demonstrates that the mere behavioral act of pushing something away from the self can lead people to associate negative qualities with previously unconditioned stimuli. The Chen and Bargh (1999) research suggests that the perception or identification of negatively valenced stimuli automatically primes people’s bodies for a specific kind of motivational response, whether that be approach or avoidance.

The embodied cognition framework is a potentially important one for understanding attachment and defense for two reasons. First, it provides a conceptual means for understanding basic motivational processes, such as approach and avoidance, by drawing upon familiar and well researched social-cognitive constructs in contemporary psychological theory, such as priming. Second, it highlights the possibility that defensive processes may go beyond the traditional boundaries of the mind to operate preemptively via basic motor patterns that have the potential to filter and modify a person’s experiences. For good reasons, attachment researchers have focused on traditional cognitive models of information processing in an attempt to investigate psychological defense (Bowlby, 1980; Fraley, Davis, & Shaver, 1998). However, there is potentially a lot to be learned by investigating embodied forms of psychological defense. The objective of the present research was to adopt a variant of the Chen and Bargh (1999) design to investigate the role of embodied avoidance motivation in adult attachment. Specifically, we were interested in whether activating a specific representation of an attachment object (i.e., “mom”) would facilitate avoidance motor behaviors on the part of people with relatively avoidant attachment orientations.1

## 2. Method

### 2.1. Participants

Forty-one undergraduate participants were recruited to take part in the study in exchange for credit in a psychology course. The mean age was 18.7 years (SD = 1.3). Seventy-one percent of the participants were female, and 73.8% were Caucasian.

### 2.2. Procedure and materials

After arriving at the laboratory, participants were asked to complete a questionnaire containing demographic items and the Experiences in Close Relationships Revised questionnaire (ECR-R; Fraley, Waller, & Brennan, 2000), a 36-item measure of adult attachment orientation. The ECR-R assesses two dimensions: attachment-related anxiety and avoidance. Attachment-related anxiety concerns the extent to which a person is worried that close others may reject him or her. Attachment-related avoidance concerns the psychological strategies that people use to regulate their attachment behavior in specific relational contexts. On the high end of the avoidance dimension are people who are uncomfortable with closeness and dependency; on the low end are people who are more comfortable using others as a secure base and safe haven. The prototypical secure person is low on both the anxiety and avoidance dimensions. The internal consistency estimates of reliability in the present study were .85 and .86 for anxiety and avoidance, respectively. The two scales were correlated .47; as such, we included them simultaneously in the regression analyses reported below.

After completing the questionnaire, participants were taken to a separate room and were asked to stand in front of a CRT display. A 17-inch lever was placed on a stand in front of the participant’s dominant hand. The participants were told that words would be presented on the computer display one at a time, and that their task was to respond to the words as quickly as possible by using the lever. There were two blocks of trials. For the first block of trials, participants were instructed to push the lever when a word appeared on the display. For the second block of trials, participants were instructed to pull the lever when a word appeared. The order in which this was done was counterbalanced across participants such that some participants pulled for the first block of trials and pushed for the second and other participants pushed for the first block of trials and pulled for the second.

A fixation cross was positioned in the center of the screen. For each trial, the fixation cross was replaced by a word. When the word appeared on the screen, participants were to either push or pull the lever (depending on the block) as quickly as possible. Response times were recorded to assess the time between the onset of the stimulus word and the completion of the motor response. After each trial, participants re-centered the lever. The next trial was presented after a random 4–7 s delay.

The words presented on the screen were the positive and negative attitude objects used by Bargh, Chaiken, Govender, and Pratto (1992), with one exception. We included the word “mom” in the stimulus set, with the constraint that it would randomly appear five times in each block of trials (with the restriction that it could not appear twice in a row). We recorded push or pull response times for all trials. The means, standard deviations, and correlations among all variables are reported in Table 1.

## 3. Results

We created a difference score that represented the difference between the average of the five reaction times to “mom” in the push vs. pull conditions. Positive differences indicate that people

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1. Mikulincer, Shaver, Bar-On, and Ein-Dor (2010) utilized a related lever paradigm to investigate the implicit ambivalence that highly insecure people might hold about close relationships. They found that highly anxious people tended to exhibit ambivalence in the sense that they were more likely to exhibit facilitated pushing and pulling in response to words concerning closeness. Their research did not involve assessing approach vs. avoidance tendencies toward a specific attachment object (e.g., a parent), nor did it focus upon avoidant attachment in particular.
were faster to push than pull when presented with “mom.” We regressed this variable upon attachment-related anxiety and avoidance. The overall model was significant, $F(2, 40) = 3.74$, $p < .05$, $R^2 = .16$. People who were more avoidant in their attachment orientations were faster to push the lever than pull it when responding to “mom” ($B = -.34.94$, $SE = 12.78$, $\beta = -.46$, $p < .05$). The association is illustrated in Fig. 1. Attachment-related anxiety was not significantly related to the dependent measure ($B = 16.78$, $SE = 12.68$, $\beta = .22$, $p = .19$). Moreover, the constant term was significant ($B = 22.95$, $SE = 39.92$, $p < .05$), suggesting that, on average, people were faster to push than to pull by 23 ms. Thus, the negative association with avoidance indicates that relatively avoidant people exhibited this tendency more than the average person.

We also examined whether the attachment dimensions predicted response times for pushing vs. pulling for both positive and negatively valenced words by creating a difference score similar to that described above (i.e., pushing minus pulling for positive words; pushing minus pulling for negative words; see Table 1 for descriptive statistics). Regression analyses indicated that the attachment dimensions were unrelated to response times for pushing vs. pulling for positive words ($F[2, 40] = .85$) or negative words ($F[2, 40] = .99$). This suggests that effect reported previously

### Table 1
Descriptive statistics and correlations among study variables.

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<td>7. Push Mom RT</td>
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<td>8. Pull Mom RT</td>
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<td>9. Push Minus Pull Mom RT</td>
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Note. Variables 3–6 represent average reaction times in response to positive and negative stimuli in pushing or pulling conditions. Variables 10–11 represent the difference in the average reaction times to positive and negative stimuli, respectively, in push vs. pull conditions. Reaction times are reported in milliseconds. Correlations $>|.30|$ are statistically significant (two-tailed) at the .05 level.

Fig. 1. Response times (push-pull) as a function of attachment avoidance, controlling anxiety.
was specific to “mom” rather than positively or negatively valenced words more generally.

4. Discussion

The purpose of this research was to examine embodied defense—the possibility that psychological defenses can manifest themselves via basic motor responses. To examine this idea, we utilized the lever procedure developed by Chen and Bargh (1999) to examine approach vs. avoidance behavior in response to various stimuli. We found that that relatively avoidant people were faster to push the lever (vs. pulling the lever) when the stimulus was the word “mom.” This finding has two broad implications for the adult attachment theory and research. First, it suggests that basic defensive or motivational processes can be activated and executed in a relatively automatic fashion, without complex, higher-order cognitive mediation. Second, it suggests that defensive processes can be embodied—that basic behavioral and motivational systems are activated upon the mere identification of attachment-relevant stimuli. This provides a potential mechanism by which pre-emptive and postemotive defensive processes may sustain a state of deactivation relatively effectively.

Because we drew upon the basic Chen and Bargh (1999) paradigm, it is most parsimonious to interpret our findings are being relevant for understanding the “downstream” flow of defense. Specifically, the stimulus had to be perceptually identified before the motor movements for executing the response could be coordinated. As such, it seems reasonable to assume that the cognitive activation of the attachment figure affected the basic motor response. This is consistent with the basic idea of embodied cognition in that the overall processing of the stimulus is not just limited to cortical evaluation, but is part of a broader system of sensory, motor, and symbolic processing.

One of the limitations of this research is that we used a relatively general and nonomothetic attachment-relevant stimulus (i.e., the word “mom”). It would be advantageous for future researchers to use stimuli that have more ideographic relevance, such as the name of specific attachment figures, or perhaps even photographs and voices. It would also be of interest to separately assess attachment quality in distinct relationships. The attachment method that we used, the ECR-R, is a broad-based measure of adult attachment that is not designed to tap into the working models that people hold for distinct people in their lives (e.g., mom, dad, partner). The fact that some people are relatively secure with their parents, but insecure with their partners (see Klohnen, Weller, Luo, & Choe, 2005), suggests that it would be worthwhile to examine the embodiment of defensive processes in a more nuanced, relationship-specific fashion. It is an open question whether basic motor responses relevant to approach vs. avoidance are capable of making the same kinds of fine-grained distinctions that might be entailed at more traditional levels of representation.

References


