

# Attachment, Caregiving, and Altruism: Boosting Attachment Security Increases Compassion and Helping

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Recent studies based on J. Bowlby's (1969/1982) attachment theory reveal that both dispositional and experimentally enhanced attachment security facilitate cognitive openness and empathy, strengthen self-transcendent values, and foster tolerance of out-group members. Moreover, dispositional attachment security is associated with volunteering to help others in everyday life and to unselfish motives for volunteering. The present article reports 5 experiments, replicated in 2 countries (Israel and the United States), testing the hypothesis that increases in security (accomplished through both implicit and explicit priming techniques) foster compassion and altruistic behavior. The hypothesized effects were consistently obtained, and various alternative explanations were explored and ruled out. Dispositional attachment-related anxiety and avoidance adversely influenced compassion, personal distress, and altruistic behavior in theoretically predictable ways. As expected, attachment security provides a foundation for care-oriented feelings and caregiving behaviors, whereas various forms of insecurity suppress or interfere with compassionate caregiving.

*Keywords:* attachment, altruism, empathy, compassion, caregiving

There is a large literature on altruistic helping (i.e., helping with the goal of benefiting the other person; see Post, Underwood, Schloss, & Hurlbut, 2002, for a collection of reviews), much of it examining whether there really is such a thing as unselfish altruism, especially directed toward strangers and nonkin familiars (e.g., Batson, 2002). More recently, researchers have focused on the possibility that there are identifiable and measurable motives or reasons for helping strangers (e.g., Penner, 2002). Of special interest are the mental mechanisms, some learned and some potentially innate, that account for helpful behavior (e.g., Batson, Chang, Orr, & Rowland, 2002; Losoya & Eisenberg, 2001). To date, however, there have been relatively few attempts to link altruistic helping to broad psychological theories of personality, motivation, and social behavior. Even when existing theories have been called upon for explanations, few experimental studies have been conducted to test these theories.

The purpose of the present article is to conceptualize altruistic helping with regard to Bowlby and Ainsworth's attachment theories (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1969/1982, 1973, 1980). When considered from the standpoint of attachment theory, altruistic behavior is viewed in terms of what

Bowlby called the "caregiving behavioral system"—an innate behavioral system that responds to the needs of dependent others, especially (but not only) children. This behavioral system is thought to have evolved mainly to complement the "attachment behavioral system," which governs people's, especially young children's, emotional attachments to their caregivers, and its functioning is expected to be influenced by a person's sense of attachment security. Attachment theory has already proven useful in explaining empathy and philanthropic volunteerism (e.g., Gillath, Shaver, & Mikulincer, 2005; Gillath et al., 2005; Mikulincer et al., 2001) and has received support from several experimental studies.

## Attachment Theory and Research

According to attachment theory (Bowlby, 1969/1982), human beings are innately equipped with attachment and caregiving behavioral systems, among other important behavioral systems (e.g., exploration, sexuality) because during evolution becoming emotionally attached to caregivers (e.g., parents) and providing care for dependent or injured individuals (e.g., infants, children, injured family members) enhanced the chances of survival, reproduction, and successful parenting (i.e., genetic success or inclusive fitness). According to Bowlby (1969/1982), the function of the attachment system is to protect a person from danger by assuring that he or she maintains proximity to caring and supportive others (attachment figures) who provide protection, support, and relief in times of adversity. The attachment system is most evident during infancy and childhood but continues to be important across the life span. Its innate parameters are gradually shaped and altered by social experiences with attachment figures, resulting eventually in fairly stable individual differences in attachment style—a systematic pattern of relational expectations, emotions, and behaviors that

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results from a particular attachment history (Fraley & Shaver, 2000; Hazan & Shaver, 1987).

Research, beginning with Ainsworth et al. (1978) and continuing through recent studies by social and personality psychologists (reviewed by Mikulincer & Shaver, 2003), indicates that major individual differences in attachment style can be measured along two orthogonal dimensions, attachment-related avoidance and attachment-related anxiety (Brennan, Clark, & Shaver, 1998). A person's position on the avoidance (or avoidant-attachment) dimension indicates the extent to which he or she distrusts relationship partners' goodwill and strives to maintain behavioral independence and emotional distance from partners. A person's position on the anxiety (or anxious-attachment) dimension indicates the degree to which he or she worries that a partner will not be available and responsive in times of need. People who score low on these two dimensions are said to be securely attached or to have a secure attachment style.

Since the mid-1980s, scores of studies have shown that a person's attachment style, assessed with fairly simple, two-dimensional self-report measures, is a powerful predictor of various psychological phenomena including self- and social schemas, self-regulation of stress and emotion, the quality of relationships with romantic or marital partners, sexual motivation, and reactions to relationship breakup or loss (see Mikulincer & Shaver, 2003; Shaver & Clark, 1994; Shaver & Hazan, 1993, for extensive reviews). Attachment security (i.e., relatively low scores on the avoidance and anxiety dimensions) is related to positive conceptions of self and others, curiosity and interest in exploration, cognitive openness and information-processing flexibility, relationship commitment, and relationship satisfaction (e.g., Bartholomew & Horowitz, 1991; Collins & Read, 1990; J. A. Feeney, 2002; Mikulincer, 1997).

### The Caregiving System and Its Interplay With the Attachment System

According to Bowlby (1969/1982), the caregiving system is designed to provide protection and support to others who are either chronically dependent or temporarily in need. It is inherently altruistic in nature, being aimed at the alleviation of others' distress, although the system itself presumably evolved because it increased the inclusive fitness of individuals by making it more likely that children and tribe members with whom the individual shared genes would survive and reproduce (Hamilton, 1964). Within attachment theory, the caregiving system provides an entrée to the study of compassion and altruism; moreover, understanding this system provides a foundation for devising ways of increasing people's compassion and effective altruism.

*Caregiving* refers to a broad array of behaviors that complement a relationship partner's attachment behaviors or signals of need. The set goal of such behaviors is reduction of the partner's suffering (which Bowlby, 1969/1982, called providing a "safe haven") or fostering the partner's growth and development (which Bowlby called providing a "secure base" for exploration). The key mechanism for achieving these goals is the adoption of what Batson (1991) called an empathic stance toward others' suffering—taking the perspective of the distressed person to sensitively and effectively help him or her reduce suffering and distress. That is, the caregiving system is focused on the other's welfare and

therefore directs attention to the other's distress rather than to one's own emotional state. In its prototypical form—that is, in the parent-child relationship—the set goal of the child's attachment system (proximity that fosters protection, reduces distress, increases safety, and establishes a secure base) is also the aim of the parent's caregiving system. Extending this conceptualization to the broader realm of compassion and altruism, one can view the caregiving system as being activated by the presence of a distressed person, even a stranger in need, and its aim as being to alter the needy person's condition until signs of increased safety, well-being, and security are evident.

Beyond explaining this complementarity between the support seeker's attachment system and the support provider's caregiving system, Bowlby (1969/1982) also conceptualized the interplay between these two systems within the mind of a potential support provider. Just as Ainsworth et al. (1978) argued that a child's exploration system is inhibited or distorted by an urgent need for attachment security in strange or threatening situations, we (Gillath, Shaver, & Mikulincer, 2005) and others (e.g., B. C. Feeney & Collins, 2001) have argued that the altruistic, innate tendency to attend empathically to others' distress and provide care when needed can be interfered with, suppressed, or overridden by attachment insecurity. Under conditions of threat, adults often think first of turning to others for support and comfort rather than providing support to others. At such times they are likely to be so focused on their own needs that they lack the mental resources necessary to attend empathically to others' distress and to engage in altruistic behavior. Only when relief is attained and a sense of security is restored can many people easily direct attention and energy to other behavioral systems, such as caregiving. Only a relatively secure person can easily perceive others not only as sources of security and support, but also as suffering human beings who have important needs and therefore deserve support.

In short, the aim of the caregiving system is more likely to become salient and be realized in behavior when a person is secure enough to allow for an empathic focus on someone else's needs. This ability to help others is a consequence of having witnessed and benefited from good care provided by one's own attachment figures, which both increases one's sense of security and provides models of good caregiving (Collins & Feeney, 2000; Kunce & Shaver, 1994). Furthermore, the sense of attachment security reduces needs for self-protection and self-enhancement (Mikulincer & Shaver, 2005) and allows a person to shift resources to other behavioral systems, including caregiving, and to take the other's perspective (Mikulincer et al., 2002)—the key mechanism underlying altruistic helping (Batson, 1991, 2002). According to our current understanding of the process, attachment security does not activate the caregiving system directly but rather provides a solid and stable psychological foundation for a form of empathy that is not overwhelmed by others' suffering or threatened by the interdependence entailed by caregiving. In other words, attachment security facilitates helping behavior that is truly aimed at benefiting another person even when there is no egoistic reason for helping.

Attachment theory can also explain cases in which people fail to behave truly altruistically. Theoretically, we expect attachment-related insecurities to interfere with altruistic helping. Attachment-anxious individuals tend to focus more on their own distress and need for greater attachment security (Collins & Read, 1994). These

concerns may draw mental resources away from taking the perspective of a distressed person and engaging in altruistic behavior. Attachment-avoidant individuals tend to be uncomfortable with closeness and interdependence and more cynical and disapproving in response to other people's signals of vulnerability, weakness, and need (Collins & Read, 1994). Obviously, these dispositions might well interfere with compassion and altruism.

This does not mean, however, that anxious and avoidant people, although both are conceptualized in attachment theory as insecure, will react in the same way to another person's distress. In a number of studies, Batson (1991) found that lack of helpful, altruistic behavior can be due either to lack of empathy and a prosocial orientation toward other people or to what he called "personal distress," a form of self-focused worry and discomfort that is not easily translated into effective helping. On the basis of attachment theory and previous research (e.g., Gillath, Shaver & Mikulincer, 2005), we expected people who score high on attachment avoidance to distance themselves from others' suffering, resulting in decreased empathy and altruistic helping. In contrast, we expected people who score high on attachment anxiety to worry about their own personal distress and desire for social acceptance, which might sometimes cause them to seem upset about others' suffering without their distress resulting in effective caregiving.

Attachment theory is also a useful framework for explaining cases in which people endorse egoistic motives for helping or not helping. There is clear evidence that helping behavior is not always guided by other-oriented, altruistic motives but can also be governed by egoistic motives such as enhancing one's own mood, relieving one's own distress, and protecting one's personally valuable close relationships (Cialdini et al., 1987, 1997; Smith, Keating, & Stotland, 1982). Theoretically, we expected attachment insecurities, mainly along the attachment-avoidance dimension, to favor the endorsement of egoistic motives for helping. For avoidant persons, who are not able to deal directly or symbolically with pain or distress and tend to engage in defensive maneuvers aimed at maintaining positive mood and protecting or enhancing their fragile self-esteem (Mikulincer & Shaver, 2003), helping others could be viewed as one possible route to feeling better about themselves. Therefore, when such a payoff is salient, they would be eager to help with the ultimate goal of benefiting themselves. When no egoistic payoff is salient, avoidant persons would not have a reason to help and would distance themselves from others' suffering.

There is extensive evidence that attachment security is associated with responsive and sensitive care for relationship partners. For example, secure mothers are more caring and supportive in interactions with their children than insecure mothers (e.g., Crowell & Feldman, 1991; Rholes, Simpson, & Blakely, 1995). Secure individuals are also more sensitive to romantic partners' needs and describe themselves as more likely to provide emotional support to their distressed partners (e.g., J. A. Feeney, 1996; J. A. Feeney & Hohaus, 2001; Kunce & Shaver, 1994). Their self-reports are corroborated by partners' reports. Moreover, self-report findings have been bolstered by observational studies in which dating couples were videotaped while one partner waited to undergo a stressful experience (e.g., B. C. Feeney & Collins, 2001; Simpson, Rholes, & Nelligan, 1992; Simpson, Rholes, Orina, & Grich, 2002). More secure participants in those studies spontaneously offered more support to their distressed partners. Similar findings

outside the romantic domain were reported by Soerensen, Webster, and Roggman (2002), who found that attachment security predicted preparation to care for older relatives.

Research also indicates that attachment security is associated with compassionate responses to needy strangers. In a study of preschoolers, for example, Kestenbaum, Farber, and Sroufe (1989) found a positive association between secure attachment to mother and empathic responses to other children who were suffering. In a conceptually similar study of adults, Westmaas and Silver (2001) found that adults who scored high on attachment avoidance behaved less supportively toward a person with cancer than participants who scored low on this dimension. In addition, participants who scored high on attachment anxiety reported greater discomfort while interacting with the person with cancer than participants who scored low on this dimension. Recently, Gillath et al. (2005) examined associations between attachment style and volunteerism (long-term, planned, pro-social behavior, especially behavior intended to benefit strangers; Penner, 2002). In two studies conducted in three countries (Israel, the Netherlands, and the United States), we found that attachment insecurities were negatively correlated with volunteer activities and positively correlated with egoistic motives for volunteering.

There is also evidence that contextual, laboratory-induced augmentation of a person's sense of attachment security increases empathy and prosocial attitudes. For example, Mikulincer and Shaver (2001) reported that subliminal or supraliminal activation of attachment-security representations (thoughts of feeling comforted and reassured by attachment figures during times of stress) increased people's willingness to interact with out-group members. In another set of studies (Mikulincer et al., 2003), an experimentally boosted sense of security increased the endorsement of values that encourage caring for others, including strangers.

In a direct experimental test of compassion, Mikulincer et al. (2001) examined effects of dispositional and contextually augmented attachment security on compassionate responses to others' suffering. Across five experiments, a variety of methods for enhancing attachment security (asking participants to recall personal memories of supportive care, having them read a story about one person's provision of care for another, having them notice a picture of a supportive interaction, or subliminally exposing them to proximity-related words), but not simple enhancement of positive affect, strengthened reports of compassion in reaction to others' suffering. In addition, dispositional avoidance was inversely related to compassion. Attachment anxiety was associated with personal distress in response to another's suffering, but not with compassion.

### The Current Studies

Despite the robust associations we have observed between attachment security and compassionate responses to others' distress, the studies we have conducted so far suffer from at least three limitations. First, Mikulincer et al. (2001) assessed only self-reported reactions (compassion and personal distress), not actual helping behavior. This is an important gap in the evidence linking attachment security with altruistic helping, because a person may feel personally distressed or even compassionate without actually helping (e.g., Batson, 1991). Second, experiments in Mikulincer et

al. (2001) were conducted only in Israel. We wanted to be sure our conclusions generalized to other societies.

Third, although Mikulincer et al. (2001) showed that experimentally induced attachment security increased compassionate responses and dispositional attachment avoidance was related inversely to compassion, these investigators failed to consider alternative, more egoistic explanations of what might only have looked like altruistic responses. This is important, given our theoretical analysis, because we expected attachment security to facilitate altruistic helping by allowing people to take the perspective of the distressed person—the main mechanism underlying altruism (Batson, 1991). That is, we expected attachment security to promote helping even when there was no egoistic payoff such as enhancing one's own mood, experiencing empathic joy, or benefiting someone to whom one was allied or obligated (Cialdini et al., 1987, 1997; Smith, Keating, & Stotland, 1989). These motives should be more salient in insecure individuals, whose worries and attitudes interfere with normal altruistic functioning of the caregiving system.

In the five experiments reported here, we examined effects of experimentally enhanced attachment security on compassion and altruistic behavior in samples of Israeli and American participants. We also examined associations between dispositional attachment anxiety and avoidance, on the one hand, and measures of compassion, personal distress, and helping, on the other, and evaluated the egoistic explanations of helping proposed by Cialdini et al. (1987, 1997) and Smith et al. (1989). We expected that contextually heightened attachment security would facilitate compassion and helping, that dispositional attachment anxiety would be associated with high levels of personal distress in response to another person's suffering without promoting helpful behavior, and that dispositional attachment avoidance would be associated with relatively low levels of both compassion and helping. We further expected the effects of security enhancement to be attributable to genuinely empathic altruism and therefore to be observed even when there was no egoistic reason for helping. To the extent that egoistic motives played any role in helping at all, we expected them to occur mainly among insecure people. Finally, because we anticipated that critics, as in the case of Batson's research, would propose that the effects of attachment security were actually due to confounded variables such as self-esteem and neuroticism, we included measures of those variables in Studies 3–5.

### *Study 1*

In Study 1, we assessed participants' dispositional attachment style, manipulated the momentary mental availability of security-related representations, and assessed their effects on emotional reactions to a needy woman and on willingness to help her. To heighten the accessibility of mental representations of attachment security, we used a subliminal priming technique developed by Mikulincer et al. (2001). Participants were exposed for 20 ms to names of people they had previously nominated as security-enhancing attachment figures. We compared this condition with two control conditions: (a) subliminal priming with names of close relationship partners who did not serve a secure-base function in the attachment-theory sense and (b) subliminal priming with names of acquaintances who were not close and did not serve secure-base functions for the participant.

To assess emotional reactions to a needy person (empathy or compassion, as well as personal distress) and participants' actual decision to help or not to help this person, we created a laboratory situation in which participants watched another ostensible participant (a young woman confederate who was actually appearing on videotape) while she performed a series of aversive tasks in a nearby room. As the study progressed, the confederate became increasingly distressed by the aversive tasks, finally getting quite upset about the prospect of having to pet a large, live tarantula in an open-topped glass tank. After a short break in the procedure, supposedly to allow the confederate to calm down, participants rated their emotional reactions while watching this woman (compassion, personal distress) and their willingness to help by replacing her in the subsequent tasks. Then, after being told that she felt very uncomfortable with the remaining tasks, participants were given an opportunity to trade roles with her, which meant that the real participant would bear the distress associated with those tasks.

As with the other studies reported in this article, Study 1 was conducted simultaneously in the United States and Israel. It consisted of two sessions. In the first, participants completed the Experience in Close Relationships Scale (ECR; Brennan et al., 1998). In the second, they were randomly divided into three experimental conditions according to the subliminal primes to which they were exposed immediately before the aversive-task scenario just described: priming with the name of a participant's security-providing attachment figure, priming with the name of a close person who did not function as an attachment figure, or priming with the name of a mere acquaintance. At the point of making a decision about replacing the distressed woman, all participants completed brief measures of compassion, personal distress, and willingness to take her place. Our predictions were as follows:

1. Participants in the security-priming condition would report higher levels of compassion and greater willingness to help the distressed woman and would actually be more likely to help her (i.e., trade roles with her) than would participants in the two control conditions.
2. Participants' scores on attachment avoidance would be inversely correlated with rated compassion, willingness to help the needy woman, and actual agreement to help her.
3. Participants' scores on attachment anxiety would be positively associated with ratings of personal distress while watching the distressed woman performing the aversive tasks.

We also explored possible interactions between security priming and scores on the two attachment-style dimensions. Although we did not make any prediction about these interactive effects, it seemed possible that the effects of security priming would be independent of the effects of attachment style, as they had been in previous studies (e.g., Mikulincer et al., 2001; Mikulincer & Shaver, 2001). Because all human beings are potentially responsive to an enhanced sense of security, they all may be susceptible



Table 1  
*Cronbach's Alpha Coefficients for the Scales Used in the Five Studies, Reported Separately for the American and Israeli Samples*

Measure	Study 1	Study 2	Study 3	Study 4	Study 5
Attachment anxiety					
American sample	.92	.89	.86	.85	.89
Israeli sample	.93	.92	.85	.84	.89
Attachment avoidance					
American sample	.93	.92	.89	.88	.84
Israeli sample	.87	.88	.86	.85	.82
Compassion					
American sample	.85	.79	.86	.89	.90
Israeli sample	.92	.90	.87	.85	.86
Personal distress					
American sample	.86	.90	.88	.89	.89
Israeli sample	.93	.88	.88	.88	.91
Willingness to help					
American sample			.90	.91	.91
Israeli sample			.90	.89	.91
Self-esteem					
American sample			.88	.89	.89
Israeli sample			.93	.88	.87
Neuroticism					
American sample			.89	.92	.90
Israeli sample			.88	.88	.86

to the effects of security priming regardless of variations in attachment style.

### Method

**Participants.** Ninety American undergraduates at the University of California, Davis (68 women and 22 men, ranging in age from 19 to 30 years, *Mdn* = 21), and 90 Israeli undergraduates from Bar-Ilan University (68 women and 22 men, ranging in age from 18 to 33 years, *Mdn* = 22) participated in the study in exchange for credits toward a research participation requirement in one of their psychology courses.<sup>1</sup> Each of the two samples, American and Israeli, was randomly divided into three experimental conditions with 30 participants in each.

**Materials and procedure.** The study was run in two sessions.<sup>2</sup> In the first session, participants completed the ECR scale. They rated the extent to which each item was descriptive of their feelings in close relationships on a 7-point scale ranging from *not at all* (1) to *very much* (7). Eighteen items tapped attachment anxiety (e.g., "I worry about being abandoned") and 18 items tapped attachment avoidance (e.g., "I prefer not to show a partner how I feel deep down"). The reliability and validity of the scales have been repeatedly demonstrated (e.g., Brennan et al., 1998; Mikulincer & Florian, 2000). In the current study as well, Cronbach's alphas were high for the anxiety and avoidance scales (see Table 1). Higher scores indicated higher anxiety and avoidance; low scores on both dimensions indicated attachment security.<sup>3</sup>

Three to four weeks later, a different experimenter of the same gender as the participant, blind to participants' attachment scores, contacted them by phone and invited them to take part in a study. Each person then came to the laboratory (one at a time) and was run through the experiment. After arriving at the laboratory, participants were informed that the study dealt with social abilities, reactions to unpleasant stimuli, and reactions to other people behaving in unpleasant situations. They were told that there was another participant in the next room, a female fellow student who had been randomly assigned to perform some unpleasant tasks while the participant receiving the instructions had been randomly assigned to watch the other person perform these tasks and evaluate her performance. Participants were then informed that, although none of the tasks was actually dangerous,

some were sufficiently stressful that some people did not want to complete them. They then received the list of tasks the other person would perform: looking at gory photographs of people who had been severely injured or killed; petting a laboratory rat; immersing one hand in ice water for 30 s; petting a live tarantula; touching a preserved sheep's eye; petting a live snake; inserting one hand into a sealed, black bag; allowing cockroaches to crawl on one's hand and arm. Participants were also told there was a video camera in each room connected to TV monitors (the participant saw himself or herself on a TV monitor at first, to add to the credibility of this claim, but he or she was then told that the other person would not see them during the first phase of the experiment). They were told that they would see the other person after the camera in the other room was switched on, because this was necessary to allow the participant to watch her performance.

<sup>1</sup> Each study involved new samples of participants who had not participated in the other studies. Across the five studies, inclusion of gender as an additional factor in the analyses did not notably change the reported findings. Moreover, no significant and consistent gender differences were found across the five studies, and none of the interactions between gender and the other predictor variables were significant. We therefore say no more about gender except for brief comments in the General Discussion section.

<sup>2</sup> Across all five studies, the materials and procedures were identical in the paired U.S. and Israeli studies, although all of the materials were presented in English in the U.S. studies and in Hebrew in the Israeli studies. Careful translation and back-translation procedures were used to make the materials as similar as possible in the two languages.

<sup>3</sup> In all five studies, statistical analyses revealed no significant differences in attachment scores as a function of gender, nationality, or condition. Across the studies, the correlation between anxiety and avoidance was generally low, ranging from .09 to .23 in the American sample and from .11 to .28 in the Israeli sample. The mean correlation across all samples was .18. This is compatible with the conceptual orthogonality of the two dimensions of insecurity (Brennan et al., 1998).

Following these instructions, participants completed three measures designed to elicit names of attachment figures, other close persons, and acquaintances to be used in the priming task. The order of these three measures was randomized across participants. In one measure, participants received a list of 100 first names displayed in an Excel worksheet and marked the names of people they knew. They were instructed to press 3 after the name of a person they knew and 1 after the name of a person they did not know. In a second measure, participants were asked to type, in an Excel worksheet, the first names of their father, mother, brothers, sisters, best friends, current and previous romantic partners, grandfathers, and grandmothers. (No mention was made about the functions these people did or did not serve in the participant's life.)

The third measure was a computerized version of the six-item WHOTO scale developed by Fraley and Davis (1997; based on previous work by Hazan, Hutt, Sturgeon, & Bricker, 1991). This scale asked participants to provide the first names of close relationship partners who serve attachment functions. Specifically, participants were asked to record in a separate Excel worksheet the first names of people with whom they sought proximity and who provided a safe haven or secure base for them or both. (These two concepts from attachment theory were explained in laypersons' terms.) Two items tapped the proximity-seeking aspect of attachment, with one of them focused on separation protest ("Who is the person you most like to spend time with?"; "Who is the person it is hardest to be away from?"). Two items tapped the safe-haven function ("Who is the person you want to talk to when you are worried about something?" "Who is the person you turn to when you are feeling down?"), and two items tapped the secure-base function ("Who is the person you know will always be there for you?"; "Who is the person you want to share your successes with?"). For each item, participants wrote the first name of the person who best served the targeted function and labeled that person's relational role (e.g., mother, father, friend).

Across all of the studies reported in this article, the average number of different attachment figures' names participants generated in the six-item WHOTO scale was 3.36 ( $SD = 1.09$ ). A close friend was nominated as an attachment figure in 43% of the cases (across all WHOTO items), a romantic partner was nominated in 18% of the cases, mother in 20% of the cases, father in 9% of the cases, and other family members in 10% of the cases. No significant association was found between participants' attachment scores and nomination of specific figures (mother, father, friends, romantic partner). These findings replicate previous results (e.g., Fraley & Davis, 1997; Mikulincer, Gillath, & Shaver, 2002) and indicate that most of the persons identified in the WHOTO by participants in our studies were extrafamilial figures.

Following these computerized questionnaires, participants completed a short delay filler questionnaire about life habits and were then asked to complete a 20-trial computerized lexical-decision task. This task was designed to prime a specific mental representation subliminally. In this task, participants read a string of letters and were asked to decide whether it constituted a word. The task was run on a Pentium IBM-PC, with an SVGA color monitor, and was programmed using Superlab software. The letter strings were displayed in black lettering on a white background in the middle of the monitor screen. Participants completed 20 trials. Each trial of the task consisted of a rapid subliminal presentation of the prime (for 20 ms) followed, after a pause of 500 ms, by the presentation of one of 20 target letter strings (for 1 s). Participants judged as quickly as possible whether the letter string was or was not a word by pressing 1 on the keyboard number pad if they thought the string was a word and 3 if they thought it was not a word. There were 10 words (e.g., lake, table) and 10 nonwords (e.g., aekl).

For each participant, the subliminal prime was one of three names, chosen on the basis of either the person's unique answers to the WHOTO questionnaire, the names of other close persons provided by the participant, or the names of people the participant knew but to whom he or she was not close. On each trial, the prime was presented for 20 ms, which was not long

enough to allow it to be consciously seen. Participants were told that each trial would begin with an *x* in the middle of the screen, where they should keep their eyes fixed, followed by a mild flash, which they should ignore, and then, after a brief pause, the target letter string. It is important to mention that even when a prime is presented for as little as 20 ms, the afterimage may temporarily remain active in the peripheral parts of the visual system, allowing people to recognize the name and thereby interfering with the subliminal priming procedure. To avoid this problem, we masked each prime with an XXX pattern immediately following its presentation.

For purposes of this task, we randomly divided participants into three conditions according to the name to be subliminally presented in all 20 trials. In the security-priming condition, the prime was the name of the person most frequently mentioned as an attachment figure when the participant completed the WHOTO measure (in cases where the top two names appeared equally often, the computer program chose one of them at random). In the close-person-priming condition, the prime was the name of a close-relationship partner who was not nominated as serving any of the attachment functions mentioned in the WHOTO scale. The program was designed to pick the name of a participant's mother if she was not nominated in the WHOTO scale. In cases where she was nominated as an attachment figure, the computer picked the name of the participant's father as the prime. If father was not available, the program moved through the names of sisters, brothers, and close friends who were not nominated as attachment figures and chose one randomly to serve as the prime. In the acquaintance-priming condition, the prime was the name of a person known by the participant but not viewed as a close-relationship partner or an attachment figure.

Following the lexical-decision task, the experimenter said he or she would go to the next room to tell the other experimenter that his or her participant could now begin performing the tasks on the list. The experimenter also said the other experimenter would begin to display the other participant's performance on the actual participant's TV monitor. As part of the cover story, the experimenter reminded the participant to focus on the way the other participant performed the task. The experimenter then left the room for one minute, returned to the experimental room, and turned on the TV monitor, allowing participants to watch a prerecorded videotape, which they believed was a live performance. On the tape, a female fellow participant could be seen performing a series of tasks presented by a male experimenter. All of the tasks had been selected on the basis of pilot research. We located aversive tasks that had been used in previous studies and also asked Israeli and American undergraduates to generate lists of aversive tasks that might be used in laboratory studies. Another sample of undergraduates rated the averseness of each of these tasks. We used the eight tasks that received the highest averseness ratings.

In the videotaped segment, participants saw Liat, a female participant (actually a bilingual student from Israel who was studying at the University of California, Davis), with a male experimenter. The experimenter explained to Liat (in English for the version used in the United States and in Hebrew for the version used in Israel) that she would be asked to perform a variety of aversive tasks and that she was free to stop whenever she chose. She agreed to proceed and then began the first task, which was to look at three somewhat gory accident and death pictures. Liat acted as if she was moderately horrified by the three pictures (showing a burned hand, a burned man, and an injured face), but she did manage to look at them. She then rested while the experimenter prepared the next task, which involved holding a large gray lab rat. The experimenter took the rat out of its cage and put it in Liat's hands. She seemed to be dismayed by the rat but did hold it for a few seconds before almost dropping it, at which point the experimenter took it back.

Liat rested and then began the third task, which was to plunge her hand and forearm into ice water for 30 s. The experimenter took a large bucket from under the table and filled it with real ice. Liat then tried once to put her hand in it, but found it too cold and painful, and withdrew her hand.

The second time she succeeded but kept grumbling, "Ooh, it's painful and cold." After 20 s she said, "I'm not sure I can go on with it." The experimenter asked Liat if she wanted to quit, but she replied, "No, I had better finish the experiment." After finishing this task, Liat asked how many more tasks there were, and the experimenter said there were five more. Liat then approached the fourth task (which was actually scripted to be the last)—touching a live tarantula (a large, hairy spider). The tarantula, visible inside an open-topped glass aquarium, was placed in the middle of the table, and the experimenter touched it to show Liat that it was alive. He asked her to touch it. She tried but broke off quickly, saying with great distress that it was just too much for her. The experimenter asked her to try again, which she did, but again she broke off quickly and said, very upset, "I can't go on. Maybe the other person can do it." The experimenter then tried to calm Liat, but when he saw that she really could not go on, he said, "OK, I'll stop the camera and we'll try again later."

After the TV screen went blank in the actual participant's room, the experimenter asked the participant to complete a 24-item questionnaire while waiting for Liat to recover. (As we mentioned earlier, participants were initially instructed that they were assigned to watch the other person perform some tasks and to evaluate her performance, so the questionnaire did not seem surprising or out of place.) Among other questions, this instrument included the main dependent variables of the study: emotional reactions to the distressed participant (compassion, personal distress) and willingness to help her by performing the remaining tasks.

Participants were presented with 10 adjectives describing different emotional states and were asked to rate how much they had experienced each emotion while watching Liat. Ratings were made on a 7-point scale, ranging from *not at all* (1) to *very much* (7). The adjectives were chosen from lists created by Batson, Fultz, and Schoenrade (1987) to measure empathy, or compassion, and personal distress. The list included four compassion-related adjectives (sympathetic, warm, compassionate, and tender) and six personal distress adjectives (afraid, uncomfortable, troubled, distressed, disturbed, and worried).

A factor analysis using varimax rotation yielded two main factors (with eigenvalues greater than 1) that explained 64% of the variance in the English version of the scale and 76% of the variance in the Hebrew version and replicated the two-factor structure intended by Batson et al. (1987). The first factor (accounting for 42% of the explained variance in the American sample and 46% in the Israeli sample) included the six personal distress adjectives (all with factor loadings above .60). The second factor (accounting for 22% of the variance in the American sample and 30% in the Israeli sample) included the four compassion adjectives (all with factor loadings above .60). Cronbach's alpha coefficients for unit-weighted scales composed of items loading highly on the two factors were high (see Table 1). Higher scores on the scales indicate higher compassion and personal distress.<sup>4</sup>

In addition, participants rated the extent to which they were willing to replace Liat and perform the tasks she was supposed to perform. This rating was also done on a 7-point scale, ranging from *not at all* (1) to *very much* (7). Once these questions were answered, the experimenter said he would go to the next room and see if Liat was ready to continue with the tarantula task and the four remaining tasks. The experimenter left the room for 1 min, returned to the experimental room, and told the participant, "We have a difficult situation here. The other person is very uncomfortable with these tasks." The experimenter then asked the actual participant if he or she would agree to help Liat by replacing her in the tarantula task and the four remaining tasks. Participants were also told that Liat would be asked to continue if they felt they could not help. The participant's dichotomous response (*yes* = 1, *no* = 0) was used as an additional dependent variable. After deciding yes or no to this final question, each participant was fully debriefed about the goals and methods of the study and was interrogated for suspicions about the manipulations, goals, and hypotheses of the study. Across all of the studies reported in this article, only a few participants expressed suspicions and they were excluded from the statistical analyses.

In both the American and Israeli samples, Pearson correlations revealed that the decision to help the distressed person was strongly associated with reported willingness to help her (*r*s of .62 and .59, *p*s < .01) and moderately associated with ratings of compassion (*r*s of .26 and .29, *p*s < .01). Actually volunteering to help was not significantly associated with ratings of personal distress (*r*s of -.12 and -.06), indicating that distress did not lead to helping.

## Results and Discussion

*Effects of attachment-security priming.* To test our predictions about the effects of attachment-security priming on compassionate and helping responses, we conducted two-way multivariate and univariate analyses of variance (ANOVAs) for priming condition (attachment security, close person, acquaintance) and nationality (American, Israeli). The dependent variables were participants' ratings of compassion, personal distress, and willingness to help the distressed woman, as well as their actual agreement to help her.<sup>5</sup>

The multivariate analysis of variance (MANOVA) revealed significant main effects for priming condition,  $F(8, 342) = 5.44$ ,  $p < .01$ , and participant nationality,  $F(4, 171) = 20.08$ ,  $p < .01$ . The interaction term was not significant,  $F(8, 342) = 0.09$ . Univariate ANOVAs revealed that the main effect of priming condition was significant for ratings of compassion,  $F(2, 174) = 8.51$ ,  $p < .01$ ,  $\eta^2 = .10$ , rated willingness to help the distressed woman,  $F(2, 174) = 11.60$ ,  $p < .01$ ,  $\eta^2 = .12$ , and actual agreement to help her,  $F(2, 174) = 11.46$ ,  $p < .01$ ,  $\eta^2 = .12$ . The priming procedure had essentially no effect on ratings of personal distress,  $F(2, 174) = 0.57$ . As can be seen in Table 2, Scheffé post hoc tests revealed that American and Israeli participants who were subliminally primed with an attachment-security representation reported higher levels of compassion and more willingness to help the distressed woman and more often decided to replace her for the remaining aversive tasks, compared with participants in the close-person and acquaintance-priming conditions. No significant difference was found between the close-person and acquaintance-priming conditions. ANOVAs also revealed significant differences between the two samples, American and Israeli, in compassion,  $F(1, 174) = 11.61$ ,  $p < .01$ ,  $\eta^2 = .06$ , and personal distress,  $F(1, 174) = 66.89$ ,  $p < .01$ ,  $\eta^2 = .28$ . As can be seen in Table 2, American participants reported higher compassion and personal distress than did Israeli participants. None of the univariate interactions was significant, all *F*s < 1.

*The contribution of attachment-style dimensions.* In examining the unique and interactive contributions of the two attachment

<sup>4</sup> In all five studies, the compassion score was significantly but not strongly associated with the personal distress score, with *r*s ranging from .21 to .29 (all *p*s < .05) in the American sample and from .25 to .32 (all *p*s < .05) in the Israeli sample. The mean correlation across all the samples was .26. This suggests that some participants interpreted their personal distress as compassion or vice versa. However, this did not eliminate the very distinct patterns of findings for the two variables. Compassion was consistently associated with security and helping, whereas personal distress was not. Also, personal distress was consistently associated with attachment anxiety, whereas compassion and helping were not.

<sup>5</sup> In all five studies, the significance level for analyses conducted on the entire sample of American and Israeli participants was set at  $p < .01$  to avoid inflation of Type I errors.

Table 2  
*Means, SDs, and F-Ratios for Compassion, Distress, Willingness to Help the Victim, and Agreement to Help According to Priming Condition and Sample Nationality (Study 1)*

Measure		Total	Attachment			<i>F</i> (2,87)
			Figure	Close Person	Acquaintance	
American sample						
Compassion	<i>M</i>	5.01	5.64 <sup>a</sup>	4.71 <sup>b</sup>	4.69 <sup>b</sup>	4.28*
	<i>SD</i>	1.49	1.30	1.46	1.50	
Distress	<i>M</i>	5.11	4.98 <sup>a</sup>	5.09 <sup>a</sup>	5.27 <sup>a</sup>	0.39
	<i>SD</i>	1.30	1.55	1.19	1.16	
Willing to help	<i>M</i>	3.88	4.77 <sup>a</sup>	3.33 <sup>b</sup>	3.53 <sup>b</sup>	4.63*
	<i>SD</i>	2.05	2.02	2.01	1.91	
Agree to help	<i>M</i>	0.48	0.70 <sup>a</sup>	0.36 <sup>b</sup>	0.37 <sup>b</sup>	4.78*
	<i>SD</i>	0.50	0.47	0.49	0.50	
Israeli sample						
Compassion	<i>M</i>	4.21	4.95 <sup>a</sup>	3.76 <sup>b</sup>	3.94 <sup>b</sup>	4.34*
	<i>SD</i>	1.49	1.62	1.83	1.61	
Distress	<i>M</i>	3.30	3.13 <sup>a</sup>	3.35 <sup>a</sup>	3.41 <sup>a</sup>	0.25
	<i>SD</i>	1.64	1.43	1.88	1.59	
Willing to help	<i>M</i>	3.17	4.30 <sup>a</sup>	2.37 <sup>b</sup>	2.87 <sup>b</sup>	7.09**
	<i>SD</i>	2.20	2.10	2.01	2.08	
Agree to help	<i>M</i>	0.41	0.67 <sup>a</sup>	0.27 <sup>b</sup>	0.30 <sup>b</sup>	6.83**
	<i>SD</i>	0.49	0.48	0.45	0.47	

*Note.* *F*-ratios examining differences between priming conditions in each of the two samples. Means with different letters within a row were significantly different at  $p < .01$ .

\*  $p < .05$ . \*\*  $p < .01$ .

dimensions, four-step hierarchical regression analyses were conducted on compassion, personal distress, willingness to help the distressed woman, and actual agreement to help her. In the first step, security priming (a dummy variable contrasting security priming with the combination of close-person and acquaintance priming), nationality (a dummy variable comparing American with Israeli participants), attachment anxiety, and attachment avoidance were introduced as predictors. The product terms representing all of the two-way interactions were introduced in the second step, the products representing all of the three-way interactions were entered in the third step, and the four-way interaction was added in the fourth step.

The regressions conducted on compassion, willingness to help the distressed woman, and actual agreement to help revealed similar patterns of effects. First, they yielded significant main effects of security priming,  $\beta$ s of .23, .28, and .29,  $ps < .01$ , even after controlling for the contributions of the attachment dimensions. Second, they yielded the already reported significant effect of nationality on compassion,  $\beta = .24$ ,  $p < .01$ . Third, the unique main effect for attachment avoidance was also significant for compassion ratings and willingness and agreement to help the suffering woman,  $\beta$ s of  $-.31$ ,  $-.22$ , and  $-.21$ ,  $ps < .01$ . Supporting our predictions, higher scores on attachment avoidance were associated with lower levels of rated compassion toward Liat and less rated and actual willingness to help her. Neither the main effect of attachment anxiety nor any of the interactions were significant.

The regression conducted on the personal distress score yielded the already reported significant effect of nationality,  $\beta = .52$ ,  $p <$

.01, and a significant main effect of attachment anxiety,  $\beta = .26$ ,  $p < .01$ . Higher attachment-anxiety scores were associated with higher personal distress while watching Liat suffer. No other main effects or interactions were significant.

Overall, the findings supported our predictions. First, subliminal priming with names of security-providing attachment figures led participants to report higher levels of compassion toward a woman in distress and higher willingness to help her. More important, these participants were more likely actually to relieve her distress by taking over the remaining aversive tasks than participants in the two control conditions. Because this contextual activation was accomplished at a subliminal level, we inferred that the observed prosocial effects of attachment security did not require conscious mediation or deliberation. Rather, the attachment-caregiving link seems to be made at a preconscious, automatic level. Second, whereas avoidance scores were inversely associated with compassionate and helpful responses, attachment anxiety was associated with higher ratings of personal distress while watching a suffering woman. It is important to note that these effects were obtained in both the American and the Israeli samples, and there was no significant interaction between attachment-style dimensions and contextual activation of attachment security as determinants of participants' reactions to another person's distress. That is, the prosocial effects of heightened accessibility of attachment-security representations were observed regardless of variations in dispositional attachment orientation.

*Testing an alternative interpretation.* Despite the theoretical predictability and cogency of the findings, they might also have been explained in terms of modeling, because the priming proce-



sure might directly arouse thoughts of helping without any mediation by attachment representations. Although modeling might also have been facilitated caregiving, we believed that the most direct effect of exposing a person to representations and reminders of a caring figure is the activation of feelings of being protected, supported, and comforted rather than the activation of wishes to assist others. Moreover, the primed thoughts and feelings related to attachment security were not assumed to activate caregiving representations automatically; rather, we believed they potentiated these representations in conjunction with encountering a person in need. In other words, in the presence of signals of need, heightened security promotes smooth activation and functioning of the caregiving system. The caregiving system is not directly activated by representations of a caring person but by exposure to other people's distress; representations of a familiar caregiver or attachment figure facilitates this activation by removing attachment-related worries and defensive (avoidant) tendencies. If this reasoning is correct, thinking about a caring attachment figure without the presence of another person in need or distress should activate representations of attachment security but not necessarily activate thoughts of helping others.

To explore this issue we ran two small additional studies. In the first one, a sample of 30 Israeli undergraduates (21 women, 9 men) completed the WHOTO task, which was designed to elicit the names of attachment figures, and also provided the names of people who were close to them without being attachment figures (see the preceding *Method* section). Participants were then randomly assigned to one of two conditions. Half (11 women, 4 men) were asked to visualize the face of the person they nominated most frequently in the WHOTO scale (the attachment-figure priming condition), and the others (10 women, 5 men) were asked to visualize the face of a close-relationship partner who was not nominated in the WHOTO scale (the close-person priming condition). In both conditions, participants were asked to bring the targeted person to mind and think about him or her for 2 min. This visualization procedure was identical to the one used by Baldwin et al. (1996). Next, all participants completed a 15-item scale tapping feelings, thoughts, and motives elicited by the visualization task. Participants rated the extent to which each item was descriptive of their feelings, thoughts, and motives during the visualization task. Ratings were made using a 7-point scale, ranging from 1 (*not at all*) to 7 (*very much*). Embedded among other items, there were 4 tapping attachment security ("I felt a sense of safety," "I felt protected from danger," "I thought I'm loved by others," "I felt happy about having people who can support me in times of need"; Cronbach's  $\alpha = .91$ ) and 4 tapping caregiving motives ("I felt a need to help another person," "I thought that I am a caring person," "I wanted to relieve other people's distress," and "I thought about the suffering of human beings"; Cronbach's  $\alpha = .88$ ). Two average scores were computed for each participant, one for security and one for caregiving.

A two-way ANOVA for Visualization Condition  $\times$  Targeted Items (attachment, caregiving), with the second factor treated as a within-subject repeated measure, revealed a significant interaction,  $F(1, 28) = 16.61, p < .01, \eta^2 = .16$ . Tests for simple main effects revealed that the visualization of an attachment figure led to stronger feelings of attachment security ( $M = 4.37, SD = 0.84$ ) than the feelings that were aroused by visualizing a close person who was not nominated as an attachment figure ( $M = 2.87, SD =$

0.81),  $F(1, 28) = 29.08, p < .01$ . However, there was no significant difference in caregiving motives between the two visualization conditions ( $M = 2.92, SD = 0.77$  for attachment figure visualization;  $M = 3.02, SD = 0.79$  for close person visualization),  $F < 1$ . In addition, simple main effects tests indicated no significant difference between attachment security feelings and caregiving motives while visualizing a close person,  $F < 1$ , but higher attachment security feelings than caregiving motives while visualizing an attachment figure,  $F(1, 28) = 26.71, p < .01$ . These findings clearly indicated that thinking about a caring attachment figure elicits representations of attachment security but not caregiving representations.

In the second supplementary study, we wanted to evaluate this conclusion further and possibly extend it to the implicit processes examined in Study 1. Specifically, we examined the effects of subliminal priming with the name of an attachment figure (as in Study 1) on the cognitive accessibility of representations of attachment security and representations of caregiving in a lexical-decision task. A different sample of 28 Israeli undergraduates (20 women and 8 men) completed the WHOTO scale and provided names of close persons. They then performed a 96-trial computerized lexical-decision task based on the procedure used by Baldwin et al. (1993). The parameters of the task were identical to those described in the preceding *Method* section. Each trial consisted of a rapid subliminal presentation (for 20 ms) of a prime word followed by a backward mask (an XXX pattern) and, after a pause of 500 ms, the appearance of a three-word sentence (for 1 s). Participants judged as quickly as possible whether the last string of letters in the three-word sentence was or was not a word by pressing 1 on the keyboard number pad if the string was a word and 3 if it was not a word. Participants were randomly assigned to two conditions, each receiving only one of the two kinds of primes. For half the participants (10 women, 4 men), the prime was the name of the person they most frequently nominated in the WHOTO scale (attachment-figure priming). For the remaining participants (10 women, 4 men), the prime was the name of a close-relationship partner who was not nominated in the WHOTO scale (close-person priming).

The three-word sentences were of two kinds: "I feel \_\_\_\_" and "I want to \_\_\_\_" (in Hebrew there is no need to insert the word "to," so all sentences included only three words). We constructed 12 "I feel \_\_\_\_" sentences. The last string of letters in 3 of these sentences was an attachment-security word (safe, protected, loved); in 3 sentences it was a neutral word (clean, different, thin), and in 6 sentences it was a nonword (generated by taking common Hebrew words and scrambling their letters). We also constructed 12 "I want to \_\_\_\_" sentences. The last string of letters in 3 of these sentences was a caregiving word (help, care, protect), in 3 sentences a neutral word (eat, walk, think), and in 6 sentences a nonword. Each of the 24 sentences was presented four times in a random order for each participant. Reaction times (RTs) for identifying whether the last string of letters in each sentence was or was not a word was used as an index of cognitive accessibility of corresponding mental representations (e.g., Baldwin et al., 1993).

For each person, RTs for correct responses were averaged according to type of letter string (attachment-security words, caregiving words, neutral words, and nonwords). We then conducted a two-way ANOVA for prime (attachment figure, close person) and target word (attachment-security, caregiving, neutral), controlling

for RTs for nonwords. Target word was treated as a within-subject repeated factor. This analysis revealed a significant interaction effect,  $F(3, 52) = 3.57, p < .05, \eta^2 = .06$ . As expected, subliminal priming with the name of an attachment figure led to faster RTs (higher cognitive accessibility) for attachment-security words ( $M = 626.83$ ) than did subliminal priming with the name of a close person who was not an attachment figure ( $M = 696.18$ ),  $F(1, 52) = 4.63, p < .05$ . It is important to note that no significant difference was found between the two priming conditions in RTs for the other target words ( $M = 702.78$  vs.  $M = 697.43$  for caregiving words;  $M = 697.94$  vs.  $M = 694.47$  for neutral words), all  $F_s < 1$ .

In the close-person prime condition, no significant difference was found between attachment-security words, caregiving words, and neutral words,  $F > 1$ . In the attachment-figure prime condition, however, participants reacted faster (displayed greater cognitive access) to attachment-security words than to neutral and caregiving words,  $F(2, 52) = 7.95, p < .01$ . No significant difference was found between caregiving and neutral words. Again, this pattern of differences indicates that subliminal exposure to the name of an attachment figure automatically heightens cognitive access to attachment-security representations but not to representations of caregiving. In fact, participants reacted to caregiving words in the same way they reacted to neutral words.

Overall, the results of these two supplementary studies provided strong support for the idea that thinking about a caring attachment figure automatically activates representations of attachment security, while casting doubt on the possibility that the procedure directly activates representations of one's own caregiving inclinations or behaviors. Moreover, this conclusion applies to both explicit and implicit levels of cognitive processing. Hence, the findings of Study 1 cannot easily be explained by modeling processes but instead are best explained in terms of the facilitating or enabling effects of attachment-security representations on caregiving cognitions, feelings, and behaviors in response to another person's distress.

### Study 2

Study 2 was designed to test the replicability of Study 1, while also allowing us to examine whether supraliminal priming of attachment-security representations, a process that involves conscious deliberation, also heightens participants' compassionate reactions to a person in distress. For this purpose, we designed a two-session study similar to Study 1. Specifically, American and Israeli participants completed the ECR scale, watched the same videotape used in Study 1, rated their level of compassion and personal distress while watching the distressed woman as well as their willingness to help her, and were given the opportunity to help her by replacing her for the remaining aversive tasks.

The single difference between the two studies concerned the priming of attachment-security representations. In Study 2, each participant was asked to think consciously about an actual person who functioned for that participant as a security-providing attachment figure, visualize this person, and recall a particular interaction with him or her in which the participant felt supported and comforted. This supraliminal priming was compared with two control-priming conditions: (a) asking participants to think about a person with whom they enjoyed working or studying (in the terms

of attachment theory, an exploration partner) and to recall a particular interaction with that person in which they enjoyed working or studying together and (b) asking participants to think about a mere acquaintance and recall a particular situation in which they interacted with him or her. The predictions were identical to those of Study 1.

### Method

*Participants.* Ninety American undergraduates at the University of California, Davis (56 women and 34 men, ranging in age from 19 to 30 years,  $Mdn = 21$ ), and 90 Israeli undergraduates from Bar-Ilan University (64 women and 26 men, ranging in age from 18 to 35 years,  $Mdn = 22$ ) participated in the study in exchange for research credits in a psychology course. Each of these two samples was randomly divided into three conditions with 30 participants in each.

*Materials and procedure.* Like Study 1, Study 2 was run in two sessions. The first session was conducted identically to the first session of Study 1; participants completed the ECR scales, which once again proved reliable (see alpha coefficients in Table 1).

Three to four weeks later, a different experimenter, unaware of participants' attachment scores, contacted participants by phone and invited them to take part in an experimental study. After arriving at the laboratory, participants were given instructions identical to those in Study 1, were randomly divided into three conditions, and performed a guided imagination task. In the attachment-security priming condition, participants were instructed to think of people to whom they turned when they felt distressed or worried. They were then asked to list six of these people's central qualities, to visualize a specific situation in which one of these people actually comforted and helped them when they were feeling distressed or worried, and to write a brief description of the recalled situation and the way they felt during it.

In the exploration-priming condition, participants were instructed to think of people with whom they enjoyed studying or working, list six qualities common to these people, visualize a real situation in which they learned something with or worked with one of these people, and write a description of the recalled situation and their feelings during it. In the acquaintance-priming condition, participants were instructed to think of other students they knew but with whom they did not have a close relationship, list six traits that described these people, visualize a specific lecture they attended with one of these people, and write a description of the recalled situation and their feelings during it.

Following the guided-imagination task, participants watched the pre-recorded videotape of Liat undergoing four unpleasant tasks and being unable to complete the tarantula-petting task (see Study 1). Then, after the TV screen went blank in the actual participant's room, the experimenter asked the participant to rate his or her emotional reactions to Liat (compassion, personal distress) and willingness to help her by replacing her for the remaining tasks. (The reliability coefficients for the scales in Study 2 are shown in Table 1.) Finally, after informing the participant that Liat felt uncomfortable with the tasks, the experimenter asked the participant whether or not he or she would help Liat by replacing her in the tarantula task and the subsequent four tasks. After providing a yes-or-no response to this question, the participant was debriefed about the goals and methods of the study and thanked for participating. Data from the few participants who expressed any suspicion about the procedures were excluded from the analysis. As in Study 1, Pearson correlations computed for the American and the Israeli samples revealed that actual agreement to help Liat was strongly associated with reported willingness to help her,  $r_s$  of .66 and .63,  $p_s < .01$ , and moderately associated with rated compassion,  $r_s$  of .31 and .26,  $p_s < .01$ . Agreement to help was not significantly associated with personal distress,  $r_s$  of .03 and  $-.10$ .

### Results and Discussion

*Effects of attachment-security priming.* The two-way MANOVA examining the effects of priming condition and participant nationality on compassion, personal distress, willingness to help the suffering woman, and actual agreement to help her revealed significant main effects for priming condition,  $F(8, 342) = 5.59, p < .01$ , and participant nationality,  $F(4, 171) = 26.27, p < .01$ . The interaction was not significant,  $F < 1$ .

Significant differences between priming conditions were found in rated compassion,  $F(2, 174) = 11.02, p < .01, \eta^2 = .12$ , rated willingness to help the suffering woman,  $F(2, 174) = 11.11, p < .01, \eta^2 = .12$ , and actual agreement to take her place,  $F(2, 174) = 9.23, p < .01, \eta^2 = .10$ . The priming procedure had no effect on ratings of personal distress,  $F < 1$ . As can be seen in Table 3, these effects replicated those obtained in Study 1. Specifically, Scheffé post hoc tests revealed that supraliminal priming of representations of a security-providing attachment figure led to greater compassion, greater willingness to help the distressed person, and actual agreement to help her than primed representations of exploration partners or mere acquaintances. There was not a significant difference between the two control conditions. The ANOVAs also revealed significant differences between the two samples in personal distress,  $F(1, 174) = 92.53, p < .01, \eta^2 = .32$ . As in Study 1, American participants reported higher levels of personal distress than did Israeli participants (see Table 3). None of the interactions were significant,  $F_s < 1$ .

*The contribution of the two attachment-style dimensions.* To examine the unique and interactive effects of attachment anxiety and avoidance, we conducted the same kinds of four-step hierarchical regression analyses conducted in Study 1. For compassion,

willingness to help the distressed woman, and actual agreement to help her, the regressions yielded the same pattern of findings obtained in Study 1. First, there was a significant main effect of security priming,  $\beta$ s of .31, .32, and .29,  $p$ s  $< .01$ , even after controlling for the attachment dimensions. Second, the unique main effect of avoidance was significant,  $\beta = -.37, p < .01$  for compassion,  $\beta = -.34, p < .01$  for willingness to help, and  $\beta = -.32, p < .01$  for actually agreeing to replace the distressed woman. As in Study 1, greater avoidance was associated with less compassion for a distressed person, less willingness to help her, and less agreement to take her place. Neither the main effect of attachment anxiety nor any of the interactions were significant.

The regression conducted on the personal-distress scores yielded the already reported main effect of nationality,  $\beta = .59, p < .01$ , and a main effect of attachment anxiety,  $\beta = .24, p < .01$ . The more attachment anxious a participant was, the more distress he or she experienced while watching a fellow participant suffer, but this personal distress did not translate into compassionate helping. No other main effects or interactions were significant.

*Conclusions.* Overall, the findings replicated those of Study 1. Supraliminal priming of representations of attachment security heightened participants' compassion and willingness to help a person in distress. In addition, the findings confirmed that attachment avoidance is inversely related to compassion and helping and that attachment anxiety is positively associated with experiencing personal distress while witnessing the suffering of another person.

As in previous studies (e.g., Mikulincer & Shaver, 2001), the results of subliminal and supraliminal priming were essentially the same: Priming mental representations of attachment security enhanced compassion and helping. The fact that the two procedures

Table 3  
Means, SDs, and F-Ratios for Compassion, Distress, Willingness to Help the Victim, and Agreement to Help According to Priming Condition and Sample Nationality (Study 2)

Measure		Total	Security Priming	Acquaintance Priming	Exploration Priming	$F(2,87)$
American sample						
Compassion	<i>M</i>	4.45	5.24 <sup>a</sup>	3.83 <sup>b</sup>	4.27 <sup>b</sup>	6.14**
	<i>SD</i>	1.68	1.38	1.64	1.73	
Distress	<i>M</i>	5.08	5.10 <sup>a</sup>	4.86 <sup>a</sup>	5.30 <sup>a</sup>	0.94
	<i>SD</i>	1.26	1.24	1.30	1.24	
Willing to help	<i>M</i>	3.90	5.01 <sup>a</sup>	3.67 <sup>b</sup>	3.03 <sup>b</sup>	5.41**
	<i>SD</i>	2.29	2.08	2.23	2.14	
Agree to help	<i>M</i>	0.51	0.73 <sup>a</sup>	0.47 <sup>b</sup>	0.33 <sup>b</sup>	6.45**
	<i>SD</i>	0.50	0.45	0.51	0.48	
Israeli sample						
Compassion	<i>M</i>	4.18	4.88 <sup>a</sup>	3.66 <sup>b</sup>	4.01 <sup>b</sup>	4.90**
	<i>SD</i>	1.62	1.39	1.61	1.64	
Distress	<i>M</i>	3.06	2.83 <sup>a</sup>	3.14 <sup>a</sup>	3.20 <sup>a</sup>	0.50
	<i>SD</i>	1.54	1.32	1.56	1.74	
Willing to help	<i>M</i>	3.72	4.73 <sup>a</sup>	3.37 <sup>b</sup>	3.07 <sup>b</sup>	3.94*
	<i>SD</i>	2.31	2.15	2.27	2.24	
Agree to help	<i>M</i>	0.49	0.70 <sup>a</sup>	0.43 <sup>b</sup>	0.37 <sup>b</sup>	4.81*
	<i>SD</i>	0.50	0.47	0.50	0.49	

Note. F-ratios examining differences between priming conditions in each of the two samples. Means with different letters within a row were significantly different at  $p < .01$ .

\*  $p < .05$ . \*\*  $p < .01$ .

produced similar effects suggests that security priming works similarly whether it is induced consciously or unconsciously. That is, the involvement of conscious processes during priming did not interfere with the prosocial effects of the contextual activation of attachment security.

Before moving on to Studies 3–5, we consider here the absence of a significant association between personal distress and helping and the fact that high scorers on the attachment anxiety scale reported considerable personal distress when seeing another person suffer but apparently had difficulty translating that distress into effective helping. According to Batson (1991), personal distress can be translated into helping as long as helping is seen as the easiest way to reduce the distress. In fact, under laboratory conditions of what is known as *difficult escape*, in which it is difficult or impossible for the potential helper to avoid witnessing the victim's continued suffering, high levels of personal distress can lead to helping (Batson, 1991). In Studies 1 and 2, we created a difficult escape condition, because the participants knew that Liat might feel she had to continue to perform the unpleasant tasks if they did not take her place. However, participants also knew about the ethical constraints on psychological experiments that should prevent the experimenter from forcing Liat to continue if she decided not to. (The participants themselves had completed an informed consent agreement and probably realized that Liat must have done the same thing.) Therefore, some participants might have implicitly construed the situation as an easy escape condition. Lamentably, we did not collect information about this possibility. Our conclusion about a disjunction between personal distress and helping might be limited to easy escape conditions, to people scoring high on attachment anxiety, or to the personal cost of agreeing to engage in stressful tasks (e.g., taking another person's place and having cockroaches run up their arms). Further research will be needed to clarify this issue.

Until that research is completed, we do not know how far our results can be generalized. We deliberately created a situation in which participants thought they would have to suffer if they replaced Liat. This is meant to be similar to real-life situations in which a person takes risks (of disease, loss of time, embarrassment, frustration, physical exertion, etc.) to help someone else—someone, say, who looks seriously ill or injured or unpredictable or uncertain whether he or she wishes to be helped, moved, taken to a hospital, and so on.

We should also mention another possible limitation of Studies 1 and 2. In these studies, the distressed person was a woman and the videotaped experimenter was a man. We decided to videotape a distressed woman following Batson's "lady in distress" procedure (e.g., Batson et al., 1989). Moreover, because the studies were intended mainly to examine effects of attachment orientation and security priming on compassion and helping, which in itself requires a large sample size, we did not vary the gender of the distressed person or the videotaped experimenter. To do so would have entailed much larger samples in two countries. Future studies will be necessary to determine whether the gender combination of participants, distressed person, and experimenter moderate the observed effects of security priming and attachment scores on compassion and helping.

### Study 3

In Studies 3–5, we examined the hypothesis that contextual heightening of attachment security overrides egoistic motives for helping and results in genuinely altruistic helping. Although there is evidence that egoistic motives, such as empathic joy and negative-mood relief, can promote helping (e.g., Cialdini et al., 1987; Smith et al., 1989), we expected the sense of attachment security to increase compassion and helping even when there was no egoistic reason for helping (e.g., no empathic joy, no mood relief). Theoretically, the sense of attachment security involves feelings of safety and self-worth (Mikulincer & Shaver, 2005), which reduces the need for selfishness (defensive self-protection) and allows a person to direct attention to others' distress, take the perspective of a distressed other, and engage in altruistic behavior with the primary goal of benefiting the other person. For secure people, helping others does not need to serve personal-protection goals, because they already feel safe and secure. Rather, their sense of attachment security frees energy and attention to be used by the caregiving system, allowing a person to adopt an empathic attitude toward others' distress, which, according to Batson (1991), is the key mechanism underlying altruistic helping.

We expected the various egoistic motives for helping, proposed and studied by Cialdini et al. (1987, 1997) and Smith et al. (1989), to be more common among insecurely attached people, especially those scoring high on avoidance. We had already found in studies of real-world volunteering (Gillath et al., 2005) that selfish reasons for helping were more common among insecure individuals. For them, because they suffer from doubts and insecurities related to negative models of self and others, helping others provides one possible route to feeling better about themselves. When no egoistic payoff is salient, they should be less eager to help.

In Studies 3–5, we focused on three egoistic motives for helping: mood-enhancement (Cialdini et al., 1987), empathic joy (Smith et al., 1989), and closeness-identification (Cialdini et al., 1997). These motives have been examined in previous studies, producing solid evidence that they sometimes account for helping behavior. Moreover, Batson (1991, 2002) has shown that an empathy manipulation—asking research participants to take another person's perspective—increases helping even when these three egoistic motives are absent. Since empathy is one process underlying the hypothesized effects of attachment security, we expected that contextual bolstering of attachment security would increase helping even in the absence of these three motives.

Study 3 focused on mood enhancement as a motive for helping. Cialdini et al. (1987) hypothesized that witnessing another person's suffering would elicit negative emotions such as sadness or sorrow and that people would help a suffering person to counter their negative feelings and enhance their own mood. Studies have shown that this egoistic motive can account for helping and that anticipation of mood enhancement by means other than helping (e.g., expecting to watch a comic film) reduces helping (e.g., Cialdini et al., 1987; Schaller & Cialdini, 1988). We hypothesized that, although mood enhancement would be a possible motive for helping, security priming would heighten compassion and helping even when participants anticipated mood enhancement by other means. Attachment security by itself provides a sense of protection and comfort that allows a person to shift mental resources from defensive and mood-enhancement efforts to other behavioral sys-



tems, including empathy, compassion, and caring for another person who is suffering.

In Study 3, we assessed participants' dispositional levels of attachment anxiety and avoidance, randomly divided them into two priming conditions (security priming, neutral priming), had them read a true newspaper article about a woman in dire personal and financial distress, and asked them to rate their emotional reactions to the article (compassion, personal distress) and their willingness to help the woman described in the article. In each priming condition, half of the participants were told that after completing the article they would read some funny stories that are known to have mood-enhancing effects (mood-enhancement condition). The remaining participants were told they would read stories whose topics did not seem to have anything to do with mood enhancement (no-mood-enhancement condition). The manipulation was similar to one used by Batson et al. (1989). Our predictions were as follows:

1. Participants in the security priming condition would report more compassion and greater willingness to help the needy woman than participants in the neutral-priming condition, even when they anticipated mood enhancement.
2. The effects of the mood-enhancement manipulation (lower compassion and willingness to help in the mood-enhancement condition) would be significant only following neutral (but not security) priming.
3. Scores on the avoidant attachment dimension would be inversely associated with compassion and willingness to help and would moderate the effects of the mood-enhancement manipulation. Specifically, anticipated mood enhancement would reduce compassion and willingness to help mainly among avoidant participants but not among relatively nonavoidant participants (i.e., those who were closer to the secure end of the avoidance dimension).

In Study 3, we also assessed other individual-difference variables known to be correlated with the attachment-style dimensions, such as self-esteem and neuroticism (see Mikulincer & Shaver, 2003, for a review), because these might be hypothesized as alternative explanations of an association between secure attachment and helping. We could then statistically control for these variables and see whether the attachment dimensions still had unique effects on compassionate, helpful reactions to a person in distress.

### Method

**Participants.** One hundred twenty American undergraduates at the University of California, Davis (91 women and 29 men, ranging in age from 18 to 34 years,  $Mdn = 20$ ), and 120 Israeli undergraduates from Bar-Ilan University (84 women and 36 men, ranging in age from 18 to 30 years,  $Mdn = 22$ ) participated in the study in exchange for research credit. Each of the samples was randomly divided into four conditions with 30 participants in each.

**Materials and procedure.** The study was run in small groups of 5 to 10 participants who were told they were participating in a study of personality and social cognition. Half of them received three self-report scales mea-

suring attachment style, self-esteem, and neuroticism before the experimental manipulations and measures; the other half completed the scales following the experimental procedure.<sup>6</sup> The order of the scales was randomized across participants.

To save time, attachment-related anxiety and avoidance were assessed with brief versions of the ECR scales (see details in Study 1). The versions consisted of the first half of each scale (18 items in all; 9 anxiety items and 9 avoidance items). Using brief versions of the scales was justified by the high reliability coefficients obtained for the full ECR scales in Studies 1 and 2 (coefficients higher than .92). Even the brief scales had high coefficient alphas in Studies 3–5, as shown in Table 1.

Self-esteem was assessed with Rosenberg's (1979) 10-item self-esteem scale. Participants rated their agreement with each item on a 4-point scale ranging from *strongly disagree* (1) to *strongly agree* (4). In Study 3 (and in Studies 4 and 5), Cronbach's alpha for the 10-item scale was high (see Table 1). Neuroticism was assessed with a 12-item version of the Neuroticism subscale of the Eysenck Personality Inventory (Eysenck & Eysenck, 1967). Participants rated the extent to which an item was self-descriptive on a 5-point scale, ranging from *not at all* (1) to *very much* (5). In Studies 3–5, alphas for the 12-item scale were high (see Table 1).<sup>7</sup>

Participants were randomly divided into two experimental conditions according to the thoughts to be primed in the experimental session. Participants in the security-priming condition were asked to complete the WHOTO scale (see Study 1), in which they named specific security-providing attachment figures. Participants in the neutral-priming condition were asked to complete a brief life habits scale, in which they described six leisure activities. Immediately following this procedure, participants were informed that they would read a newspaper article and then some stories. They were also told that they would be asked to report their feelings and reactions to the article and the stories. Participants in each priming condition were then randomly divided into two conditions according to type of stories they would read following the newspaper article. In the anticipated mood-enhancement condition, participants were informed that they would read a series of funny stories that were known to have a mood-enhancing effect. In the no anticipated mood-enhancement condition, participants were told they would read a series of stories that were described in such a way that no particular effect on mood was anticipated.

Following these manipulations, all participants were given a newspaper article about a needy woman. The article described the substantial rise in people eating at a soup kitchen in a city near the university (a composite story based on actual articles in newspapers from the Davis, California, and Tel-Aviv areas) and presented the story of an unemployed widow and mother of five, who brings her children to a free soup kitchen because otherwise they would suffer from hunger and malnutrition, if not starvation. After reading the article, participants were asked to complete a 24-item questionnaire assessing their reactions. Among these questions, participants rated their emotional reactions to the needy woman (compassion, personal distress) and willingness to help her. The 4 compassion items and the 6 personal distress items were the ones used in Study 1 (see

<sup>6</sup> In Studies 3–5, the placement of the individual-difference measures—before or after the experimental procedure—did not significantly affect scores on those measures or on the dependent variables. We therefore say nothing more about this methodological variable.

<sup>7</sup> In Studies 3–5, significant correlations were found between attachment anxiety and self-esteem, with  $r$ s ranging from  $-.22$  to  $-.44$  (all  $p$ s  $< .05$ ). Significant correlations were also found between attachment anxiety and neuroticism, with  $r$ s ranging from  $.32$  to  $.59$  (all  $p$ s  $< .01$ ). Avoidance was not significantly associated with self-esteem or neuroticism,  $r$ s  $< .18$ . As in our previous studies, including the experimental ones (e.g., Mikulincer, Gillath, & Shaver, 2002), the correlations between attachment anxiety, self-esteem, and neuroticism did not explain or eliminate the effects of attachment anxiety.

Table 4  
*Means and SDs for Compassion, Distress, and Willingness to Help According to Sample Nationality, Priming Condition, and Anticipated Mood Enhancement (Study 3)*

Measure		Neutral priming		Security priming	
		No mood enhancement	Mood enhancement	No mood enhancement	Mood enhancement
Compassion					
American sample	<i>M</i>	5.33 <sup>a</sup>	4.69 <sup>b</sup>	5.48 <sup>a</sup>	5.60 <sup>a</sup>
	<i>SD</i>	0.99	1.08	0.99	0.95
Israeli sample	<i>M</i>	5.65 <sup>a</sup>	4.80 <sup>b</sup>	5.45 <sup>a</sup>	5.85 <sup>a</sup>
	<i>SD</i>	1.25	1.37	1.25	1.18
Personal distress					
American sample	<i>M</i>	3.13 <sup>a</sup>	3.04 <sup>a</sup>	3.61 <sup>a</sup>	3.68 <sup>a</sup>
	<i>SD</i>	1.32	1.32	1.45	1.53
Israeli sample	<i>M</i>	4.25 <sup>a</sup>	3.92 <sup>a</sup>	3.68 <sup>a</sup>	4.36 <sup>a</sup>
	<i>SD</i>	1.49	1.18	1.32	1.26
Willingness to help					
American sample	<i>M</i>	5.29 <sup>a</sup>	4.13 <sup>b</sup>	5.18 <sup>a</sup>	5.09 <sup>a</sup>
	<i>SD</i>	1.20	1.32	1.08	1.24
Israeli sample	<i>M</i>	5.06 <sup>a</sup>	4.48 <sup>b</sup>	5.07 <sup>a</sup>	5.36 <sup>a</sup>
	<i>SD</i>	1.28	1.20	1.17	1.04

Note. Means with different letters within a row were significantly different at  $p < .01$ .

reliability coefficients in Table 1). Willingness to help the needy woman was assessed with 11 items describing specific helping behaviors (e.g., help her search for a job through newspaper want ads, accompany her to job interviews, donate a food item to her once a month). Participants rated the extent to which they would be willing to carry out each described behavior on a 7-point scale, ranging from *not at all* (1) to *very much* (7). (As far as we know, participants believed they actually were agreeing to help if they provided high ratings on these scales, but we did not assess this belief.) As can be seen in Table 1, alphas for these items were high, enabling us to create a scale by averaging the 11 ratings.<sup>8</sup>

### Results and Discussion

*Effects of attachment-security priming.* The effects of attachment security were examined in a three-way MANOVA and follow-up ANOVAs, with priming condition, anticipated mood enhancement, and sample nationality as the factors. Ratings of compassion, personal distress, and willingness to help the needy woman were the dependent variables. The MANOVA yielded significant main effects of nationality,  $F(3, 230) = 5.64, p < .01$ , and priming condition,  $F(3, 230) = 3.95, p < .01$ , and a significant two-way interaction between priming condition and anticipated mood enhancement,  $F(3, 230) = 4.70, p < .01$ . No other effects were significant.

Univariate ANOVAs yielded significant differences between the two national samples only in ratings of personal distress,  $F(1, 232) = 17.05, p < .01, \eta^2 = .09$ . As can be seen in Table 4, Israeli participants reported higher levels of personal distress while reading about the needy woman ( $M = 4.05$ ) than did American participants ( $M = 3.33$ ).

The ANOVAs also revealed that priming condition had a significant main effect on compassion,  $F(1, 232) = 10.35, p < .01, \eta^2 = .05$ , and on willingness to help the needy woman,  $F(1, 232) = 7.52, p < .01, \eta^2 = .04$ . The effect of priming condition on personal distress was not significant,  $F < 1$ . As can be seen in Table 4, participants in the security-priming condition reported

greater compassion and more willingness to help ( $M = 5.59, M = 5.18$ ) than did participants in the neutral-priming condition ( $M = 5.12, M = 4.74$ ). The two-way interaction between priming and anticipated mood enhancement was statistically significant only for compassion,  $F(1, 232) = 11.86, p < .01, \eta^2 = .06$ , and willingness to help,  $F(1, 232) = 9.41, p < .01, \eta^2 = .05$ , but not for personal distress,  $F < 1$ .

Tests for simple main effects revealed the following pattern of differences. In the neutral-priming condition, participants in the anticipated mood-enhancement condition (expecting to read funny stories) reported lower compassion and less willingness to help the needy woman than did participants in the no anticipated mood-enhancement condition (expecting to read neutral affective stories),  $F$ s of 11.90 and 12.34,  $p$ s  $< .01$  (see means in Table 4). This effect supported the mood-enhancement hypothesis tested in previous studies by Cialdini et al. (1987); it indicated that offering a mood-repair alternative (funny stories) led to a significant reduction in participants' compassionate, helping responses. However, these effects of anticipated mood enhancement were not significant in the attachment-security priming condition,  $F$ s of 1.72 and 0.26. As can be seen in Table 4, participants who were primed with representations of attachment security reported relatively high levels of compassion and willingness to help the needy woman regardless of anticipated mood enhancement.

*The contribution of attachment-style dimensions.* In examining the unique and interactive effects of the attachment-style dimensions (anxiety, avoidance), we conducted five-step hierarchical regressions with attachment anxiety, attachment avoidance, and dummy variables representing nationality, priming condition, and anticipated mood enhancement as the predictors. The technical

<sup>8</sup> In Studies 3–5, willingness to help was significantly associated with compassion, with  $r$ s ranging from .43 to .61 (all  $p$ s  $< .01$ ), but not with personal distress,  $r$ s  $< .15$ .

details of these regressions were similar to those described in Study 1. In addition, we included self-esteem and neuroticism scores (and all their interactions with the other predictors) as covariates within the regression analyses so we could assess the unique contributions of the various predictors even after these individual-difference variables were statistically controlled.

With regard to ratings of personal distress, the regression yielded the already reported significant effect for participant nationality,  $\beta = -.27, p < .01$ , and a significant main effect for attachment anxiety,  $\beta = .21, p < .01$ . In line with the findings of Studies 1 and 2, the higher the attachment-anxiety score, the higher the reported distress while reading about the needy woman. No other main effects or interactions were significant.

With regard to compassion and willingness to help, the regression analyses revealed the now familiar pattern of findings. First, they yielded the already reported significant main effect of security priming,  $\beta$ s of .20 and .18,  $ps < .01$ , and the significant interaction between priming and mood enhancement,  $\beta$ s of .43 and .38,  $ps < .01$ , even after controlling for the attachment dimensions, self-esteem, and neuroticism. Second, the unique main effect of attachment avoidance was significant,  $\beta = -.36, p < .01$ , for compassion,  $\beta = -.28, p < .01$ , for willingness to help. In line with the findings of Studies 1 and 2, the higher the attachment avoidance, the lower the rated compassion and willingness to help. Third, the regressions also yielded a significant two-way interaction of mood enhancement and attachment avoidance,  $\beta = -.24, p < .01$  for compassion,  $\beta = -.29, p < .01$  for willingness to help. Neither the main effect of attachment anxiety nor any of the other interactions were significant.

Regressions examining the source of the significant two-way interaction between mood enhancement and avoidance revealed that anticipation of mood enhancement was significantly associated with lower levels of compassion and willingness to help when participants scored relatively high on attachment avoidance (1 *SD* above the mean),  $\beta$ s of  $-.28$  and  $-.37, ps < .01$ . However, when participants scored relatively low on attachment avoidance (1 *SD* below the mean), anticipated mood enhancement did not have a significant effect on ratings of compassion and willingness to help,  $\beta$ s of  $-.07$  and  $-.03$ . That is, the mood-enhancement hypothesis was supported for avoidant individuals but could not explain the compassionate responses of less avoidant (i.e., more secure) individuals.

**Conclusions.** Overall, the findings indicate that the effects of contextually heightened attachment security on compassion and willingness to help are observable even when mood can be enhanced by means other than helping. It therefore seems that increased security actually fosters empathic, compassionate altruism. This conclusion is also supported by the finding that anticipated mood enhancement led to a drop in compassion and willingness to help only when no attachment-security representation was contextually activated (neutral priming) or among highly avoidant (i.e., relatively insecure) individuals. The dispositional sense of security or the contextual activation of this sense seems to have rendered mood enhancement less relevant and therefore promoted compassionate, helping responses even if those responses had no immediate mood-regulation benefit. The findings also replicated the previously observed associations between attachment avoidance, attachment anxiety, and reactions to others' suffering, while show-

ing that these associations cannot be explained by variations in self-esteem or neuroticism.

#### Study 4

Study 4 focused on the empathic joy motive for helping. Smith et al. (1989) hypothesized that people provide help so that they can empathically enjoy the resolution and relief of the other person's distress. In support of this view, Smith et al. showed that preventing empathic joy—by blocking the opportunity to witness the positive outcomes of one's helping behavior or causing participants to believe that helpful behavior might not produce the desired positive outcomes—reduced helping behavior. We hypothesized that, although empathic joy is a possible motive for helping, security priming would heighten compassion and willingness to help even when little empathic joy was anticipated. Attachment security helps a person maintain a positive mood—due to feeling loved, accepted, and cared for by others, and worthy and special in the eyes of attachment figures—which means that secure individuals have less need than insecure individuals to search for additional sources of happiness and joy (Mikulincer & Shaver, 2005). They can therefore direct their resources to other behavioral systems including caregiving, which involves empathic, altruistic attitudes toward other people's suffering.

To evaluate this hypothesis, we replicated the design of Study 3 but used an empathic joy manipulation rather than a mood-enhancement manipulation. Specifically, we assessed participants' dispositional attachment style, self-esteem, and neuroticism; randomly divided participants into two priming conditions (security priming, neutral priming); gave them a newspaper article about a woman suffering personal and financial distress; and asked them to rate their emotional reactions to the article (compassion, personal distress) and their willingness to help the woman described in it. In each priming condition, half of the participants were told that the needy woman was chronically depressed and her mood might be beyond their ability to repair (no empathic joy condition). The remaining participants were told that the needy woman's feelings would probably benefit from help (empathic joy condition). Our predictions were as follows:

1. Participants in the security-priming condition would report more compassion and greater willingness to help than would participants in the neutral-priming condition, even when they anticipated no empathic joy.
2. The effects of the empathic joy manipulation (lower compassion and willingness to help in the no empathic joy condition) would be significant only following neutral (but not security) priming.
3. Attachment avoidance would be inversely associated with compassion and willingness to help and would moderate the effects of the empathic joy manipulation. Specifically, the anticipation of no empathic joy would reduce compassion and willingness to help mainly among avoidant participants but not among their less avoidant counterparts.

**Method**

*Participants.* One hundred twenty American undergraduates at the University of California, Davis (88 women and 32 men, ranging in age from 17 to 31 years, *Mdn* = 20), and 120 Israeli undergraduates from Bar-Ilan University (79 women and 41 men, ranging in age from 19 to 39 years, *Mdn* = 23) participated in the study in exchange for research credit. Each of the two samples was randomly divided into four conditions with 30 participants in each.

*Materials and procedure.* Most of the study’s instructions, procedure, and materials were identical to those in Study 3. Specifically, participants completed the 18-item brief version of the ECR, the Rosenberg Self-Esteem Scale (Rosenberg, 1979), and the neuroticism scale before or after the experimental manipulations (see reliability coefficients in Table 1). They were then randomly divided into the two priming conditions (security, neutral) according to the questionnaire they completed (WHOTO scale, life habits scale), read the newspaper article about a needy woman, and answered the 24-item questionnaire assessing their emotional reactions (compassion, personal distress) and willingness to help (see reliability coefficients in Table 1).

The single difference between Study 3 and Study 4 was the inclusion in Study 4 of an empathic joy manipulation instead of a mood-enhancement manipulation. Specifically, participants in each priming condition were randomly divided into two conditions according to additional information they received about the mental health of the needy woman. In the empathic joy condition, the newspaper article stated that although the woman was diagnosed as suffering from mild depression, her prognosis was good and improvement was expected in the near future. In the no empathic joy condition, participants read that the woman was suffering from severe depression, that her prognosis was not good, and that no improvement was expected in the near future. In this condition, participants were led to believe that although their help might objectively improve the woman’s situation, it probably would not improve her mood and therefore would not allow them to experience empathic joy.

**Results and Discussion**

*Effects of attachment-security priming.* The effects of attachment security were examined in a three-way MANOVA and follow-up ANOVAs, as described in Study 3. The MANOVA

yielded significant main effects for participant nationality,  $F(3, 230) = 11.46, p < .01$ ; priming condition,  $F(3, 230) = 14.83, p < .01$ ; empathic joy,  $F(3, 230) = 5.83, p < .01$ ; and a two-way interaction between priming condition and empathic joy,  $F(3, 230) = 8.60, p < .01$ . No other effects were significant. ANOVAs yielded significant differences between the two samples in ratings of personal distress,  $F(1, 232) = 7.99, p < .01, \eta^2 = .04$ , and willingness to help,  $F(1, 232) = 24.60, p < .01, \eta^2 = .09$ . As in Study 3, Israeli participants reported higher levels of distress while reading about the needy woman ( $M = 3.68$ ) than did American participants ( $M = 3.19$ ). However, American participants reported higher willingness to help ( $M = 4.77$ ) than did Israeli participants ( $M = 3.98$ ).

The main effect of empathic joy was significant only for ratings of personal distress,  $F(1, 232) = 13.95, p < .01, \eta^2 = .05$ . Participants in the no empathic joy condition reported higher levels of personal distress while reading about the needy woman ( $M = 3.76$ ) than did participants in the empathic joy condition ( $M = 3.11$ ). The ANOVAs also revealed that priming condition had a significant main effect on compassion,  $F(1, 232) = 34.06, p < .01, \eta^2 = .13$ , and willingness to help,  $F(1, 232) = 26.32, p < .01, \eta^2 = .09$ . As in Study 3, participants in the security-priming condition reported higher compassion and greater willingness to help ( $M = 5.44, M = 4.78$ ) than did participants in the neutral-priming condition ( $M = 4.52, M = 3.96$ ). The two-way interaction between priming and empathic joy was also significant for compassion,  $F(1, 232) = 23.38, p < .01, \eta^2 = .08$ , and willingness to help,  $F(1, 232) = 9.29, p < .01, \eta^2 = .04$ .

Tests for simple main effects revealed the following pattern of differences: In the neutral-priming condition, participants in the empathic joy condition (reading about a mildly depressed needy woman) reported higher compassion and more willingness to help than did participants in the no empathic joy condition (reading about a severely depressed needy woman),  $F$ s of 11.94 and 5.66,  $p$ s  $< .01$  (see means in Table 5). In contrast, following attachment-security priming, participants in the no empathic joy condition

Table 5  
*Means and SDs for Compassion, Distress, and Willingness to Help According to Sample Nationality, Priming Condition, and Anticipated Empathic Joy (Study 4)*

Measure	Neutral priming		Security priming	
	No empathic joy	Empathic joy	No empathic joy	Empathic joy
Compassion				
American sample	<i>M</i> 4.23 <sup>a</sup>	4.90 <sup>b</sup>	6.03 <sup>c</sup>	5.03 <sup>b</sup>
	<i>SD</i> 1.09	1.10	1.05	1.18
Israeli sample	<i>M</i> 3.99 <sup>a</sup>	4.95 <sup>b</sup>	5.57 <sup>b</sup>	5.14 <sup>b</sup>
	<i>SD</i> 1.43	1.18	1.31	1.23
Personal distress				
American sample	<i>M</i> 3.46 <sup>a</sup>	2.81 <sup>b</sup>	3.56 <sup>a</sup>	2.91 <sup>b</sup>
	<i>SD</i> 1.49	1.37	1.49	1.42
Israeli sample	<i>M</i> 4.01 <sup>a</sup>	3.37 <sup>b</sup>	4.04 <sup>a</sup>	3.32 <sup>b</sup>
	<i>SD</i> 1.43	1.27	1.31	1.18
Willingness to help				
American sample	<i>M</i> 3.99 <sup>a</sup>	4.59 <sup>b</sup>	5.56 <sup>c</sup>	4.92 <sup>b</sup>
	<i>SD</i> 1.25	1.27	1.12	1.11
Israeli sample	<i>M</i> 3.35 <sup>a</sup>	3.91 <sup>b</sup>	4.40 <sup>c</sup>	4.24 <sup>bc</sup>
	<i>SD</i> 1.30	1.19	1.29	1.25

Note. Means with different letters within a row were significantly different at  $p < .01$ .



reported higher compassion and more willingness to help than did participants in the empathic joy condition,  $F_s$  of 9.63 and 3.18,  $p_s < .05$  (see means in Table 5). That is, security priming led to greater compassion toward a severely depressed than toward a mildly depressed woman.

*The contribution of attachment-style dimensions.* The unique and interactive effects of the attachment dimensions (anxiety, avoidance) were examined with the same five-step hierarchical regressions, including self-esteem and neuroticism as covariates, described in Study 3. With regard to ratings of personal distress, the regression yielded the already reported significant effects of participant nationality,  $\beta = -.19, p < .01$ , and empathic joy,  $\beta = -.22, p < .01$ . As in the previous studies, the main effect of attachment anxiety was also significant,  $\beta = .22, p < .01$ : The higher the attachment anxiety, the higher the reported distress while reading about the needy woman. In addition, the regression revealed a significant interaction between empathic joy and attachment anxiety,  $\beta = .27, p < .01$ . No other effects were significant.

Regressions examining the source of the significant two-way interaction between empathic joy and attachment anxiety revealed that the empathic joy condition led to lower levels of personal distress than did the no empathic joy condition only when participants scored relatively high on attachment anxiety (1 *SD* above the mean),  $\beta = -.36, p < .01$ . However, when participants scored relatively low on anxiety (1 *SD* below the mean), the empathic joy manipulation did not have a significant effect on personal distress,  $\beta = -.05$ .

With regard to compassion, the regression yielded the already reported significant effect of security priming,  $\beta = .30, p < .01$ , and an interaction between priming and empathic joy,  $\beta = -.36, p < .01$ , even after controlling for the attachment dimensions, self-esteem, and neuroticism. In addition, the unique main effect of attachment avoidance was significant,  $\beta = -.35, p < .01$ : The higher the avoidance, the lower the rated compassion. No other effects were significant.

The regression conducted on willingness to help also yielded the already reported significant effects of security priming,  $\beta = .28, p < .01$ , nationality,  $\beta = .29, p < .01$ , and an interaction between priming and empathic joy,  $\beta = -.27, p < .01$ , even after controlling for the two attachment dimensions, self-esteem and neuroticism. The unique main effect of attachment avoidance was also significant,  $\beta = -.21, p < .01$ : The higher the avoidance, the lower the willingness to help. In addition, the regression yielded a significant two-way interaction between empathic joy and attachment avoidance,  $\beta = .41, p < .01$ . No other effects were significant.

Regressions examining the source of the significant two-way interaction between empathic joy and attachment avoidance revealed that anticipation of empathic joy was significantly associated with higher willingness to help the needy woman when participants scored relatively high on attachment avoidance (1 *SD* above the mean),  $\beta = .31, p < .01$ . However, when participants scored relatively low on attachment avoidance (1 *SD* below the mean), the empathic joy manipulation did not have a significant effect on willingness to help. In fact, a trend was found such that participants scoring low on attachment avoidance reported more willingness to help a severely depressed woman (no empathic joy condition) than a mildly depressed woman (empathic joy condi-

tion),  $\beta = -.20, p < .05$ . That is, the empathic joy hypothesis seemed to apply only to relatively avoidant individuals.

*Conclusions.* The findings indicated that the effects of contextually enhanced attachment security on heightened compassion and willingness to help were most notable when participants anticipated no empathic joy. Moreover, the findings indicate that the empathic joy hypothesis applies mainly to insecurely attached individuals' responses to others' suffering, not to the reactions of more securely attached people or to the pattern of responses observed following contextual activation of attachment security. In fact, whereas anticipation of no empathic joy (as compared with the empathic joy condition) reduced compassion and willingness to help in the neutral-priming condition and among avoidant individuals, it actually increased compassionate, helping responses in the security priming condition and among people scoring low on avoidance. Thus, the dispositional sense of attachment security and the contextual enhancement of attachment security caused people to be more sensitive and compassionate toward a person whose suffering was so severe that it could not be immediately mitigated by helping efforts. As in Studies 1–3, the findings included the expected associations between attachment avoidance, attachment anxiety, and reactions to others' suffering, while indicating that these associations cannot be explained by variations in self-esteem or neuroticism.

The heightened feelings of compassion and willingness to help following security priming in the no empathic joy condition can be explained by an implicit manipulation of neediness in that condition. Although we did not intend to manipulate neediness, the severely depressed woman in the no empathic joy condition presumably needed more help than the mildly depressed woman in the empathic joy condition. If this is correct, contextual enhancement of attachment security caused people to be more sensitive and compassionate to a person who needed more help from them. This conclusion fits well with previous studies of romantic couples that showed that securely attached people provided more support when their romantic partner expressed more distress and need (B. C. Feeney & Collins, 2001; Simpson et al., 1992). Future studies should disentangle the potential confound between empathic joy and neediness as factors that interact with attachment security.

Doubts might also be raised about the extent to which participants in the no empathic joy condition were blocked from experiencing some kind of joy after helping the needy woman. Participants might still feel, for example, that they could improve the condition and mood of her children, even if they could not improve her own mood. Unfortunately, we did not include measures relevant to that possibility. Nevertheless, two findings indicated that our manipulation succeeded in reducing anticipated joy. In the neutral-priming condition, we replicated Smith et al.'s (1989) finding that participants were more willing to help in the empathic joy than in the no empathic joy condition. Moreover, participants in the no empathic joy condition reported more personal distress while reading the article (a sign of mood deterioration) than did participants in the empathic joy condition.

### Study 5

Study 5 focused on closeness identification as a reason for helping. Cialdini et al. (1997) hypothesized that helping depends on the extent to which people feel close to and can identify with a

needy person. In support of this view, they showed that reducing people's feelings of closeness to a needy person or their level of identification with the person produced a reduction in helping. We hypothesized that, although closeness is a possible reason for helping, security priming would heighten compassion and willingness to help even when little closeness or identification existed. Attachment security satisfies a person's need for closeness and proximity and provides a strong sense of connectedness and togetherness, leaving secure people with less need to search for other signs of closeness (Mikulincer & Shaver, 2005). They are more able to direct their mental resources to other behavioral systems, including caring for others, even distressed strangers. Previous studies have shown that security priming heightens both concern for the welfare of close relationship partners and concern for the welfare of all human beings (Mikulincer et al., 2003).

Beyond proposing the hypothesis that security priming would produce more compassion and helping than would neutral priming, even in response to strangers' needs, we realized that closeness is an inherent part of attachment and that caregiving might be more strongly activated in response to a close relationship partner's needs as compared with the needs of a stranger (Gillath, Shaver, & Mikulincer, 2005; Mikulincer et al., 2001). There are both psychological and biological (e.g., inclusive fitness; Hamilton, 1964) reasons for caring especially strongly about the welfare of genetically related individuals. Therefore, we also expected that greater compassion and more helping would be observed in response to a close relationship partner than to a stranger in both security-priming and neutral-priming conditions.

To evaluate these hypotheses, we replicated the designs of Studies 3 and 4, but this time included a closeness manipulation. Specifically, we assessed participants' attachment style, self-esteem, and neuroticism; randomly divided participants into two priming conditions (security priming, neutral priming); gave them a newspaper article about a woman in personal and financial distress; and asked them to rate their emotional reactions to the article (compassion, personal distress) and their willingness to help the needy woman. In each priming condition, half of the participants were asked to imagine that the needy woman was a member of their nuclear family (high closeness condition). The remaining participants were asked to imagine that the needy woman was someone they knew but did not know well (low closeness condition).

We predicted a significant main effect for security priming: Participants in the security-priming condition would report more compassion and greater willingness to help the needy woman than would participants in the neutral-priming condition, even in the low closeness condition. We also predicted a main effect for closeness: Participants in both neutral-priming and security-priming conditions would report more compassion and willingness to help in the high than would those in the low closeness condition. Finally, we predicted the already observed associations between attachment avoidance and low levels of compassion and willingness to help and between attachment anxiety and heightened personal distress.

## Method

*Participants.* One hundred twenty American undergraduates at the University of California, Davis (92 women and 28 men, ranging in age

from 17 to 36 years,  $Mdn = 20$ ), and 120 Israeli undergraduates at Bar-Ilan University (86 women and 34 men, ranging in age from 20 to 27 years,  $Mdn = 21$ ) participated in the study in exchange for research credit. Each of the two samples was randomly divided into four conditions with 30 participants in each.

*Materials and procedure.* Most of the study's instructions, procedures, and materials were identical to those of Studies 3 and 4 (see the reliability coefficients in Table 1). The single difference from Studies 3 and 4 was the inclusion of a closeness manipulation. Participants in each priming condition (security, neutral) were randomly divided into two conditions. In the high closeness condition, participants were instructed to imagine that the needy woman was a member of their nuclear family. In the low closeness condition, participants were instructed to imagine that the needy woman was someone they knew but did not know well. During debriefing, all participants in the high and low closeness conditions reported that they were able to visualize the needy woman, and no one reported having difficulty picking a member of his or her nuclear family (high closeness) or a person known but not well (low closeness).

## Results and Discussion

*Effects of attachment-security priming.* The data were analyzed by a three-way MANOVA and follow-up ANOVAs, as described in Studies 3 and 4 (see Table 6 for relevant means and standard deviations). The MANOVA yielded significant main effects for participant nationality,  $F(3, 230) = 4.05, p < .01$ ; priming,  $F(3, 230) = 6.68, p < .01$ ; and closeness,  $F(3, 230) = 25.77, p < .01$ . None of the interactions were significant. Univariate ANOVAs yielded significant differences between the two national samples in ratings of personal distress,  $F(1, 232) = 10.64, p < .01, \eta^2 = .05$ . As in Studies 3 and 4, Israeli participants ( $M = 4.07$ ) reported higher levels of distress while reading about the needy woman than did American participants ( $M = 3.49$ ). The main effect for closeness was significant for compassion,  $F(1, 232) = 12.86, p < .01, \eta^2 = .06$ ; personal distress,  $F(1, 232) = 42.16, p < .01, \eta^2 = .15$ ; and willingness to help,  $F(1, 232) = 40.38, p < .01, \eta^2 = .11$ . In line with our predictions, participants in the high closeness condition reported higher levels of compassion and distress and more willingness to help ( $M = 5.68, M = 4.37, M = 5.31$ ) than did participants in the low closeness condition ( $M = 5.11, M = 3.20, M = 4.33$ ).

The ANOVAs also revealed that priming condition had a significant main effect on compassion,  $F(1, 232) = 11.23, p < .01, \eta^2 = .06$ , and willingness to help,  $F(1, 232) = 15.45, p < .01, \eta^2 = .07$ . As in Studies 3 and 4, participants in the security-priming condition reported higher compassion and greater willingness to help the needy woman ( $M = 5.66, M = 5.13$ ) than did participants in the neutral-priming condition ( $M = 5.13, M = 4.52$ ).

*The contribution of attachment-style dimensions.* The effects of attachment dimensions were examined in the same kinds of five-step hierarchical regressions described in Studies 3 and 4, once again with self-esteem and neuroticism as covariates. With regard to ratings of personal distress, the regression yielded the already reported significant effects of nationality,  $\beta = -.17, p < .01$ , and closeness,  $\beta = .37, p < .01$ . As in the previous studies, the main effect of attachment anxiety was also significant,  $\beta = .34, p < .01$ : The higher the anxiety, the higher the reported distress while reading about the needy woman. No other effects were significant.

Table 6  
*Means and SDs for Compassion, Distress, and Willingness to Help According to Sample Nationality, Priming Condition, and Closeness to the Needy Woman (Study 5)*

Measure		Neutral priming		Security priming	
		Low closeness	High closeness	Low closeness	High closeness
Compassion					
American sample	<i>M</i>	4.64 <sup>a</sup>	5.30 <sup>b</sup>	5.59 <sup>b</sup>	5.55 <sup>b</sup>
	<i>SD</i>	1.27	1.26	1.22	1.24
Israeli sample	<i>M</i>	4.78 <sup>a</sup>	5.80 <sup>b</sup>	5.43 <sup>b</sup>	6.09 <sup>bc</sup>
	<i>SD</i>	1.19	1.20	1.09	1.16
Personal distress					
American sample	<i>M</i>	3.19 <sup>a</sup>	4.03 <sup>b</sup>	2.86 <sup>a</sup>	3.86 <sup>b</sup>
	<i>SD</i>	1.18	1.39	1.18	1.54
Israeli sample	<i>M</i>	3.27 <sup>a</sup>	4.62 <sup>b</sup>	3.45 <sup>a</sup>	4.95 <sup>b</sup>
	<i>SD</i>	1.59	1.51	1.34	1.38
Willingness to help					
American sample	<i>M</i>	4.23 <sup>a</sup>	5.04 <sup>b</sup>	4.87 <sup>b</sup>	5.35 <sup>bc</sup>
	<i>SD</i>	1.35	1.39	1.22	1.14
Israeli sample	<i>M</i>	3.58 <sup>a</sup>	5.23 <sup>bc</sup>	4.65 <sup>b</sup>	5.63 <sup>c</sup>
	<i>SD</i>	1.08	1.13	1.22	0.94

*Note.* Means with different letters within a row were significantly different at  $p < .01$ .

With regard to compassion and willingness to help, the regressions yielded the already reported main effects of security priming,  $\beta$ s of .16 and .21,  $ps < .01$ , and closeness,  $\beta$ s of .18 and .34,  $ps < .01$ . The unique main effect of avoidance was also significant,  $\beta = -.31$ ,  $p < .01$  for compassion,  $\beta = -.18$ ,  $p < .01$  for willingness to help: The higher the avoidance, the lower the compassion and willingness to help. No other effects were significant.

*Conclusions.* Overall, participants in the security-priming condition reported more compassion and more willingness to help than did participants in the neutral-priming condition, even in the low closeness condition. The findings also included a strong effect for the closeness manipulation: Participants were most willing to help when they imagined the needy woman to be a member of their nuclear family. Moreover, the findings replicated previous results concerning the inverse associations between attachment avoidance and compassionate, helpful responses and the positive association between attachment anxiety and personal distress, while showing that these associations were not explained by self-esteem or neuroticism.

### General Discussion

Five experiments addressed several questions left unanswered by previous studies of the effects of attachment security on empathy, compassion, and altruism. First, in our previous experimental studies (Mikulincer et al., 2001), we assessed self-reported emotional reactions, especially personal distress and compassion, but not helping behavior. This left unanswered the important question of whether manipulated attachment security actually fosters such behavior. Second, in our previous experimental studies of the effects of security priming on compassion (Mikulincer et al., 2001), we included only participants from Israel. We wanted to explore the generalizability of the findings to another society. Thus, in the studies reported in this article we conducted parallel experiments in Israel and the United States. Third, we wanted to examine the mental processes underlying links between experi-

mentally enhanced attachment security and helping behavior by focusing on the extent to which these links reflect genuine, altruistic motives—helping with the ultimate goal of benefiting a suffering person—or are dependent on other egoistic motives of helping. In general, we were attempting to create and understand effects of the attachment system on the caregiving system, two behavioral systems postulated by Bowlby (1969/1982).

Across the five experiments, attachment-security priming led to greater compassion and willingness to help a person in distress; these effects occurred repeatedly, reliably, and in two different societies. In Studies 1 and 2, security priming also increased participants' actual agreement to replace a suffering woman and shoulder the burden of enduring her aversive tasks. In all five experiments, attachment avoidance was associated with lower levels of rated compassion and willingness to help a suffering woman, whereas attachment anxiety was consistently associated with higher levels of personal distress that did not translate into helpful behavior. In Studies 3–5, neither self-esteem nor neuroticism proved to be adequate alternative explanations of the attachment-related effects. The major findings were remarkably consistent across Israeli and American samples, even though there were cross-national differences (discussed below) in mean levels of compassion, personal distress, and willingness to help.

In Studies 3 and 4, security priming led to greater compassion and willingness to help even when there was no egoistic reason (no empathic joy, no mood relief) for helping. That is, the absence of egoistic motives did not succeed in undermining the beneficial effects of experimentally enhanced security. Findings of Studies 3 and 4 also showed that these egoistic motives regulated the helpfulness of the more avoidant participants, who consistently exhibited greater willingness to help only when there were egoistic reasons for doing so (empathic joy, mood relief). In Study 5, although participants were more inclined to help a distressed family member than a distressed acquaintance, regardless of dispositional attachment orientation, the beneficial effects of experi-

mentally enhanced security were still notable even in the acquaintance condition.

Dispositional and experimentally induced security had similar effects and correlates in Israel and the United States, but in Studies 1 and 2, American participants reported higher personal distress while witnessing a suffering fellow student compared with their Israeli counterparts. One possible explanation of these differences is that the Israeli students were somewhat older on average, and most of them had served in the military. They might have considered such things as looking at pictures of accident victims and plunging a hand into ice water less disturbing than the younger, generally more sheltered American students did.

In contrast, Israeli students in Studies 3 and 5 reported higher levels of personal distress than did their American counterparts while reading about a destitute woman who was having trouble feeding her family. It is possible that societal norms concerning poverty and social (vs. personal) responsibility for health and welfare are different in Israel and the United States. (Taxes for social welfare are proportionally much higher in Israel, for example.) Alternatively, Israeli students were older on average and might either have or be closer to having children of their own, thereby making them more sensitive and responsive to the suffering of the needy woman's children. In Study 4, Israeli participants again reported higher levels of personal distress while reading about a needy woman than American participants did, although American participants reported higher personal willingness to help the woman than Israeli participants did, perhaps again suggesting that in Israel it is more clearly the entire society's responsibility to provide assistance to the poor. Whatever the reasons for these cross-national differences, they did not interact statistically with the attachment-related processes under study here and therefore do not challenge our interpretation of those processes.

Theoretically, the cumulative evidence from the five experiments, especially when combined with the correlational evidence assembled in previous studies (Gillath et al., 2005), indicates that the sense of attachment security, whether established in a person's long-term relationship history or nudged upward by subliminal or supraliminal priming, makes altruistic caregiving more likely. And this effect of security (as was the case in our previous survey studies of community volunteering) is essentially the same in Israel and the United States. Although there are other reasons for one person to help another, the observed effects of attachment security do not depend on alternative egoistic motives, such as a person's desire to improve his or her own mood, the desire to share a suffering person's relief, or the desire to help a family member. These conclusions are important for attachment theory, which views helping behavior as an output of an altruistic, other-oriented caregiving system.

On the basis of an attachment perspective, we believe that a sense of attachment security allows a redistribution of attention and resources, away from self-protection and toward other behavioral systems, including the caregiving system, which operates through such mechanisms as empathy and compassion. This idea implies that empathic concern and compassion are somewhat effortful processes that demand attentional and cognitive resources and can be interfered with by worries and anxieties as well as other emotional and cognitive demands. However, there is no empirical evidence regarding the amount of attentional and cognitive resources needed for empathizing with another person or evidence

regarding the specific cognitive or neural paths by which competing tasks or demands interfere with empathy and compassion. Further studies should explore this issue and examine whether empathy and compassion are effortful processes.

Beyond this transfer of resources from self-protection to other systems, three additional mechanisms may contribute to empathy, compassion, and altruistic helping following activation of a sense of attachment security. First, attachment security allows people to feel comfortable with closeness and interdependence (Collins & Read, 1990; Hazan & Shaver, 1987). This comfort can, in turn, facilitate approaching others in need, because to provide comfort and assistance a person typically has to accept others' needs for sympathy and temporary dependency (Lehman, Ellard, & Wortman, 1986). Second, security priming activates mental representations of available and caring others, which may make it easier to construe a distressed partner as deserving sympathy and compassion, hence motivating a person to provide comfort and support. Third, security priming can activate positive models of self, which may sustain a sense of control and confidence in one's ability to address others' suffering, a task that can otherwise generate a great deal of personal distress in a potential caregiver (e.g., Batson, 1987; Losoya & Eisenberg, 2001). These additional ideas should be tested in future studies.

It is important to mention that our findings contradict at least one interpretation involving the third mechanism just described. Across all five experiments, contextual priming of attachment security did not reduce the personal distress aroused by a suffering woman's plight. If enhanced attachment security works by allowing caregiving motives and actions to come to the fore, it apparently does not do so by virtue of eliminating empathic personal distress. The exact nature of the intervening processes is therefore still open to further research.

The five studies also documented effects of two kinds of dispositional attachment insecurity. Attachment anxiety was consistently associated with personal distress, which did not, in itself, contribute to compassionate or helpful responses. In other words, personal distress appears to be mostly a self-oriented reaction, not an instigator of care for another person. Attachment avoidance was consistently associated with less compassion and less willingness to help a suffering woman. Attachment avoidance involves a detached attitude toward others' suffering (a defensive cognitive-affective distancing from all sources of distress and pain, especially those that involve intimate contact and expressions of vulnerability) and a lack of concern for others' welfare (Mikulincer, et al., 2003). It is interesting to note that Studies 3 and 4 indicated that these inhibitory effects of avoidance depended on the absence of other egoistic reasons for helping, such as mood enhancement and empathic joy. Specifically, avoidant participants evinced relatively high willingness to help a person in distress only when it might improve their own mood or allow them to experience empathic joy. Such egoistic concerns held less sway over participants who were either dispositionally less avoidant (i.e., more secure in one sense) or under the influence of a security-enhancing prime. It seems, therefore, that attachment security counteracts some of the egoistic motives that underlie avoidant people's reluctance to help.

These findings fit with our recent two-level model of psychological functioning (Mikulincer & Shaver, 2005). In this model, attachment-figure availability and the resulting sense of attach-



ment security provide a stable and secure foundation for psychological well being. Being able to count on available and loving attachment figures during times of threat or need provides an important sense of personal safety and protection and a persisting sense of self-worth. Representations of attachment security act as resilience resources that maintain emotional equanimity and effective psychological functioning without the need for other defensive maneuvers. Furthermore, attachment security facilitates the optimal functioning of other behavioral systems, including the caregiving system, which involves compassionate, loving attitudes toward others even when helping does not produce any other personal benefit.

A second level of defenses is required when a person fails to form secure attachments and is unable to maintain a solid and stable psychological foundation. For an insecurely attached person, many everyday experiences challenge the sense of safety and threaten the person's already tenuous hold on life, self, and identity. At this secondary, defensive level, a "prevention motivational orientation" (Higgins, 1998) and the use of ego-protective defenses can sometimes compensate for the absence of attachment security, create a façade of self-esteem and self-efficacy, and contribute some degree of emotional equanimity and adjustment. However, the natural functioning of the caregiving system can be damaged by such a defensive stance, subordinating its operation to self-protective goals and strategies. That is, the caregiving system is activated mainly when helping others provides an opportunity to improve one's own mood or enhance one's own self-esteem.

This line of reasoning implies that child rearing practices and behavior in close relationships that engender attachment insecurity are likely to undermine or distort the insecure person's subsequent compassion and altruism. In our studies, people high on the avoidant attachment dimension were consistently less compassionate and less altruistic than their more secure counterparts. Also, people high on the anxiety dimension were prone to personal distress in response to a needy person's plight without this distress leading to greater altruism. Thus, if we wish to help children and adults develop their natural potential for compassion and altruism, one way to do so would be to help them achieve attachment security.

Our research also supports the view that the caregiving system is basically guided by the altruistic, benevolent goal of promoting others' welfare (Batson, 1991) and that egoistic motives for helping are rooted in a lack of attachment security that interferes with smooth functioning of the caregiving system. Unlike selfish gene theories of human behavior (e.g., Dawkins, 1976/1989), which discourage us from imagining that evolution equipped *Homo sapiens* with a capacity for compassion and care, our findings and reasoning suggest that the same caregiving behavioral system that evolved to assure adequate care for vulnerable, dependent children can be extended to include care and concern for other people in need, even if we often care more for people with whom we are closely related, either psychologically or genetically. Our findings indicate that the attachment behavioral system affects the caregiving system, making it likely that heightening security will yield benefits in the realm of compassionate, altruistic behavior.

Our findings also indicate that the caregiving system can be generalized or extended to help a stranger and that attachment security can facilitate such a generalized compassionate attitude toward humanity. Although the prototypical biological function of

the caregiving system is to facilitate the survival of offspring, which should cause it to be most strongly applied to people with whom one has a close relationship, recurrent functioning of the caregiving system in favorable, security-providing environments might transform empathy, compassion, and altruistic helping into chronically accessible orientations, traits, or skills that can be contextually activated by the presence of a distressed person, even a stranger in need. That is, what begins as a caring tendency toward specific figures (especially offspring) can become transformed and generalized into a prosocial disposition or trait that is applied very broadly. Further research should explore this hypothesized developmental process.

We also found that the effects of attachment-security priming on compassion and helping did not depend on dispositional attachment orientations. That is, contextual activation of attachment security led to greater compassion and willingness to help independent of variations in attachment anxiety and avoidance. This implies that temporary activation of the sense of attachment security allows even chronically insecure people to react to others' needs in ways similar to those of people with a more secure attachment style. Contextual augmentation of security may remind people of similar experiences stored in memory, inhibit incongruent memories of attachment insecurity, and bring to mind schemas that are congruent with security. Contextual activation of a particular mental representation of attachment security may spread throughout a person's semantic memory network, causing the person temporarily to become more compassionate or helpful, in line with the activated representation. It is important to note, however, that our findings suggest that temporary effects of security enhancement coexist with the effects of dispositional attachment orientations. That is, reactions to others' needs are concurrently affected by experimentally enhanced attachment security and by chronically accessible schemas related to attachment avoidance and anxiety.

It should be recalled that two small studies were conducted to clarify the findings of Study 1. In the absence of those studies, it seemed possible that priming a sense of attachment security also directly activates the caregiving system. Instead, the two additional studies showed that supraliminal or subliminal primes reminding participants of supportive attachment figures did not directly activate explicit or implicit representations of caregiving. Of course, it is still possible that our security primes evoked feelings of interdependence and love, because representations of attachment figures' love and interdependence are a core component of attachment security. However, the fact that the effects of dispositional attachment orientations paralleled the effects of the priming procedure strengthens our confidence in the relevance of attachment-related representations for explaining care-oriented reactions to others' needs. Moreover, other studies have shown beneficial effects of the same attachment-security inductions on what Bowlby (1969/1982) called the exploration system (e.g., Mikulincer & Arad, 1999), and these would be difficult to explain in terms of activation of the caregiving system.

Another possible limitation of the current studies is the overrepresentation of women in the samples. Although gender played no significant moderating role in these or our previous studies involving security manipulations (e.g., Mikulincer et al., 2001; Mikulincer & Shaver, 2001), the small number of men nevertheless makes it difficult to generalize our conclusions to both genders

with confidence. Future studies should include more men so that gender differences in the attachment-caregiving link can be examined with higher power. As we mentioned earlier, it would also be useful to systematically vary the gender of the experimenter (in studies like our Studies 1 and 2) and the suffering other. In the studies reported here, the suffering other was always a woman.

Our findings do not imply that reactions to others' needs are exclusively determined by a sense of attachment security. In fact, as reflected in the observed differences between the Israeli and the American samples, sociocultural and motivational factors undoubtedly play a role in shaping these reactions. Nevertheless, we have shown that attachment security, whether dispositionally present or contextually enhanced, fosters compassion and altruism and appears to work similarly in different societies. The discovery and repeated documentation of these processes cause us to be more optimistic about both attachment theory and the potential of human beings to achieve a more humane level of mutual coexistence and support.

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