Two studies investigated cognitive primes designed to evoke images of secure adult attachment, compared with primes designed to elicit positive affect unrelated to attachment. The primes were used previously in studies of Israeli undergraduates’ perceptions of outgroup members (Mikulincer & Shaver, 2001). In the current studies, European American students completed self-reports of empathy for others who are racially/ethnically different, using the Scale of Ethnocultural Empathy (Wang et al., 2003). In Study 1, subjects randomly assigned to a prime involving imagery of a hypothetical problematic situation in which loved ones come to their assistance, reported significantly more cultural empathy than those assigned to the positive affect prime. In Study 2, a prime involving imagining a
specific real-life person “who loves you and helps you in times of need” was no more effective than the positive affect prime in eliciting ethnocultural empathy. Across both studies, all four primes were equally effective in producing desirable pre-post change in affect. However, among students who received the secure attachment primes, attachment anxiety was significantly associated with a decrease in positive affect. Thus, secure attachment primes may risk an adverse affective response in students with high attachment anxiety.

As attachment theory has been applied to understand healthy adult development, the concept of secure base for exploration has proven to be an important construct. Bowlby (1969) believed that attachment figures serve as a comforting presence that allows children to regulate affect and reduce fears of the unfamiliar. This sense of felt security provided by the availability of a secure attachment figure permits children to regulate anxiety that would otherwise limit their exploration (Sroufe & Waters, 1977). As children grow, the exploration and mastery fostered by a sense of secure base attachment extends increasingly beyond physical surroundings to include the psychological and interpersonal environment as well (Bowlby, 1988). Studies of adults have identified two orthogonal dimensions of attachment insecurity: avoidance, characterized by distrust of close relationships and a high need for independence; and anxiety, characterized by a fear of abandonment and heightened dependence on others (Brennan, Clark, & Shaver, 1998). Persons who exhibit relatively low levels of anxiety or avoidance are assumed to have generally secure attachments. Theorists suggest that securely attached adults may be more open to exploration and better able to regulate anxiety in novel interpersonal situations (Hazan & Shaver, 1994; Lopez & Brennan, 2000). Research confirms that attachment insecurity in adults is associated with emotional reactivity (Wei, Vogel, Ku, & Zakalik, 2005) and with poor social competencies (Mallinckrodt & Wei, 2005). Clients who are securely attached to their psychotherapist were found to engage in deeper emotional exploration in sessions (Mallinckrodt, Porter, & Kivlighan, 2005). Thus, a growing body of evidence supports an extension of the concept of secure base attachment to forms of interpersonal exploration in adult relationships.

A series of ground-breaking studies conducted in Israel explored the possibility that a sense of secure base attachment may also fa-
cilitate a general sense of altruism and benevolence (Mikulincer et al., 2003; Mikulincer et al., 2001), as well as positive interactions between adults from different cultures (Mikulincer & Shaver, 2001). This research is based on an assumption that bridging cultural differences to develop empathy and form positive interpersonal relationships requires the same capacities for exploration and affect regulation in adults that are encouraged in childhood by a secure base attachment with caregivers. The capacity in adulthood to empathize with others who are culturally different requires the ability to soothe one’s own sense of anxiety with the unfamiliar in order to transcend the limitations of one’s own encapsulated perspective. In this series of experiments, Mikulincer, Shaver, and their associates randomly assigned participants to conditions that used a cognitive prime to elicit mental images of secure attachment. Comparison conditions involved neutral primes or primes designed to induce a positive mood without associations to secure attachment. 

The first series of studies (Mikulincer et al., 2001) explored the role of attachment security primes in prompting empathic responses to the perceived needs of others. The empathic target persons ranged from a fellow Israeli student struggling to care for her siblings, a student with a severe physical disability, narratives of an actual person the student had seen in distress, response time in a computerized task requiring accessing empathic memories, a hypothetical best friend, and a same-sex stranger. In each study the secure prime was as effective as the positive affect prime in evoking a positive mood, but more effective in eliciting empathy for the targets. In some of these component studies attachment anxiety also had main effects across conditions, and was negatively associated with ratings of empathy and positively associated with the rater’s own personal distress. Thus, it appears that the priming condition and a participant’s preexisting attachment pattern both independently influence empathy. These robust findings, obtained with a variety of priming methods (including one subliminal condition), provided strong evidence suggesting primes eliciting mental images of secure attachment prompted a significantly stronger empathic reaction than nonattachment primes (even though both primes were equally potent in producing a positive mood). In a follow-up set of studies, Mikulincer et al. (2003) found additional evidence for the beneficial effects of secure base priming. Secure attachment primes, compared to positive affect and neutral primes, were more effective
at eliciting agreement with self-transcendent values, that is, a willingness to place concern for others’ welfare social justice, equality, and peace ahead of personal benefit.

A third series of five experimental studies directly addressed cultural differences (Mikulincer & Shaver, 2001). The dependent variables in this series were ratings of 15 positive and negative character traits (e.g., trustworthy, intelligent, argumentative, sleazy) attributed to members of out-groups relative to the Israeli Jewish research participants. The primary hypothesis was that a secure attachment prime would lead to less negative ratings of out-group members relative to neutral or positive affect primes. Study 1 used a subliminal computer presentation of the primes, followed by ratings of personal profiles from two targets: an Israeli Palestinian or Israeli Jewish fellow student. Results suggested a significant main effect for target, with the in-group member rated more favorably, as expected. However, there was also a significant interaction with the three priming conditions. This effect was striking in that the Palestinian student was perceived less favorably only in the positive and neutral prime conditions. In the secure attachment prime condition, the Palestinian and Jewish target students received equivalent ratings. (Recall that the primes were subliminally presented in this study). The remaining four studies in this series presented the primes via guided imagery or visualization of persons with specific characteristics known to the participants. Out-group members were presented as an ultra-orthodox religious Jew (Study 2), a Russian immigrant (Study 3), gay or lesbian Israelis (Study 4), and out-group members who were portrayed as criticizing Israeli culture (Study 5). Results were essentially identical to the findings of Study 1, with secure cognitive primes significantly reducing the more negative perceptions of out-group members relative to in-groups. Study 1 and 2 assessed participants’ attachment style, and in both cases found significant main effects. Attachment Anxiety was associated with negative ratings of out-group members regardless of priming conditions.

Taken together, these three series (Mikulincer et al., 2001; Mikulincer et al., 2003; Mikulincer & Shaver, 2001) reported results from 13 component experimental studies that provided consistent support for the hypothesized positive effects of cognitive primes for secure attachment. Two series (Mikulincer et al., 2001; Mikulincer
et al., 2003) examined empathy or endorsement of values consistent with concern for others’ welfare, but did not present specific rating targets that were culturally different from the research subjects. The third series (Mikulincer & Shaver, 2001) did examine perceptions of specific culturally different outgroup members (e.g., Israeli Palestinians, Russian immigrants), but the ratings involved attributions of positive and negative character traits—not generalized empathy for outgroup members. All three studies were conducted with Israeli research subjects. Although the positive effects of secure attachment priming on altruism and compassion have been replicated with U.S. subjects (Mikulincer, Shaver, Gillath, & Nitzberg, 2005), we could not locate any previous study that has examined the effects of secure attachment primes on U.S. subjects’ perceptions of cultural outgroup members. Therefore, the main purpose of the two component studies in this project was to extend the work of Mikulincer, Shaver, and their associates by investigating the effect of secure attachment cognitive primes on generalized empathy for U.S. racial/ethnic minorities, in a sample of U.S. undergraduates who identified themselves as European American.

Instead of assessing stereotyping and prejudice, as Mikulincer and Shaver (2001) did by measuring attribution of specific traits to outgroup members, the dependent variable in our studies was general ethnocultural empathy for all persons who are racially or ethnically different. This broad type of empathy is often the target of campus diversity programming, and we believe that the cognitive primes developed by Mikulincer, Shaver, and associates might eventually be adapted as interventions for this purpose. However, before field tests can be conducted to explore these possibilities, a critical first step is to investigate whether the cognitive primes developed with Israeli research subjects have beneficial effects with U.S. test subjects. We hypothesized that secure attachment cognitive primes would be significantly more effective than positive affect primes in eliciting ethnocultural empathy. Finally, we wanted to check for potential negative side effects of the secure attachment primes, by investigating interactions of attachment anxiety and avoidance with pre/post prime changes in affect. Perhaps asking a person with high Anxiety or Avoidance (who may have rarely experienced a secure attachment), to vividly imagine such a relationship might be somewhat upsetting.
A model of cultural empathy as having cognitive, affective, and communication components guided Wang et al. (2003) in development of the Scale of Ethnocultural Empathy (SEE), which served to operationalize the dependent variable in this study. The four empirically derived subscales of the SEE measure a range of knowledge, attitudes, and self-reports of past behavior. For example, the Empathic Feeling and Expression subscale includes items to assess actual behavior (e.g., reporting that one has objected to racist jokes, or that one has participated in events to promote equal rights). The Acceptance of Cultural Differences subscale can be described as items measuring intolerance for public displays of cultural difference, reversed keyed (e.g., I feel annoyed when people do not speak standard English). The third subscale, Empathic Awareness, is concerned with knowledge of issues such as bias in media portrayals or institutional racism; but strictly speaking, this subscale is not a measure of affective empathy. Because the cognitive primes we delivered experimentally were not expected to have a strong influence on self-reports of knowledge or past behavior, we hypothesized that only the Empathic Perspective Taking subscale of the SEE would be influenced by the experimental manipulation. Empathic Perspective Taking, alone of the four SEE subscales, captures the common understanding of what it means to have affective empathy for another, that is, feeling what another feels (e.g., It is easy for me to understand what it would feel like to be a person of another racial or ethnic background other than my own).

The secure attachment cognitive prime used in Mikulincer and Shaver’s (2001) Study 2, was used in this study because this procedure appears to be easily adaptable for use in diversity programming. Note that unlike Mikulincer and Shaver, our study did not contain a third priming condition for neutral affect. With a limited number of participants, we were able to present only one comparison condition, and we believed the most stringent test of the secure attachment prime would be through comparison with the positive affect prime. We hypothesized that students randomly assigned to the secure attachment prime would report higher empathic perspective taking than students randomly assigned to a positive affect prime.
METHOD

Participants

Survey packets were returned from 92 students in journalism and educational statistics classes at a large Midwestern university, of whom 75 identified their ethnicity as European American. After the procedures described below were used to screen data, surveys from 57 European American participants were retained for analysis, including 44 (77%) women and 13 (23%) men. Their mean age was 21.88 years ($SD = 3.77$, range = 19–40). As a protection for confidentiality, the course instructors asked us not to request demographic information other than ethnic identification, age, and sex. Note that the statistics class was open to both graduate and undergraduate students. The study was described to prospective subjects as “a survey of how personality traits, especially preferences for close relationships with others, influence one’s perceptions of others.” Students in one class were offered credit toward their course grade for participation, whereas students in the other two courses were entered into a lottery drawing for an iPod Shuffle. The study was approved by the university Institutional Review Board.

Instruments

Pre- and Post-Prime Mood. The Positive and Negative Affectivity Schedule (PANAS; Watson, Clark, & Tellegen, 1988) is a widely used measure to assess current mood. The PANAS consists of a positive affect scale and a negative affect scale, each containing ten adjectives (e.g., excited, proud, irritable, upset). Subjects were instructed to indicate “the feelings you are having right now” using a 5-point scale ranging from 1 (Very Slightly or Not At All) to 5 (Extremely). In the current study, internal consistency reliabilities (coefficient alpha) were .91 and .89 for the positive affect and negative affect subscales, respectively. In addition to the PANAS, this study included six items used to assess current mood in Mikulincer and Shaver’s (2001) study. These six items (good, happy, calm, sad, depressed, anxious) were scored on a 6-point scale ranging from not at all to very much. In the current study, internal reliability (coefficient alpha) was .81 for the three positive adjectives, and .79 for the three
negative adjectives. Each of these four mood subscales was scored by calculating the item mean.

*Adult Attachment.* The Experiences in Close Relationships Scale (ECRS; Brennan et al., 1998) was developed from a factor analysis of more than 300 items from previous self-report adult attachment instruments. Two orthogonal factors were identified: Anxiety and Avoidance. Each subscale contains 18 items, which subjects complete using a 7-point Likert-type scale (1 = Disagree Strongly, 2 = Disagree Somewhat, 3 = Disagree Slightly, 4 = Neutral/Mixed, 5 = Agree Slightly, 6 = Agree Somewhat, 7 = Agree Strongly). Higher scores indicate greater Anxiety or Avoidance. Subscales are scored by calculating the item mean. Test-retest reliabilities (three-week interval) were .70 for each subscale in a sample of undergraduates (Brennan, Shaver, & Clark, 2000). In a sample of college students Brennan et al. (1998) reported internal consistency reliabilities (coefficient alpha) of .94 and .91 for the Avoidance and Anxiety subscales, respectively; and evidence of validity through correlations in expected directions with other measures of adult attachment and sexual feelings. In the current study internal reliability (coefficient alpha) was .94 and .93 for the Avoidance and Anxiety subscales, respectively.

*Cultural Empathy.* The Scale of Ethnocultural Empathy (SEE; Wang et al., 2003) is a 31-item self-report instrument designed to assess empathy for culturally different others. Factor analyses identified four subscales: (a) Empathic Feeling and Expression, (b) Acceptance of Cultural Differences, (c) Empathetic Awareness, and (d) Empathic Perspective Taking. Subjects respond using a 6-point Likert-type scale (1 = Strongly Disagree to 6 = Strongly Agree). Higher scores indicate greater empathy. Evidence of validity was provided by correlations of the total SEE and subscale scores in expected directions with other measures of generalized empathy, and with universal-diverse orientation (Wang et al., 2003). In the current study although the entire scale was administered to preserve validity, only data from the seven items of the Empathic Perspective Taking subscale were retained for analyses. For this subscale Wang et al. reported internal reliability (coefficient alpha) = .75, and test-retest reliability (two-week interval) of $r = .75$. In the current study, internal reliability (coefficient alpha) was .73.
Procedures

Survey packets were distributed in class, and included consent forms and step-by-step instructions for completing each stage of the procedure. Students were directed to follow instructions in the packet in a quiet location outside of class, complete the materials in one sitting, and return the survey packet within one week. They were instructed not to discuss the study with peer students during the data collection week. The first portion of the packet was identical for every participant and contained the PANAS and six additional mood items used by Mikulincer and Shaver (2001). These items, used to assess pre-priming mood, were completed and sealed in a small envelope separate from the remainder of the survey so that when subjects completed the same items after the priming procedure, they would not have access to their pre-prime responses. After presentation of the pre-prime mood measures, students completed the ECRS to assess adult attachment. The second part of each research packet contained one of the two guided imagery primes described below. Random assignment of participants to conditions was accomplished by shuffling the packets prior to distributing them to students. After presentation of the primes, the third section of the research packets was identical for each participant. The PANAS and six supplemental mood adjectives were presented again, followed by the SEE.

**Priming Procedure.** The secure prime self-guided imagery began with the following instruction, “Imagine yourself in a problematic situation that you cannot solve on your own, and imagine that you are surrounded by people who are sensitive and responsive to your distress, who want to help you only because they love you, and set aside other activities in order to assist you.” Students were directed next to record the current time in hours and minutes, and then “take about five minutes to visualize this situation as vividly as possible. As you imagine that you are actually experiencing the situation, please jot down brief answers to the following questions—making sure that you pause long enough to imagine each step of the situation in as much detail as possible.” Six sequential induction primes were then presented with space for writing brief answers (see Appendix for details).

The positive affect self-guided imagery began with the following instruction “Imagine yourself receiving a notice that you have
won a large amount of money in the state lottery, and imagine other students in your class hearing about this notice, approaching you, congratulating you, and telling others about your good fortune.” Students were directed next to record the current time, and take five minutes to visualize the situation as vividly as possible through a series of six induction primes (see Appendix). Both priming conditions ended with instructions to again record the time in hours and minutes, and complete two items to record “How clearly were you able to imagine this situation” and “How real were you able to make the situation as you imagined it.” Responses to these last two items were recorded on 7-point partially anchored scales (1 = Not at All, 7 = Very Much). These primes were closely modeled on the procedures used in Study 2 reported by Mikulincer and Shaver (2001).

Results and Discussion

Surveys contained two items to check for inattentive or random responding (e.g., please code a 9 for this item). Data from 9 of the 75 original students were excluded based on responses to these two items. Using procedures recommended by Cohen, Cohen, West, and Aiken (pp. 391–411, 2003) to screen for outliers prior to regression analyses, data were checked for leverage, distance (externally studentitized residuals), and global influence (Cook’s D). One case exceeded fairly conservative criteria for distance, $t = 2.02$, and was excluded from further analysis. Of the remaining 65 surveys, random distribution of the packets resulted in 28 students returning the attachment security (Problem Solved) prime, and 37 returning the positive affect (Lottery) prime. Start/stop times were inspected to identify participants who, contrary to instructions to spend at least five minutes, completed the guided imagery task in less than three minutes. Data from three participants, all assigned to the Lottery prime, were excluded on this basis. Ratings of how real and how clear participants were able to achieve visualization of the primes were also examined. Participants who gave ratings below the scale midpoint of 4 for either item were also excluded from analysis ($n = 1$ from Problem Solved and 4 from Lottery). After this screening, 27

1. Analyses for Study 1 and Study 2 were also conducted with no data excluded based on screening for completion time or ratings on the how real and how clear items. There were no changes in substantive conclusions from either study. In fact, the magnitude of the effect sizes for differences in primes in both studies was actually larger.
participants remained in the secure attachment (Problem Solved) prime, and 30 in the positive affect (Lottery) prime.¹

To examine the main hypotheses, hierarchical multiple regression analyses were conducted to test for differences between the prime conditions and interactions with adult attachment. The SEE Empathic Perspective Taking subscale was the criterion variable. Assignment to cognitive prime condition was dummy coded (0 = positive affect prime, 1 = secure attachment prime) and entered as the first step, which provides the test of main hypothesis. In the second step, attachment Anxiety and Avoidance were entered. Finally, in the third step, interaction terms consisting of the prime condition × Avoidance, and prime condition × Anxiety were entered. Findings shown in Table 1 suggest that there was a significant difference between the two prime conditions, \( R^2 = .07, p < .05 \); with students assigned to the attachment security prime giving higher cultural empathy ratings (\( M = 3.49, SD = 0.97 \)) than students assigned to the positive affect prime (\( M = 3.02, SD = 0.72 \)). Thus, the hypothesis for Study 1 was supported. Table 2 presents regression coefficients for each variable in the final model. Note that there were no significant direct effects or interactions for attachment Anxiety or Avoidance.

### STUDY 2

The primes tested in Study 1 involved hypothetical scenarios that some participants indicated were difficult for them to clearly and realistically visualize. Therefore in this study we tested two primes that we expected persons with very concrete patterns of thinking would have less difficulty visualizing. These primes, adapted from Mikulincer and Shaver’s (2001) Study 3, involved picturing real people from a student’s life. With further development, this secure
attachment prime might also be used in diversity programming interventions. We hypothesized that participants assigned to the secure attachment prime would report significantly higher scores on the Empathic Perspective Taking subscale of the SEE than those assigned to the positive affect prime.

METHOD

Participants and Procedures

All procedures and measures for this study were identical to those described for Study 1. Packets with complete data were returned from 88 students, but only data from 74 who indicated their ethnicity as European American were retained for analysis. None of these respondents were identified as an outlier, but 16 packets contained responses to at least one of the two validity items that suggested inattentive or random responding. Data were excluded from one subject who reported taking less than three minutes to complete the positive affect priming task (a total of seven elapsed minutes was requested), and three subjects who were below the midpoint on either the how clear or how real ratings for visualizing the primes (one from the secure attachment prime and two from the positive affect prime). After this screening, 30 participants remained in the secure prime condition and 24 in the positive affect condition described below. The 54 remaining participants included 40 (74%) women and 14 (26%) men. Their mean age was 23.42 years ($SD = 7.21$, range = 19–51).

**Priming Procedure.** For both primes, participants were asked to fill in blanks with the name of a person who met the following four descriptions: (a) a person who lives in your neighborhood but you

<table>
<thead>
<tr>
<th>Final Model Variables</th>
<th>$B$</th>
<th>$SEB$</th>
<th>$\beta$</th>
<th>$t$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priming condition</td>
<td>0.561</td>
<td>.227</td>
<td>.323</td>
<td>2.46*</td>
</tr>
<tr>
<td>Attachment Anxiety</td>
<td>-0.076</td>
<td>.135</td>
<td>-0.103</td>
<td>0.56</td>
</tr>
<tr>
<td>Attachment Avoidance</td>
<td>0.289</td>
<td>.163</td>
<td>0.339</td>
<td>1.77</td>
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<tr>
<td>Prime × Anxiety</td>
<td>-0.600</td>
<td>.194</td>
<td>-0.059</td>
<td>0.31</td>
</tr>
<tr>
<td>Prime × Avoidance</td>
<td>-0.093</td>
<td>.231</td>
<td>-0.079</td>
<td>0.40</td>
</tr>
</tbody>
</table>

*Note. N = 57. Criterion variable was the Empathic Perspective Taking subscale of the Scale of Ethnocultural Empathy. Cognitive prime condition was a dummy coded variable; 0 = positive affect prime; 1 = secure attachment prime. *$p < .05$; **$p < .01$*
do not know well, (b) a person who accepts and loves you and helps you in times of need, (c) a professor or teacher who has had a significant impact on you, and (d) a person who is always happy and loves fun and jokes, and (e) a person who has been something of a role model for you (five different individuals in all). Participants in the secure attachment prime then read this instruction “You have been randomly assigned to give a more complete description of person b above. (Other students are asked to describe other persons.) Please take about 2 minutes to visualize the person you named above ‘who accepts and loves you and helps you in times of need’ as vividly and clearly as possible.”

Students in the positive affect prime read the following instruction, “You have been randomly assigned to give a more complete description of person d above. (Other students are asked to describe other persons.) Please take about 2 minutes to visualize the person you named above ‘who is always happy and loves fun and jokes’ as vividly and clearly as possible.” Both primes were then followed with this directive, “Think about the positive qualities of this person that led you to select him or her, and the positive interactions you have had in the past. In the space below, please take about five minutes to describe the person.” This instruction was followed by about one-half page of white space in the research packet (See Appendix).

Results and Discussion

To test the main hypotheses of this study a series of hierarchical multiple regressions similar to Study 1 was performed to examine

<table>
<thead>
<tr>
<th>Step/ Variables Entered</th>
<th>Adjusted R</th>
<th>R²</th>
<th>R²</th>
<th>F</th>
<th>df</th>
</tr>
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<tbody>
<tr>
<td>1. Prime Condition</td>
<td>.07</td>
<td>.00</td>
<td>-.01</td>
<td>.00</td>
<td>0.20 (1, 52)</td>
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<tr>
<td>2. Avoidance, Anxiety</td>
<td>.11</td>
<td>.01</td>
<td>-.05</td>
<td>.01</td>
<td>0.15 (2, 50)</td>
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<tr>
<td>3. Prime × Avoidance, Prime × Anxiety</td>
<td>.12</td>
<td>.02</td>
<td>-.08</td>
<td>.00</td>
<td>0.09 (2, 48)</td>
</tr>
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</table>

Note. N = 54. Criterion variable was the Empathic Perspective Taking subscale of the Scale of Ethnocultural Empathy. Cognitive prime condition was a dummy coded variable; 0 = positive affect prime; 1 = secure attachment prime. *p < .05; **p < .01
differences in the two priming conditions and interactions with Avoidance and Anxiety. Results shown in Table 3 and final model coefficients in Table 4 suggest no significant effects in step one for the dummy coded prime variable, ($R^2 = .005$, $p = ns$), and no significant direct effects or interactions involving attachment Anxiety or Avoidance. Thus, it appears that the Loves You secure attachment prime was not more effective than the Fun and Jokes positive affect prime in Study 2.

**STUDY 1 AND 2 FOLLOW-UP ANALYSES**

An important consideration in both Study 1 and Study 2 was whether the secure attachment and positive affect primes were equally effective in producing affect change. A comparison of these priming conditions served as a manipulation check, to make sure that the primes had the intended impact; and served to rule out a potential confound, in that both conditions should not differ in the degree that affect was changed. In addition, by combining data from both studies into a single set of follow-up analyses we were able to compare relative effectiveness of the two secure attachment primes in eliciting changes in affect. To investigate all four primes with regard to induced changes in affect, data from Study 1 and 2 were combined ($N = 109$). One participant from each study had missing data for one or more of the affect change variables.

A one-way MANOVA was conducted with the four priming conditions serving as the between-subjects factor, and time (pre-prime vs. post-prime) as the repeated measures factor. The four dependent variables were PANAS positive and negative affect, and the 3-item positive and negative adjective scales used by Mikulincer and Shaver (2001). Results suggested no significant differences among the

<table>
<thead>
<tr>
<th>Final Model Variables</th>
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<th>SEB</th>
<th>$\beta$</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priming condition</td>
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<td>.291</td>
<td>.050</td>
<td>0.34</td>
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<tr>
<td>Attachment Anxiety</td>
<td>0.146</td>
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<td>.168</td>
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<tr>
<td>Attachment Avoidance</td>
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<td>-.092</td>
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<td>Prime × Anxiety</td>
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<td>.287</td>
<td>-.098</td>
<td>0.38</td>
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<tr>
<td>Prime × Avoidance</td>
<td>0.076</td>
<td>.225</td>
<td>.073</td>
<td>0.34</td>
</tr>
</tbody>
</table>

*Note. N = 54. Criterion variable was the Empathic Perspective Taking subscale of the Scale of Ethnocultural Empathy. Cognitive prime condition was a dummy coded variable; 0 = positive affect prime; 1 = secure attachment prime. *$p < .05$; **$p < .01$.**
### TABLE 5. Effect of Priming Conditions on Pre/Post Change in Affect

<table>
<thead>
<tr>
<th></th>
<th>Study 1</th>
<th>Study 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Secure</td>
<td>Positive</td>
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<tr>
<td></td>
<td>Attachment</td>
<td>Affect</td>
</tr>
<tr>
<td></td>
<td>“Problem”</td>
<td>“Lottery”</td>
</tr>
<tr>
<td></td>
<td>(n = 26)</td>
<td>(n = 30)</td>
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<tr>
<td>Affect Measure</td>
<td>Positive Affect</td>
<td>Negative Affect</td>
</tr>
<tr>
<td>aPANAS</td>
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<td></td>
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<tr>
<td>Pre-</td>
<td>2.91 .94</td>
<td>2.79 .70</td>
</tr>
<tr>
<td>Post-</td>
<td>3.04 .86</td>
<td>2.99 .83</td>
</tr>
<tr>
<td>bMikulincer and Shaver</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-</td>
<td>4.49 1.06</td>
<td>4.32 1.05</td>
</tr>
<tr>
<td>Post-</td>
<td>4.56 1.10</td>
<td>4.53 .89</td>
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<td>cPANAS</td>
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<tr>
<td>Pre-</td>
<td>1.63 .77</td>
<td>1.60 .64</td>
</tr>
<tr>
<td>Post-</td>
<td>1.67 .88</td>
<td>1.35 .42</td>
</tr>
<tr>
<td>dMikulincer and Shaver</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-</td>
<td>2.14 1.32</td>
<td>1.98 .96</td>
</tr>
<tr>
<td>Post-</td>
<td>2.04 1.12</td>
<td>1.69 .73</td>
</tr>
</tbody>
</table>

Note. N = 109. PANAS = Positive and Negative Affect Scale. aUnivariate pre/post effect change, F(1, 107) = 3.72, p < .06, partial η² = .034; bUnivariate pre/post effect change, F(1, 107) = 1.84, p = ns, partial η² = .017; cUnivariate pre/post effect change, F(1, 107) = 6.61, p < .05, partial η² = .059; dUnivariate pre/post effect change, F(1, 107) = 0.96, p = ns, partial η² = .009.
four prime conditions based on Wilks’ Lambda criterion, $F(12, 270) = 0.58, p = \text{ns}$, partial $\eta^2 = .02$; no prime $\times$ time interactions, $F(12, 270) = 1.18, p = \text{ns}$, partial $\eta^2 = .04$; but there were significant differences for the within-subjects factor of change over time, $F(4, 102) = 2.47, p < .05$, partial $\eta^2 = .09$. From the standpoint of the integrity of experimental procedures, these are the effects we expected. There was a significant change in affect from pre-prime to post-prime, but no differences among any of the four conditions in producing this effect. Table 5 shows results of univariate follow-up analyses used to determine which of the affect measures registered the greatest pre/post change. Inspection of pre/post pairs of means, and their associated $F$-tests shown in the table notes reveals that there was a significant pre/post decrease in PANAS negative affect, $F(1,107) = 6.61, p < .05$, partial $\eta^2 = .059$; and a trend toward an increase in PANAS positive affect scores, $F(1, 107) = 3.72, p < .06$, partial $\eta^2 = .034$.

Thus, the four primes, although not significantly different than one other, appear to have been effective at reducing negative affect, and to a lesser degree, enhancing positive affect.

The final purpose of this project was to check for the possibility that exposure to the secure attachment primes might elicit undesirable changes in affect for persons with high attachment avoidance or anxiety. Mikulincer, Shaver, and their associates did not examine the possibility of interactions between primes and attachment security in influencing change in affect, but perhaps a participant who has high levels of attachment Anxiety or Avoidance might be relatively more resistant than securely attached subjects to the positive changes in affect elicited by the secure attachment primes. Perhaps asking a person with high Anxiety or Avoidance (who may have rarely experienced a secure attachment), to vividly imagine such a relationship might be somewhat upsetting.

Data were again combined from Study 1 and 2. To reduce the number of follow-up analyses, composite scores were created by using pre-prime means and standard deviations to create standardized versions of each affect measure. The PANAS standard scores were then combined with the corresponding standardized versions of the three-item scales developed by Mikulincer and Shaver (2001) to composite measures of pre-prime and post-prime affect. Next, hierarchical multiple regression analyses were performed to test interactions between participants’ levels of Anxiety or Avoidance and change in affect, modeled as residual gain scores. Pre-prime levels of affect were entered in the first step, with post-prime levels
of affect serving as the criterion variable. A dummy variable was used to indicate whether a participant had been assigned to one of the two secure attachment primes (Problem Solved or Loves You) versus one of the two positive affect primes (Lottery or Fun and Jokes). This dummy variable was entered into the second step of each analysis. Attachment Avoidance or Anxiety was entered in the third step to account for direct effects. A term representing the interaction of priming condition with Anxiety or Avoidance was entered in the fourth step.

The fourth step of each analysis shown in Table 6 presents the key tests of interactions. Findings suggested one significant interaction (Analysis 1) involving attachment Anxiety and the positive affect composite variable (increment in $R^2 = .02, p < .05$). To investigate the nature of these interactions, partial correlation analyses were conducted to model change in affect as residual gain scores. Correlations of attachment Anxiety with post-prime affect were calculated, controlling for pre-prime affect. The nature of the interaction can be illuminated by calculating coefficients separately for each of the two cognitive prime groups. Results suggest that for participants randomly assigned to the positive affect prime conditions, there was no significant association between attachment Anxiety and positive affect change ($r_{part} = .16, p = ns$). However, among the participants who were presented with a secure attachment prime, attachment Anxiety was significantly associated with adverse changes in affect, that is, with a decrease in positive affect ($r_{part} = -.21, p < .05$). Thus, our last follow-up analysis adds a very important note of caution regarding the use of secure attachment primes. It appears that as attachment Anxiety increases among participants exposed to these primes, so too does the risk of undesirable reductions in positive affect immediately following the prime.

**GENERAL DISCUSSION**

The purpose of these two studies was to investigate the effectiveness, in a sample of U.S. students, of two cognitive primes that had elicited increased favorable ratings of members of various cultural out-groups in samples of Israeli students (Mikulincer & Shaver, 2001). We hoped that these primes, if proven effective with U.S. students, might eventually become the basis for diversity programming interventions. From the variety of primes used by Mikulincer
and Shaver (2001) we selected two that seemed to offer the most promise as interventions, which we labeled Problem Solved and Loves You. (Our adaptations of Mikulincer and Shaver’s primes are described in detail in the Appendix.)

Before discussing the findings of these studies, it is important to note that the dependent variable we selected was substantially different than those used in Mikulincer and associates previous research. Mikulincer et al. (2001) studied empathy for targets of unspecified culture, and Mikulincer and Shaver (2001) studied attributions of traits to targets who were members of specific cultural out-groups. We studied generalized empathy for persons who are culturally different. Thus, it would be an error to describe the present research as a replication of Mikulincer, Shaver, and associates’ work. We decided not to use their approach because, if the cognitive

<table>
<thead>
<tr>
<th>Step / Variables Entered</th>
<th>Analysis 1: Post-Prime Positive Affect</th>
<th>Analysis 2: Post-Prime Negative Affect</th>
<th>Analysis 3: Post-Prime Positive Affect</th>
<th>Analysis 4: Post-Prime Negative Affect</th>
</tr>
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<td>.52</td>
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<td>3. Anxiety</td>
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<tr>
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<td>.60</td>
<td>.60</td>
<td>162.89***</td>
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<td>.61</td>
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</tr>
<tr>
<td>3. Anxiety</td>
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<td>.01</td>
<td>1.83</td>
</tr>
<tr>
<td>4. Prime $\times$ Anxiety</td>
<td>.63</td>
<td>.61</td>
<td>.01</td>
<td>1.54</td>
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</tbody>
</table>

Note. N = 109. Prime condition was a dummy coded variable, 0 = positive affect prime; 1 = secure attachment prime. *p < .05; ***p < .001.
primes are eventually adapted for multicultural training applications, it must be shown that they are effective in increasing empathy with a broad range of culturally different target others—not only a specific person who is culturally different. We selected the Empathic Perspective Taking subscale of the SEE because we believed it represented the best available measure of this type of generalized multicultural empathy.

A final noteworthy difference is that we did not reproduce the primes in every detail. In Mikulincer and Shaver’s (2001) Study 2 the primes referred to in the present research as Problem Solved and Lottery were followed by instructions for participants to close their eyes and picture the faces of the imagined persons for two minutes. In Mikulincer and Shaver’s (2001) Study 3 the primes we refer to as Loves You and Fun and Jokes were followed by instructions to “bring this person to mind and think about her/him for two minutes.” We believed that the more detailed instructions we used (see Appendix) were likely to provide a more potent delivery of the guided imagery and are more similar to the step-by-step guided imagery exercises often used in counseling or therapy. Nevertheless, any differences in findings between our study and Mikulincer and Shaver (2001) could be due to these differences in procedures.

Turning now to the specific findings, the lack of a significant interaction between Anxiety and Avoidance with the priming conditions in either Study 1 and 2 is in line with the findings of Mikulincer and Shaver (2001), and suggests that when a cognitive prime works, the resulting activation of secure attachment schemas leads to more cultural empathy, regardless of a participant’s pre-existing level of attachment anxiety or avoidance. However, in the absence of an intervention to activate secure base schema, persons with attachment insecurity may feel threatened and overwhelmed by cultural differences, and their empathic responses are inhibited. Mikulincer and Shaver (2001, p. 111) speculated that “Secure base priming provides a cognitive-affective shield against potential threats . . . It is possible that having the sense of a secure base heightens a person’s confidence in his or her coping skills for dealing with threats to self-esteem or worldview, which in turn reduces the need to defensively derogate or reject members of out-groups.” Experimental research has consistently shown that even subliminal priming of secure base attachment schema leads to positive effects, for example, a tendency to rate neutral stimuli more positively (Mikulincer, Hirchberger, Nachmias, & Gillath, 2001).
In general, we found support for the effectiveness of one of the two primes we examined (Problem Solved) but not the other (Loves You). The key difference in these primes is that Loves You in Study 2 required individuals to imagine one specific person from their past life experience, whereas Problem Solved in Study 1 prompted visualization of a group of hypothetically ideal attachment figures (i.e., . . . surrounded by people who love you). In Mikulincer and Shaver’s (2001) studies, the rating targets were described with considerable specificity, and always as identifiable individuals. Their version of Loves You was as effective as Problem Solved in mitigating differences in ratings of character traits between specific rating targets. In the current project, the SEE Empathic Perspective Taking subscale assesses empathy generalized broadly across unspecified culturally different others. Individuals vary in their ability to visualize others and provide ratings of targets when they are not given concrete descriptions. Perhaps Loves You was not effective in the present Study 2 because it was not as well matched to the demands of the rating task as Problem Solved in Study 1. Loves You prompts visualization of a specific person, but the SEE calls for generalized ratings; whereas Problem Solved prompts visualization of a group of hypothetical attachment figures. Alternatively, Problem Solved may simply have been a more powerful prime for activating secure base cognitive schemas. Although the finding that all four primes were equally effective in producing changes in affect makes the latter possibility less likely.

Before concluding that the Problem Solved prime might eventually be effective in clinical applications or multicultural training, it must be noted that results of follow-up analyses suggest an important caveat. Although there were no interactions between prime conditions and either Anxiety or Avoidance in terms of influence on ratings of cultural Empathic Perspective Taking (i.e., if a prime worked to increase empathy, it worked regardless of Anxiety or Avoidance level), there were significant interactions between Anxiety and prime condition with regard to affect change. Among persons exposed to a positive affect prime, attachment Anxiety was not associated with the strength of pre-post-prime change in affect. However, for those exposed to one of the two secure attachment primes, attachment Anxiety was associated with decreased positive affect following the prime.

These findings suggest that the Problem Solved and Loves You primes delivered in these two studies may have had some harmful
effects in proportion to a participant’s attachment anxiety. Perhaps persons with high attachment anxiety experienced distress when thinking of a secure attachment scenario, for example, a person who “accepts and loves you and helps you in times of need.” Interestingly, it appears that being required to engage in the imagery of the two secure attachment primes tends to decrease positive affect in subjects whose attachment anxiety was relatively high. Perhaps asking a person with high attachment Anxiety to imagine “that you are surrounded by people who are sensitive and responsive to your distress, want to help you only because they love you, and set aside other activities in order to assist you” is akin to asking a famished person to visualize a banquet. Research suggests that clients’ ratings of family structural dysfunction in childhood are associated with adult alexithymia, an inability to identify and describe one’s own affect, together with insecure attachment in the working relationship with their therapist (Mallinckrodt, King, & Coble, 1998). Clients may be even more likely than the undergraduates in these studies to experience high levels of attachment anxiety. Therefore, we strongly caution against using secure attachment primes in clinical applications until further studies are conducted to determine how the risk of adverse effects can be reduced.

A number of important limitations must be recognized in each of these studies in addition to those already mentioned. Both studies relied exclusively on self-report data. Mikulincer and Shaver (2001) assigned 20–25 participants to each group in their tests of the Problem Solved and Loves You primes, and reported group differences greater than 1.0 standard deviation units. We calculated that a research design with 35 participants in each of two groups would allow power of .80 to detect differences of .7 standard deviation units. The final number of participants with useable data in the smallest two groups compared (n = 26, n = 30) resulted in actual power of only .74 to detect an effect size of .7 standard deviation. Thus, our studies had sufficient statistical power to detect only fairly large effects, although we had somewhat more power than published studies of the same primes (e.g., Mikulincer & Shaver, 2001). In Mikulincer and Shaver’s experimental studies participants completed the rating tasks under the supervision of a research assistant. In our studies practical constraints prevented us from following similar procedures. The protocols were self-administered by students, which almost certainly resulted in a less potent manipulation of the independent variables, and introduced a greater potential for ran-
dom error than Mikulincer and Shaver’s research. For example, we cannot be certain that all participants followed the procedures as instructed. In fact, we know that several subjects in each condition did not spend the required time engaged in the cognitive prime activity. Nevertheless, the significant differences in affect following the primes suggests that they had at least a portion of the desired effect, and there is no reason to expect that one condition would be influenced any more than others by the relatively lower level of experimental control.

In each study approximately 10% of the participants indicated they had difficulty imagining the primes clearly and vividly, or they completed the task with only a minimum expenditure of time. Although the effect sizes were actually larger with these participants included in analyses, a further limitation is that a substantial proportion of the participants were apparently unable (or unwilling) to complete the prime as intended. Subjects for both studies were college students, limiting the generalizability of the findings.

Results of these studies suggests that one of two secure attachment cognitive primes examined appears to enhance the self-reported capacity of individuals to experience affective empathy for persons who are racially/ethnically different—at least temporarily. Further research is needed to study the duration of these changes, and identify ways of maintaining and expanding the positive effects. These findings underscore the importance for therapists and multicultural trainers of promoting an atmosphere of safety and security as they deliver interventions. This atmosphere may be especially important for participants with insecure adult attachment patterns who may tend to approach the prospect of multicultural contact with considerable apprehension. If the beneficial effects of secure attachment priming are confirmed in future studies, an important intervention may become available to therapists and trainers. However, findings of these studies suggest that adults with high levels of attachment anxiety, whose insecure attachment may limit their cultural empathy more than securely attached adults, may also be more at-risk for the primes’ harmful effects. In summary, a great deal of further research is needed to explore ways to elicit secure base attachment

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2. This 10% does not include the initial 12% of participants excluded from Study 1 and 21% from Study 2 due to random or inattentive responses on the validity check items. The experience of our research team and other colleagues with collecting data from over a dozen studies in these classes over an eight-year period suggests that a 20% rate of invalid responses is, unfortunately, not unusual.
schemas across a broad range of clients and trainees, without risking adverse emotional reactions in some individuals.

APPENDIX

COGNITIVE PRIMES

"PROBLEM SOLVED" PRIME: SECURE ATTACHMENT FOR STUDY 1

Guided Imagery: Next, please imagine yourself in a problematic situation that you cannot solve on your own, and imagine that you are surrounded by people who are sensitive and responsive to your distress, want to help you only because they love you, and set aside other activities in order to assist you.

Please record the current time in hours and minutes: ____________

Please take about 5 minutes to visualize this situation as vividly as possible. As you imagine that you are actually experiencing the situation, please jot down brief answers to the following questions—making sure that you pause long enough to imagine each step of the situation in as much detail as possible.

1. Imagine that you have a very distressing problem that you cannot solve on your own. Please describe the problem in 1–2 sentences.

2. How would you feel as you struggle to solve this problem by yourself without success?

3. Now imagine that you have asked for help with this problem, and that you are very pleased and pleasantly surprised by the strength of the positive response you get. More than one person steps in to help you. These are people who obviously care for you very much. What are their first names?

4. Each of these persons has interrupted their own important activities to help you, but they make it very clear that they are completely happy to do so. In fact, they tell you they are glad for the opportunity to help because they love you (or care about you as a friend very much). How would you feel?

5. These people are very sensitive to your needs and responsive to your distress. They seem to know exactly what you need in this situation. What kind of help would they provide?
6. The problem is completed resolved, thanks to the help you received from people that you know you can rely on in the future. How would you feel?

Please record the current time in hours and minutes: ____________

“LOTTERY” PRIME: POSITIVE AFFECT FOR STUDY 1

Guided Imagery: Next, please imagine yourself receiving a notice that you have won a large amount of money in the state lottery, and imagine other students in your class hearing about this notice, approaching you, congratulating you, and telling others about your good fortune.

Please record the current time in hours and minutes: ____________

Please take about 5 minutes to visualize this situation as vividly as possible. As you imagine that you are actually experiencing the situation, please jot down brief answers to the following questions—making sure that you pause long enough to imagine each step of the situation in as much detail as possible.

1. You may not typically buy a lottery ticket, but on this day you decided to take a chance. While shopping at a convenience store with 3–4 of your friends, on an impulse, you use your birthday as the lottery number. Your friends see you do this. How would you feel?

2. The winning number will be announced the next day at the end of the 6:30 local TV news. How would you feel as you wait the last few minutes to see if you have the winning number?

3. You are stunned to hear the TV anchor announce YOUR BIRTHDAY as the winning lottery number. The “Power 7” lottery that you entered is not one of those multi-million dollar contests, but still it is possible that you have won a great deal of money. How would you feel?

4. As you are still trying to absorb the news, you receive a telephone call from an official of the lottery, informing you that your after-tax winnings amount to $82,000! Minutes later, you receive calls from two of the friends who were with you in the convenience store. They’ve been watching TV and saw your birthday displayed as the winning number. You tell them that you’ve won, and they are incredibly happy for you. What would you say to them over the phone?

5. As you try to fall asleep that evening, your mind is racing with happy thoughts. What would you be thinking and feeling?
6. By the time you arrive at your first class the next day, most of your other friends have heard about your good fortune. They are genuinely happy about your good fortune. Please describe how you would feel as you hear their congratulations and start to give some thought to what you will do with your new-found wealth.

Please record the current time in hours and minutes: ____________

Please list the first names of people who fit the following descriptions for you.

(a) A person who lives in your neighborhood, but you do not know well.
(b) A person who accepts and loves you and helps you in times of need.
(c) A professor or teacher who has had a significant impact on you.
(d) A person who is always happy and loves fun and jokes.
(e) A person who has been something of a role model for you.

Please record the current time in hours and minutes: ____________

Guided Imagery: You have been randomly assigned to give a more complete description of person b above. (Other students are asked to describe other persons.) Please take about 2 minutes to visualize the person you named above “who accepts and loves you and helps you in times of need” as vividly and clearly as possible. Think about the positive qualities of this person that led you to select him or her, and the positive interactions you have had in the past.

In the space below, please take about five minutes to describe the person.

Please record the current time in hours and minutes: ____________

“FUN AND JOKES” PRIME: POSITIVE AFFECT FOR STUDY 2

Please list the first names of people who fit the following descriptions for you.

(a) A person who lives in your neighborhood, but you do not know well.
(b) A person who accepts and loves you and helps you in times of need.
(c) A professor or teacher who has had a significant impact on you.
(d) A person who is always happy and loves fun and jokes.
(e) A person who has been something of a role model for you.

Please record the current time in hours and minutes: ____________

Guided Imagery: You have been randomly assigned to give a more complete description of person d above. (Other students are asked to describe other persons.) Please take about 2 minutes to visualize the person you named above “who is always happy and loves fun and jokes.” as vividly and clearly as possible. Think about the positive qualities of this person that led you to select him or her, and the positive interactions you have had in the past.

In the space below, please take about five minutes to describe the person.

Please record the current time in hours and minutes: ____________

REFERENCES


