

# Attachment Theory and Group Processes: The Association Between Attachment Style and Group-Related Representations, Goals, Memories, and Functioning

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Four studies examined attachment-style differences in group-related cognitions and behaviors. In Studies 1–2, participants completed scales on group-related cognitions and emotions. In Studies 3–4, participants were divided into small groups, and their performance in group tasks as well as the cohesion of their group were assessed. Both attachment anxiety and avoidance in close relationships were associated with negative group-related cognitions and emotions. Anxiety was also related to the pursuit of closeness goals and impaired instrumental performance in group tasks. Avoidance was related to the pursuit of distance goals and deficits in socioemotional and instrumental performance. Group cohesion significantly moderated the effects of attachment anxiety. The discussion emphasizes the relevance of attachment theory within group contexts.

In their germinal article, Smith, Murphy, and Coats (1999) argued that “adult attachment theory, which has been prominent in recent years as a theory of interpersonal relationships, may be able to shed light on the processes underlying people’s identification with social groups as well” (p. 94). Accordingly, their findings indicated that people developed specific attachment orientations toward social groups and that these orientations contributed to group identification and emotional reactions to group membership. In the current studies, we follow Smith et al.’s integrative approach and make a step forward in applying attachment theory as a relevant framework for understanding individual differences in group-related cognitions, affect, and behavior. Specifically, we examine whether and how attachment style in close relationships (*relationship attachment style*) is associated with group-related appraisals, emotions, goals, and memories; variations in instrumental and socioemotional performance in actual group tasks; and the development of attachment orientations toward a specific group during these tasks. We also explore the possible role that group-level constructs, such as group cohesion, may play in moderating the psychological manifestations of relationship attachment style within group contexts.

## Attachment Theory and Research

Attachment theory (Bowlby, 1973) attempts to explain individual differences in the affective ties formed with significant others. Specifically, Bowlby (1973) proposed that interactions with sig-

nificant others in times of need are internalized into mental representations of the self and others (*attachment working models*), which, in turn, organize relational cognitions, affect, and behavior. Originally, this theory was applied to explain individual differences in the infant–caregiver relationship (e.g., Ainsworth, Blehar, Waters, & Wall, 1978). However, Bowlby (1988) claimed that attachment theory is a highly relevant framework for explaining relational cognitions and behaviors across the entire life span. In fact, following Bowlby’s (1969/1982) basic assumptions, scholars (Ainsworth, 1991; Hazan & Zeifman, 1994) argued that attachment theory can be applied to relationships that fulfill three criteria: (a) *proximity maintenance*—people tend to show preference for the relationship partner and seek proximity to him or her in times of need; (b) *safe haven*—the partner facilitates distress alleviation and is a source of support, comfort, and relief; and (c) *secure base*—the partner facilitates exploration, risk taking, and self-expansion. Research has shown that friendships and romantic relationships during adolescence and adulthood fulfill these criteria (e.g., Fraley & Davis, 1997; Hazan & Zeifman, 1994).

In studying adult close relationships, attachment studies have focused on the construct of relationship attachment style—stable patterns of relational cognitions and behaviors—and have adopted Hazan and Shaver’s (1987) typology of secure, avoidant, and anxious style. Recently, Brennan, Clark, and Shaver (1998) concluded that this typology reflects two basic dimensions: avoidance and anxiety. Persons scoring low in these two dimensions correspond to the *secure* style and are characterized by a positive history of interactions with significant others, confidence in others’ availability in times of need, and comfort with closeness. Persons scoring high on attachment avoidance correspond to the *avoidant* style, which is characterized by negative representations of others, compulsive self-reliance, and preference for emotional distance. Persons scoring high on attachment anxiety correspond to the *anxious* style, which is characterized by doubts in others’ responses, negative self-appraisals, compulsive need for closeness, and fear of rejection.

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Attachment research has shown extensively that self-reports of relationship attachment style are significantly associated with the quality of close relationships (for reviews, see Feeney, 1999; Shaver & Hazan, 1993) and daily social interactions (e.g., Pietromonaco & Barrett, 1997; Tidwell, Reis, & Shaver, 1996) as well as with a wide array of relational cognitions and behaviors (e.g., Collins, 1996; Collins & Feeney, 2000; Mikulincer & Nachshon, 1991). People who are high in attachment anxiety in close relationships have intense needs to be accepted, supported, and admired by their partner, which is likely to create relationship tensions and conflicts. People who are high in attachment avoidance in close relationships are uncomfortable with intimacy, self-disclosure, and interdependence, which is likely to create difficulties in maintaining satisfactory close relationships. Although relationship attachment style is conceptualized and measured as a global orientation toward close relationships (Shaver & Hazan, 1993), recent studies have shown that people could develop relationship-specific attachment orientations organized around experiences with a specific partner and that these orientations affect their cognitions and behavior in the relationship (e.g., La Guardia, Ryan, Couchman, & Deci, 2000; Mikulincer & Arad, 1999; Pierce & Lydon, 2001).

### The Manifestations of Attachment Working Models Within Group Contexts

In the current series of studies, we attempt to apply attachment theory as a relevant framework for understanding individual differences in group relationships. In our terms, relationships with a group as a whole or other individual group members can fulfill the three definitional criteria of attachment bonds. First, research on group identification and intergroup relations show that people have a clear pattern of preference for their own groups and that they seek the proximity of other group members in times of need (for reviews, see Devine, 1995; Dovidio & Gaertner, 1993; Tajfel, 1982). Second, research on group cohesion reveals that the group as a whole can be a source of support, comfort, and relief mainly during demanding or threatening situations (e.g., Hogg, 1992; Mullen & Cooper, 1994). Third, group activities can facilitate exploration and learning of social, emotional, and cognitive skills (e.g., Forsyth, 1990). On this basis, one can apply attachment theory to group contexts and claim that attachment style may be active within group contexts and affect cognition, affect, and behavior during group interactions.

In support of this view, Smith, Murphy, and Coats (1999) found that people can develop feelings of attachment anxiety and attachment avoidance toward a group. Whereas group attachment anxiety was characterized by a sense of being unworthy as a group member and worries regarding acceptance by a group, group attachment avoidance was characterized by the appraisal of closeness to groups as unnecessary and the tendency to avoid dependence on groups. More important, higher scores on group-specific attachment anxiety or avoidance were related to lower identification with social groups, stronger negative emotions toward groups, and lower perceived support from groups. Overall, Smith et al.'s findings strongly support the application of attachment theory and research to the field of group relationships, indicating that variations along attachment dimensions of anxiety and avoidance underlie a person's attitudes toward groups.

Smith et al.'s (1999) study represents the first systematic step in applying attachment theory to the field of group relationships. More research is needed that attempts to consolidate the conceptual and empirical links between these two psychological fields and to understand the psychological mechanisms that underlie these links. For example, Smith et al. asked participants to report on their orientation toward either their most important social group (Studies 1 and 2) or their fraternities or sororities (Study 3). However, no information was collected about a person's cognition, affect, and behavior during specific interactions within small, functional groups (e.g., study groups, work teams). In fact, most of the group dynamics literature has focused on these functional groups (Forsyth, 1990), and the criteria defining attachment relationships seem to fit better small functional groups than large social groups. As a result, it is still not known whether attachment theory can explain a person's actual functioning within small groups.

Another limitation of Smith et al.'s (1999) study is that no information was collected on group-level constructs. Studies on group dynamics have emphasized the importance of a multi-level approach that takes into account both individual-level and group-level constructs (e.g., Barry & Stewart, 1997; Mullen & Cooper, 1994). Moreover, group cohesion, the most prominent group-level psychological construct in the group dynamics literature (e.g., Evans & Dion, 1991; Mullen & Cooper, 1994), seems to be crucial for integrating between attachment theory and group relationships. *Group cohesion* is defined as team spirit and indicates the level of coordination, cooperation, support, and consensus that exist among group members (Hogg, 1992; Levine & Moreland, 1990). In our terms, this construct reflects the extent to which a group serves as a safe haven for its members (the higher the group cohesion, the higher the support and reassurance a group offers); it then may affect the formation of group-specific attachment orientations and their psychological manifestations during group interactions.

From the perspective of attachment theory, Smith et al.'s (1999) study did not take into account the multifaceted nature of attachment working models. Collins and Read (1994) delineated four basic components of these models: (a) representations of the self and others, (b) episodic memories of social interactions, (c) interaction goals that guide behavior in social interactions and close relationships, and (d) regulatory strategies aimed at attaining these goals and dealing with distress. Moreover, research has shown that persons differing in relationship attachment style consistently differ in these four components and that all these components underlie attachment-style differences in relational cognitions and behaviors (for reviews, see Collins & Allard, 2001; Collins & Read, 1994; Shaver & Mikulincer, 2002). Therefore, a comprehensive integration between attachment theory and group relationships should delineate the specific manifestations of each of these four components of working models in group-related cognitions, emotions, and behaviors.

The current studies represent a further step in integrating between attachment theory and group relationships while focusing on a person's orientation toward small groups, his or her actual performance in group tasks, and the possible role that group-level constructs (i.e., group cohesion) may play during these interactions. Furthermore, we explore whether and how a person's relationship attachment style is manifested in group-related cognitions, emotions, and behaviors. In this way, we take into account both

individual and group levels of analyses and adopt a multifaceted approach in assessing the manifestations of relationship attachment style within group contexts.

### *Representations of the Self and Others*

Attachment theorists claim that people differing in relationship attachment style differ in their representations of self and others (e.g., Bartholomew & Horowitz, 1991; Collins & Read, 1994; Fraley & Shaver, 2000). On the one hand, high scores on attachment anxiety indicate negative representations of the self. Anxious persons tend to perceive themselves as worthless and as having little control over relational outcomes, which, in turn, exacerbates their worries about relationships and their fears of abandonment. On the other hand, high scores on attachment avoidance indicate negative representations of others. Avoidant persons tend to perceive others as unavailable and untrustworthy, which, in turn, exacerbates their tendency to maintain emotional distance and independence from others. In support of this view, persons scoring high on attachment anxiety have been found to suffer from low self-esteem and to view themselves in negative terms (e.g., Griffin & Bartholomew, 1994; Mikulincer, 1995). In addition, persons scoring high on attachment avoidance have been found to hold negative views of relationship partners and to explain their behaviors in negative terms (e.g., Bartholomew & Horowitz, 1991; Collins, 1996).

We hypothesize that variations in relationship attachment style are manifested in the way people appraise themselves as group members as well as their appraisal of other group members and the group as a whole. Specifically, for the current studies, we made two hypotheses. First, we hypothesized that attachment anxiety in close relationships would be associated with negative self-perceptions and the appraisal of group interactions as a psychological threat. In our view, anxious persons' low self-esteem and sense of helplessness raise doubts about their worth in the eyes of other group members and foster negative expectations about their efficacy in dealing with group interactions. As a result, these persons worry about their functioning during group interactions and then appraise these interactions as a threat and experience high levels of tension and distress. These cognitive-affective reactions fit extensive findings on anxiously attached persons' catastrophic appraisal of person-environment transactions (for reviews, see Mikulincer & Florian, 1998, 2001).

Second, we hypothesized that attachment avoidance in close relationships would be associated with negative perceptions of other group members and the dismissal of the potential benefits of group interactions. In our view, avoidant persons' negative view of others causes them to doubt the goodwill and worth of other group members and fosters a negative attitude toward the necessity or desirability of group interactions. As a result, they dismiss the potential benefits of group interactions and experience little interest or excitement during these interactions. Because avoidant persons tend to suppress distressing thoughts and repress painful emotions (e.g., Fraley & Shaver, 1997), we also expect that attachment avoidance in close relationships is not significantly associated with the appraisal of group interactions as a threat and the arousal of negative emotions during these interactions.

### *Episodic Memories*

Collins and Read (1994) suggested that relationship attachment style is associated with memory processing. Specifically, attachment anxiety biases memory toward the processing of painful relational episodes and then heightens the accessibility of these episodes within the semantic memory network. Indeed, research has found that anxious persons heighten accessibility of negative emotional memories as well as memories of negative relational episodes (e.g., Baldwin, Keelan, Fehr, Enns, & Koh Rangarajoo, 1996; Mikulincer & Orbach, 1995; Miller, 1999). In contrast, attachment avoidance reflects a more defensive memory structure in which painful emotional memories are repressed. As a result, avoidant persons have been found to have low accessibility of negative memories (e.g., Fraley, Garner, & Shaver, 2000; Mikulincer & Orbach, 1995). For the current studies, we hypothesized that these attachment-style differences would be reflected in the processing of memories of group interactions. Whereas attachment anxiety in close relationships would be associated with heightened accessibility of negative memories of group interactions, attachment avoidance in close relationships would be associated with reduced accessibility of these memories.

### *Interaction Goals*

According to Collins and Read (1994), people differing in relationship attachment style differ in the goals they pursue in social interactions. Whereas anxious people tend to construe their interaction goals around their unfulfilled need for love and support and the desire to attain a sense of felt security, avoidant people tend to organize their goals around the search for self-reliance and the maintenance of emotional distance. Research provides support for these attachment-related interaction goals (e.g., Mikulincer, 1998; Mikulincer & Nachshon, 1991).

We hypothesize that these attachment-style differences in interaction goals are reflected in the goals people seek during group interactions. On the one hand, persons high in relationship attachment anxiety seek to be accepted and loved by group members and perceive group interactions as an opportunity for gaining a sense of attachment security. On the other hand, persons who score high on relationship attachment avoidance seek to maintain distance from group members and to emphasize their independence and autonomy during group interactions.

### *Regulatory Strategies*

Attachment theory and research have provided important information about attachment-related regulatory strategies (e.g., Cassidy & Kobak, 1988; Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993; Shaver & Mikulincer, 2002). Whereas anxious persons tend to hyperactivate attachment-related behaviors, avoidant persons tend to deactivate the attachment system. Hyperactivation is indicated by a hypervigilant attentional focus on relationship partners and recurrent attempts to minimize emotional distance from significant others; elicit support, love, and closeness; and avoid interpersonal conflicts and disagreements that could destroy the relationship. In contrast, deactivation consists of attempts to maximize emotional distance from others; avoid interdependence; and strive for self-reliance, uniqueness, and control.

These strategies have been extensively documented in a wide variety of social interactions and close relationships (for a review, see Shaver & Mikulincer, 2002).

We hypothesize that these regulatory strategies are manifested in the two main group-related performance dimensions. Theory and research on small groups have delineated two basic dimensions of an individual's contribution to group outcomes: (a) *socio-emotional functioning*—the extent to which a person contributes to the morale and cohesion of the group as well as to the resolution of conflicts among group members, and (b) *instrumental functioning*—the extent to which a person contributes to the successful completion of group tasks and the accomplishment of group goals (e.g., Barry & Stewart, 1997; Forsyth, 1990; Hare, 1992; Mann, 1959). In our view, whereas attachment anxiety is associated with impaired instrumental functioning, attachment avoidance is associated with performance impairment in the socioemotional dimension.

On the one hand, we hypothesize that anxious persons' hyperactivating strategies lead them to be more focused on maintaining the positive emotional tone of group interactions than on contributing to task completion. Because anxious persons want to be accepted and loved and desire to feel close to others, they direct psychological resources mainly to the promotion of an atmosphere of acceptance and support among group members and the resolution of any intragroup conflict that could damage this atmosphere. As a result, these hyperactivating strategies draw resources away from task-oriented thoughts and behaviors, thereby impairing instrumental functioning. On the other hand, avoidant persons' deactivating strategies foster a dismissal of the socioemotional realm of group interactions and lead avoidant persons to invest time and energy in the completion of group tasks that do not require any emotional involvement with the group. As a result, their deactivating strategies mainly impair socioemotional functioning.

### The Current Studies

The current series of four studies examined the associations between relationship attachment style and group-related mental representations, memories, goals, and socioemotional and instrumental performance. In the four studies reported here, we focused on a person's cognitions, affect, and behavior in small, functional groups. However, because most groups are highly heterogeneous in their goals (ranging from support groups to task-oriented groups) and structure (ranging from informal, unstructured groups to formal, well-structured groups), we attempted to control for this source of variance by increasing the homogeneity of the groups that were under study. Specifically, we focused on small, task-oriented groups (study groups or work teams) that were designed to complete specific group missions.

In Studies 3 and 4, we also explored the possible role that the most prominent group-level construct—group cohesion—may play in moderating the manifestations of attachment-related regulatory strategies during task-oriented group interactions. There is extensive evidence that group cohesion has positive effects on both the socioemotional and instrumental functioning of group members (e.g., Evans & Dion, 1991; Gully, Devine, & Whitney, 1995; Hackman, 1992; Karau & Williams, 1997; Mullen & Cooper, 1994). Moreover, high levels of group cohesion may lead people to feel protected and supported by the group and then elicit a group-

specific sense of attachment security, which, in turn, makes the activation of other defensive strategies less necessary. In fact, the contextual activation of the sense of attachment security (e.g., visualizing a supportive other) has been found to have positive effects on a person's cognitive-affective reactions to social interactions (e.g., Mikulincer et al., 2001; Mikulincer & Shaver, 2001; Pierce & Lydon, 1998). On this basis, we explore the possibility that a highly cohesive group weakens the hypothesized links between relationship attachment style, the attachment orientation a person develops toward this group, and his or her socioemotional and instrumental functioning in group tasks.

### Study 1

In Study 1, we examined the construct validity of relationship attachment style within group contexts. Specifically, we examined whether and how this construct was associated with group-related self-efficacy, threat, and challenge appraisals as well as emotional states in group settings. Our predictions were as follows:

1. The higher the attachment anxiety, (a) the lower the appraisal of self-efficacy in dealing with task-oriented group interactions, (b) the higher the appraisal of these interactions as a potential threat, and (c) the stronger the negative emotions toward these interactions.

2. The higher the attachment avoidance, (a) the lower the appraisal of task-oriented group interactions as a beneficial challenging experience and (b) the weaker the positive emotions toward these interactions.

### Method

**Participants.** Eighty-nine Israeli undergraduates (65 women and 24 men ranging in age from 19 to 27,  $Mdn = 23$ ) participated in the study as part of the requirements for their degree. All participants reported having prior experience with task-oriented groups.<sup>1</sup>

**Instruments and procedure.** The study was run in two sessions. The first session was conducted during regular class time and participants completed Mikulincer, Florian, and Tolmacz's (1990) 10-item scale tapping attachment anxiety and avoidance in close relationships (5 items per dimension). Participants were asked to think about their close relationships without focusing on a specific partner and to rate the extent to which each item described their feelings in these relationships on a 7-point scale ranging from 1 (*not at all*) to 7 (*very much*). In our sample, Cronbach's alphas were adequate for both anxiety and avoidance items (.74, .78). Then we computed two scores by averaging the relevant items.<sup>2</sup>

A different research assistant from the person who conducted the first session, who was unaware of the participants' attachment scores, conducted the second session 2 weeks later. Participants were run in small groups and were told that they would complete a battery of questionnaires dealing with task-oriented group activities. The order of the scales was randomized across participants.

Participants' appraisal of task-oriented groups was assessed by a 14-item Hebrew version of Folkman and Lazarus's (1985) scale, which was tailored

<sup>1</sup> No significant gender difference was found in all the assessed variables. Moreover, there were no significant interactions of gender with attachment scores in predicting any of the group-related variables. Identical findings were observed in Study 2.

<sup>2</sup> In all the studies, no significant association was found between the attachment anxiety and attachment avoidance scores ( $r_s$  ranging from .04 to .13).

to group interactions. Participants were instructed to rate the extent to which they appraised task-oriented groups in the way described in each item. Ratings were made on a 5-point scale ranging from 1 (*not at all*) to 5 (*very much*). A factor analysis with Varimax rotation yielded three main factors (eigenvalue  $> 1$ ) that explained 61% of the variance. Factor 1 (25% of explained variance) included seven items (loading  $> .40$ ) tapping the appraisal of self-efficacy for dealing with group interactions (e.g., "I know how to improve the efficacy of group performance"). Factor 2 (19%) included four items (loading  $> .40$ ) tapping a challenge appraisal of groups (e.g., "Working with other people in group tasks helps me to know myself"). Factor 3 (17%) included three items (loading  $> .40$ ) tapping a threat appraisal of groups (e.g., "Working with other people in group tasks threatens my self-esteem"). Cronbach's alphas were adequate for the three factors (ranging from .71 to .86). On this basis, we computed three scores by averaging items that load high on a factor.

Participants' emotions toward task-oriented groups were assessed by a Hebrew version of the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988). This scale consists of 10 positive emotions and 10 negative emotions. Participants rated the extent to which task-oriented groups elicited each of these emotions. Ratings were made on a 5-point scale ranging from 1 (*not at all*) to 5 (*very much*). In our sample, a factor analysis with Varimax rotation yielded two main factors (eigenvalue  $> 1$ ) that explained 58% of the variance. Factor 1 (36% of explained variance) included the 10 negative emotions (e.g., anxiety, fear, sadness). Factor 2 (22%) included the 10 positive emotions (e.g., pleasure, interest, pride). Cronbach's alphas were high for the two factors (.93, .92). On this basis, we computed two emotion scores by averaging items that load high on a factor.

### Results and Discussion

Multiple regressions revealed that relationship attachment style made significant contributions to all the predicted variables and explained between 10% and 26% of their variance (see Table 1).<sup>3</sup> Regression coefficients revealed that the higher the attachment anxiety, (a) the lower the appraisal of group-related self-efficacy, (b) the higher the appraisal of task-oriented groups as a threat, and (c) the stronger the negative emotions that task-oriented groups elicited (see Table 1). In addition, the higher the attachment avoidance, (a) the lower the appraisal of task-oriented groups as a challenge and (b) the weaker the positive emotions and the stronger the negative emotions that task-oriented groups elicited (see Table 1). Overall, the findings supported the construct validity of relationship attachment style within group contexts. Furthermore,

with one exception, the findings were in line with our specific predictions. Only the finding that attachment avoidance was significantly associated with strong negative emotions toward task-oriented groups did not fit our predictions. We deal with this unexpected finding in the General Discussion.

### Study 2

In Study 2 we further examined the construct validity of relationship attachment style within group contexts while assessing its associations with the goals people endorse in task-oriented groups (security-love, distance-self-reliance) and their memories of group interactions (positivity of the memories and appraisals of the self and group members). Our predictions were as follows:

1. The higher the attachment anxiety, (a) the higher the endorsement of security-love goals in task-oriented groups, (b) the less positive the available memories of task-oriented groups, and (c) the more negative the appraisal of the self within these memories.

2. The higher the attachment avoidance, (a) the higher the endorsement of distance-self-reliance goals in task-oriented groups and (b) the more negative the representation of group members within the available memories of task-oriented group interactions.

### Method

**Participants.** Ninety Israeli undergraduates (54 women and 36 men ranging in age from 20 to 30,  $Mdn = 24$ ) volunteered to participate in the study without any reward. All the participants reported having prior experience with task-oriented groups.

**Instruments and procedure.** The study was run in two sessions. The first session was conducted during class time, and participants completed a randomly ordered battery of scales. Among these scales, they completed the 10-item attachment scale described in Study 1. In the Study 2 sample, Cronbach's alphas were acceptable for anxiety items (.73) and avoidance items (.75). Then we computed two scores by averaging the relevant items.

Participants also completed a 15-item scale, which was constructed for Study 2 and tapped participants' endorsement of security-love goals, distance-self-reliance goals, and mastery-skill goals (5 items per category). Mastery-skill goals, which are the most prominent goals of task-oriented groups, were introduced as distracting filler items. Participants rated the extent to which they strive for the goal described in an item during task-oriented group interactions. Ratings were made on a 5-point scale ranging from 1 (*not at all*) to 5 (*very much*). A factor analysis with Varimax rotation yielded three main factors (eigenvalue  $> 1$ ) that explained 59.5% of the variance. The five security-love goals (e.g., "Being accepted by group members") loaded greater than .40 in the first factor (25.4% of explained variance). Factor 2 (19.1%) included (loading  $> .40$ ) the five mastery-skill goals (e.g., "Learning new things about myself"). Factor 3 (15.0%) included (loading  $> .40$ ) the five distance-self-reliance goals (e.g., "Maintaining personal freedom in making my own decisions"). Cronbach's alphas were adequate for the three factors (ranging from .75 to .87). Then we computed three scores by averaging items that load high on a factor.

A different research assistant from the person who conducted the first session, who was unaware of the participants' attachment and goal scores, conducted the second session 2 weeks later. Participants were run individ-

Table 1  
Standardized Regression Coefficients and Strength of the Contributions of Attachment Anxiety and Attachment Avoidance to Cognitive-Affective Orientation Toward Group Interactions (Study 1)

Measure	$\beta$		
	Attachment anxiety	Attachment avoidance	$R^2$
Self-efficacy appraisal	-.33**	.12	.11**
Challenge appraisal	.05	-.36**	.15**
Threat appraisal	.43**	.10	.22**
Positive emotions	.02	-.29**	.10*
Negative emotions	.34**	.28**	.26**

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

<sup>3</sup> In all the studies, the statistical analyses revealed that the interactive effects of attachment anxiety and attachment avoidance were not significant.

ually and were asked to recall three different task-oriented group interactions and to write a brief description of each recalled episode. None of the participants had problems in retrieving these three memories.

For each of the three recollected interactions, participants rated the extent to which each of four attributes (good, bad, happy, sad) was descriptive of the interaction. Ratings were made on a 7-point scale ranging from 1 (*not at all*) to 7 (*very much*). Cronbach's alphas (after reversing the scales of the negative items) were high for the four items in each of the recollected interactions (ranging from .81 to .91), and correlations between the three interactions were also high (*r*s ranging from .65 to .72). Then, we computed a total score by averaging the four ratings across the three recollected interactions. Higher scores reflected more positive memories of task-oriented groups.

Participants also received two scales tapping representations of self and others. The order of these scales was randomized across participants. In the Self-Representation Scale, participants rated the extent to which each of six attributes (intelligent, stable, calm, shy, spineless, lonely) was self-descriptive in each of the recollected interactions. In the Others-Representation Scale, participants rated the extent to which each of six attributes (honest, reliable, trustworthy, impulsive, manipulative, lazy) was descriptive of the other members of a recalled group. Ratings were made on a 7-point scale ranging from 1 (*not at all*) to 7 (*very much*). Cronbach's alphas (after reversing scales of the negative items) were high in each of the recollected interactions (ranging from .75 to .86 for self-representation items and from .79 to .84 for others-representation items) and the correlations between the three interactions were also high (*r*s ranging from .68 and .74 for self-representation ratings and from .61 to .72 for other-representation ratings). On this basis, we computed (a) a total self-representation score—the average of the six ratings across the three recollected interactions—and (b) a total others-representation score—the average of the six ratings across the three recollected interactions. Higher scores reflect a more positive self-representation and a more positive appraisal of group members.

### Results and Discussion

Multiple regressions revealed that relationship attachment style made significant contributions to most of the predicted variables, with the exception of mastery–skill goals, and explained between 12% and 16% of the variance (see Table 2). As can be seen in Table 2, most of the regression coefficients were in line with our predictions. First, attachment anxiety was significantly associated

with higher endorsement of security–love goals, more negative memories of group interactions, and more negative self-appraisals in the recollected interactions. Second, attachment avoidance was significantly associated with higher endorsement of distance–self-reliance goals and a more negative appraisal of group members. However, unexpectedly, avoidance was also significantly associated with the recall of more negative memories of task-oriented groups. This finding fitted results of Study 1 showing that avoidant persons reacted with strong negative emotions to group interactions. Overall, these findings further contributed to the construct validity of relationship attachment style within group contexts.

### Study 3

In Study 3, we examined the association between relationship attachment style and the quality of socioemotional and instrumental performance in group tasks. We hypothesized that the search for closeness, support, and consensus that characterizes the hyperactivating strategies of anxiously attached persons (Shaver & Mikulincer, *in press*) would draw psychological resources away from task-oriented thoughts and behaviors, thereby impairing instrumental functioning. We also hypothesized that the search for emotional and social distance that characterizes the deactivating strategies of avoidant persons (Shaver & Mikulincer, *in press*) would lead to a dismissal of the socioemotional realm of group interactions, thereby impairing socioemotional functioning. In Study 3, we also examined the hypothesis that group cohesion would temper the manifestations of attachment-related regulatory strategies during group interactions.

To examine these issues, we conducted a naturalistic study with new recruits in the Israel Defense Forces (IDF), whose fitness for combat units was evaluated in a 2-day screening session. On the 1st day, participants completed the attachment style scale described in Study 1. On the 2nd day, participants were randomly divided into small groups and performed three group missions. After each mission, they rated their socioemotional functioning (i.e., the extent to which they contributed to maintaining a positive emotional tone in their group) and instrumental functioning (i.e., the extent to which they contributed to the successful completion of the group mission). In addition, they rated the level of cohesion of their group. Our predictions were as follows:

1. The higher the attachment anxiety, the lower the self-evaluation of instrumental functioning during group missions.
2. The higher the attachment avoidance, the lower the self-evaluation of socioemotional functioning during group missions.
3. The higher the group cohesion, the weaker the hypothesized associations between attachment dimensions and functioning ratings.

### Method

**Participants.** A total of 377 eighteen-year-old men participated in the study. All the participants were beginning their compulsory service in the IDF and were undergoing a 2-day screening session in which their fitness for combat units was being evaluated. Before this screening session, all the participants had undergone rigorous IDF tests and had been found to be suitable for serving in the army. All of the participants were single and had completed high school. Most of them resided in urban areas. Originally, the sample was composed of 405 participants, but 28 were dropped because

Table 2  
*Standardized Regression Coefficients and Strength of the Contributions of Attachment Anxiety and Attachment Avoidance to Interaction Goals and Memories of Group Interactions (Study 2)*

Measure	$\beta$		$R^2$
	Attachment anxiety	Attachment avoidance	
<b>Goal scores</b>			
Security–love	0.34**	0.03	.12**
Distance–self-reliance	0.13	0.35**	.16**
Mastery–skill	−0.02	0.14	.03
<b>Memory scores</b>			
Hedonic tone	−0.22*	−0.26*	.14**
Self-representation	−0.39**	0.18	.16**
Others-representation	−0.01	−0.38**	.16**

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

they failed to fill out all the research questionnaires or did not complete the entire 2-day screening session.

**Instruments and procedure.** The study was run at an IDF base in the northern area of Israel. On the 1st day, all the participants were put together in a large room and asked to individually complete a large IDF battery of questionnaires and ability tests. Among these questionnaires, participants completed the 10-item attachment style scale described in Study 1. In Study 3's sample, Cronbach's alphas were .74 for the anxiety items and .73 for the avoidance items. Then we computed two scores by averaging the relevant items. No significant difference was found between samples of Study 3 and those of Studies 1–2 in the two attachment scores.

On the 2nd day, all the participants were randomly assigned to small groups of 6–9 participants wherein they completed three group missions. In this way, 51 groups were constructed (8 groups of 6 participants, 20 groups of 7 participants, 18 groups of 8 participants, and 5 groups of 9 participants). An instructor, whose task was to explain each of the three missions and collect participants' self-report data after each mission, escorted each group. During each mission, the instructor acted only as an observer and did not intervene in the deliberations, decisions, and performance of a group. The three missions were (a) completing a U.S. National Aeronautics and Space Administration moon-survival task while being on a raft in the middle of the sea, (b) mounting a rubber boat (zodiac), and (c) assembling a complex military tent. The order of the three missions was randomized across groups.

Following each of the missions, all the participants completed two self-report scales. The order of the scales was randomized across participants. One scale tapped participants' evaluation of their own socioemotional and instrumental functioning during the group task. This scale included eight items, which were taken from Barry and Stewart's (1997) scale and were found to load high on latent factors of socioemotional and instrumental functioning (Barry & Stewart, 1997). These eight items were translated by two bilingual psychologists using a back-translation technique and were tailored to the current group tasks. Five items tapped instrumental functioning (e.g., "I took the work seriously"; "I contributed to the quality of the team performance") and three items tapped socioemotional functioning (e.g., "I helped group members to work together"; "I stimulated the expression of thoughts and feelings within the group"). Participants rated the extent to which each item was self-descriptive in the mission in question. Ratings were done on a 5-point scale ranging from 1 (*not at all*) to 5 (*very much*).

Factor analyses with Varimax rotation were performed on the eight items separately for each of the three missions. These analyses yielded two main factors (*eigenvalue > 1*) that explained between 54% and 58% of the variance and replicated the theoretical two-factor structure of the scale. Whereas Factor 1 (between 38% and 41% of explained variance) always included the five instrumental functioning items (loading > .40), Factor 2 (between 16% and 17%) always included the three socioemotional functioning items (loading > .40). Cronbach's alphas were acceptable for both the five instrumental functioning items (between .72 and .76) and the three socioemotional functioning items (between .64 and .71). Then we computed two scores for each participant in each mission by averaging items that load high on a factor. It is important to note that Pearson correlations revealed that a participant's self-evaluation of his functioning was stable across the three missions (*rs* of .66, .71, and .74 for instrumental functioning; *rs* of .71, .73, and .75 for socioemotional functioning). On this basis, we computed two total functioning scores by averaging a participant's evaluations across the three missions. Higher scores reflected higher appraisals of instrumental and socioemotional functioning. A moderate correlation was found between these two scores, *r*(375) = .33, *p* < .01.

Participants also completed a 10-item scale tapping their appraisal of group cohesion. This scale was based on Stokes's (1983) and Rosenfeld and Gilbert's (1989) items, which were translated into Hebrew by two bilingual psychologists using a back-translation technique. Items tapped the basic definitional components of group cohesion, such as commitment,

cooperation, coordination, and consensus (e.g., Hogg, 1992; Mullen & Cooper, 1994). Examples of items are "In my group, we worked together"; "In my group, we helped each other"; "In my group, there was a high level of consensus." Participants rated the extent to which each item was descriptive of their group during a mission. Ratings were done on a 7-point scale ranging from 1 (*not at all*) to 7 (*very much*). Cronbach's alphas (range = .88–.91) were high for the 10 group cohesion items. Then we computed a group cohesion score for each participant in each mission by averaging the 10 items. However, Pearson correlations revealed that a participant's evaluation of his group cohesion was stable across the three missions (*rs* = .60, .61, and .67). On this basis, we computed a total group cohesion score by averaging a participant's evaluations across the three missions.

Although group cohesion was assessed at an individual participant level, previous studies have assumed that cohesion is a group-level construct and have shown that most cohesion measures reflect a central tendency index of group's cohesiveness composition (for a review, see Mullen & Cooper, 1994). To examine whether our cohesion measure reflected a group-level construct, we followed the analytical steps recommended in group research (Blieske, 2000; Kenny & Judd, 1986; Kenny & la Voie, 1985). First, an analysis of variance (ANOVA) treating groups as the independent variable and the individual participants' reports of group cohesion as the dependent variable revealed a significant difference between groups, *F*(50, 326) = 3.47, *p* < .01. This finding was in line with the statistical condition defining a group-level construct: The within-group variance was significantly smaller than the between-group variance. Second, to determine the reliability of the group average ratings of cohesiveness, we computed intraclass correlations (Shrout & Fleiss, 1979) and obtained a reliability coefficient of .71. This coefficient reflected a high level of agreement among group members in their ratings of group cohesion. On this basis, we computed a cohesion score for each group by averaging the cohesion ratings made by the individual members of a group.

It is important to note that attachment and functioning scores did not fulfill statistical conditions for group-level constructs, and they were treated as individual-level constructs. All the ANOVAs performed with group as the independent variable revealed that the *F* ratio was neither meaningfully less than nor meaningfully greater than 1, *F*s(50, 326) ranging from 1.02 to 1.50, *ps* ranging from .16 to .37. This finding supported the assumption that observations within a group were relatively independent. Furthermore, intraclass correlations among group members in attachment and functioning ratings revealed low reliability coefficients (between .02 and .31).

## Results and Discussion

**Data analysis.** Following Kenny, Mannetti, Pierro, Livi, and Kashy's (2002) recommendation, the data were analyzed using multilevel methods (hierarchical linear modeling procedure; Bryk & Raudenbush, 1992). Specifically, the data represented a two-level model. The lower level represented the individual participants who were nested within groups. At this level, we assessed individual participants' attachment scores and their ratings of instrumental and socioemotional functioning in the group tasks. The upper level represented the groups in which these participants were allocated. At this level, we assessed the level of cohesion of a group (mean aggregate score). To facilitate the interpretation of the results, group cohesion scores were transformed into *Z* scores.

In hierarchical linear modeling, the two levels of analyses are simultaneously addressed in a hierarchically nested data set, which, in our case, was the individual participant nested within a group. This statistical procedure provided independent coefficients of the relationships among constructs at the lower level (within-group associations between attachment and functioning) and mod-

eled them at the upper level (between-groups effects) using maximum likelihood estimation. On this basis, we examined (a) the association between participants' relationship attachment style and functioning scores across groups, (b) the effects of group cohesion on participants' functioning ratings, and (c) the contribution of group cohesion to the within-group associations between relationship attachment style and functioning. These analyses were separately performed for each functioning score.

The participant-level (lower level) analysis predicted a functioning score (instrumental or socioemotional) from attachment scores using the following equation:

$$F_{ij} = b_{0j} + b_{1j}\text{ANX}_{ij} + b_{2j}\text{AVO}_{ij} + e_{ij}, \quad (1)$$

where  $F_{ij}$  refers to an individual's functioning on a given group (i.e., the  $i$ th participant for the  $j$ th group),  $b_{0j}$  refers to that group's average functioning across all its members,  $\text{ANX}_{ij}$  and  $\text{AVO}_{ij}$  are the attachment scores of that individual on that group,  $b_{1j}$  and  $b_{2j}$  are the regression coefficients indicating the degree of functioning change produced by a one-unit change in each of the attachment scores of a given individual, and  $e_{ij}$  is error.<sup>4</sup>

In examining group-level (upper level) effects, we computed constant ( $b_{0j}$ ) and slope ( $b_{1j}$ ,  $b_{2j}$ ) terms for each group. The constant term (or intercept) for each group,  $b_{0j}$ , is represented as

$$b_{0j} = a_0 + a_1\text{COH}_j + u_{0j}, \quad (2)$$

where  $a_0$  refers to the samplewide mean functioning score,  $\text{COH}_j$  is the cohesion score of a group,  $a_1$  is the regression coefficient indicating the degree of change in a group's mean functioning produced by a one-unit change in the cohesion of that group, and  $u_{0j}$  is error.

The slope of the association between attachment anxiety and functioning for each group,  $b_{1j}$ , is

$$b_{1j} = c_0 + c_1\text{COH}_j + u_{1j}, \quad (3)$$

where  $c_0$  represents the average effect of anxiety on functioning in the entire sample (across groups),  $\text{COH}_j$  is the cohesion level of a group,  $c_1$  is the regression coefficient indicating the degree of change in the attachment anxiety-functioning slope produced by one-unit change in the level of cohesion of a group, and  $u_{1j}$  is error.

The slope of the association between attachment avoidance and functioning for each group,  $b_{2j}$ , is

$$b_{2j} = d_0 + d_1\text{COH}_j + u_{2j}, \quad (4)$$

where  $d_0$  represents the average effect of avoidance on functioning in the entire sample (across groups),  $\text{COH}_j$  is the cohesion level of a group,  $d_1$  is the regression coefficient indicating the degree of change in the attachment avoidance-functioning slope produced by one-unit change in the level of cohesion of a group, and  $u_{2j}$  is error.

These equations allowed us to examine questions at both the participant and group level. The participant-level question, "Did participants' attachment anxiety and attachment avoidance relate to their functioning scores within a group?" was assessed by the sample-average slopes,  $c_0$  and  $d_0$ , from Equations 3 and 4. The group-level question, "Did group cohesion relate to average participants' functioning scores?" was assessed by the intercept term,  $a_1$ , from Equation 2. The third question asked about the interaction between lower and upper levels: "Did the attachment anxiety-functioning and attachment avoidance-functioning participant-

level relationships vary in magnitude as a function of group cohesion?" The terms  $c_1$  and  $d_1$  in Equations 3 and 4 provided the appropriate tests for this question. These terms examined whether group cohesion significantly moderated the anxiety-functioning and avoidance-functioning relationships.

*Instrumental functioning.* As can be seen in Table 3, the participant-level contributions of attachment anxiety and attachment avoidance to participants' self-evaluations of instrumental functioning were significant ( $p < .01$ ): The higher a participant's attachment anxiety or attachment avoidance, the lower his or her self-evaluation of instrumental functioning. Accordingly, the group-level contribution of group cohesion to participants' self-evaluations of instrumental functioning was also significant ( $p < .01$ ), indicating that the higher the cohesion of a group, the better the instrumental functioning reported by its members.

The analysis also revealed that the interaction between attachment anxiety and group cohesion was significant ( $p < .05$ ), implying that variations in group cohesion significantly moderated the within-group association between attachment anxiety and self-evaluations of instrumental functioning. To examine the source of the significant interaction, we adopted Aiken and West's (1991) suggestions and computed regression slopes for self-evaluation of instrumental functioning as a function of attachment anxiety separately for two values of group cohesion—one standard deviation above the mean of group cohesion and one standard deviation below this mean. As can be seen in Table 3, the slope of self-evaluation of instrumental functioning regressed on attachment anxiety was significant (different from zero) when group cohesion was one standard deviation below the mean ( $b = -.49, p < .01$ ) but not when group cohesion was one standard deviation above the mean ( $b = -.05$ ). In other words, the higher the cohesion of a group, the weaker the negative association between attachment anxiety and self-evaluation of instrumental functioning within that group.

It is interesting that the interaction between attachment avoidance and group cohesion was not significant, implying that variations in group cohesion did not significantly moderate the within-group association between attachment avoidance and self-evaluations of instrumental functioning. As can be seen in Table 3, the slope of self-evaluation of instrumental functioning regressed on attachment avoidance was significant for the two values of group cohesion (one standard deviation below or above the mean).

*Socioemotional functioning.* Results for the equation predicting socioemotional functioning are also presented in Table 3. At the participant's level, attachment avoidance but not attachment anxiety made a significant within-group contribution to socioemotional functioning ( $p < .01$ ): The higher a participant's attachment avoidance, the lower his or her self-evaluation of socioemotional functioning. At the group level, the cohesion of a group significantly predicted socioemotional functioning ( $p < .01$ ): The higher

<sup>4</sup> In Studies 3 and 4, we performed preliminary analyses allowing intercepts and slopes to vary randomly across groups. Tests examining the variance and covariance components in these preliminary analyses revealed nonsignificant across-groups differences in slopes ( $Z_s$  ranged from 0.09 to 1.29, all  $ns$ ) and nonsignificant covariance between intercepts and slopes ( $Z_s$  ranged from -1.24 to 1.57, all  $ns$ ). On this basis, we allowed intercepts to vary randomly but represented slopes as fixed effects.

Table 3  
*Hierarchical Linear Modeling Coefficients Predicting Participants' Self-Evaluation of Functioning Scores From Their Own Attachment Scores and the Averaged Cohesion of Their Group (Study 3)*

Effect	Functioning	
	Instrumental	Socioemotional
Participant level		
Attachment anxiety	-0.26**	0.04
Attachment avoidance	-0.11**	-0.34**
Group level		
Group cohesion	0.38**	0.37**
Interaction effects		
Cohesion × Anxiety	0.21*	-0.14
Cohesion × Avoidance	0.01	-0.10
Slopes for anxiety in		
High cohesion <sup>a</sup>	-0.05	-0.10
Low cohesion <sup>b</sup>	-0.49**	0.18
Slopes for avoidance in		
High cohesion <sup>a</sup>	-0.10**	-0.41**
Low cohesion <sup>b</sup>	-0.12**	-0.24**

<sup>a</sup> +1 standard deviation. <sup>b</sup> -1 standard deviation.

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

the cohesion of a group, the better the socioemotional functioning reported by its members. The analysis also revealed that the interactions between group cohesion and attachment scores were not significant. That is, group cohesion did not significantly moderate the within-group effects of attachment scores on socioemotional functioning.

**Conclusions.** Overall, most of the findings were in line with our predictions. At the individual participants' level, relationship attachment scores were significantly associated with self-evaluation of functioning during the three group missions. As expected, attachment anxiety was significantly associated with worse instrumental functioning, and attachment avoidance was significantly associated with worse socioemotional functioning. It is important to note that intraclass correlations revealed that attachment orientations operated at the level of the individual and not the group, implying that this construct is an individual-difference factor that can affect a person's unique reactions to group interactions. At the between-groups level, group cohesion made a significant positive contribution to the socioemotional and instrumental functioning reported by its members. This finding fits previous results on the association between group cohesion and performance (for a review, see Mullen & Cooper, 1994). More important, group cohesion significantly moderated the association between attachment anxiety and instrumental functioning. As expected, high levels of group cohesion seemed to act as a psychological buffer against the negative effects of attachment anxiety on instrumental functioning.<sup>5</sup>

However, two major findings were at odds with our predictions. First, attachment avoidance in close relationships also made a negative contribution to instrumental performance in the group tasks. Second, the negative effects of attachment avoidance on both instrumental and socioemotional functioning were not significantly moderated by group cohesion. In other words, attachment avoidance was associated with performance impairment at both the

socioemotional and instrumental dimensions, and the level of group cohesion did not significantly affect these associations. Although unexpected, these undifferentiated and relatively impervious detrimental effects of attachment avoidance on performance in the group tasks fit the finding of Studies 1 and 2 that avoidant persons held a negative cognitive-affective orientation toward task-oriented groups. This pattern of findings may imply that group interactions are so threatening and distressing for avoidant persons that their habitual regulatory strategies fail to suppress negative emotions and memories, which, in turn, may impair instrumental functioning. We elaborate on this idea in the General Discussion.

For several reasons, these conclusions should be regarded cautiously. First, the findings were based on a single sample and should be replicated in other samples. Second, functioning was assessed by self-report measures, which may be affected by motivational and cognitive biases and may not accurately reflect a person's functioning during group interactions. The findings should be replicated using external observers' ratings of a participant's functioning. Third, although the measurement of functioning and group cohesion immediately after each of the three group missions might have increased the validity of the findings, one should take into account that these ratings were derived from reactive measures that might have raised awareness and suspicions about the study's purposes and biased subsequent participants' ratings. It was important to replicate the findings with a single wave of measurement after all the group missions. Fourth, although attachment style in close relationships was significantly associated with functioning during group interactions, it was still possible that this relationship attachment style had an impact on the specific attachment orientation a person developed toward his or her group, which, in turn, might have been responsible for the observed effects. Thus, it would be informative to assess specific attachment orientation toward a group (Smith et al., 1999). Study 4 was an attempt to deal with these limitations.

#### Study 4

In Study 4 we attempted to replicate and extend findings of Study 3 while using external observer's ratings of a participant's socioemotional and instrumental functioning in group tasks. These ratings were collected in a single wave of measurement following all the group tasks. In fact, Study 3 revealed high stability of functioning ratings across three group tasks. We also gathered data on participants' relationship attachment styles and their specific attachment orientations toward their group (*group attachment style*). In this way, we examined (a) whether individual variations in relationship attachment style were manifested in group attach-

<sup>5</sup> In Studies 3 and 4, we tested the alternative that the moderating effect of group cohesion was at the participant's level. For this purpose, we simultaneously included the mean aggregate of group cohesion as a group-level variable and the participant's rating of group cohesion as an additional participant-level variable. In both studies, these analyses revealed that whereas the reported effects of the mean aggregate group cohesion (see Tables 3 and 4) were still significant, the main effect of the participant's own rating of group cohesion and all its interactions with attachment scores were not significant. These findings implied that the effects of group cohesion occurred at the group level.

ment style and (b) the unique contributions of relationship and group attachment styles to socioemotional and instrumental performance in group tasks. In Study 4, we also attempted to improve the measurement of attachment style in close relationships by using the Experience in Close Relationships Scale (ECR; Brennan et al., 1998). The ECR is the most updated and integrative attachment style scale and has been developed through factor analytic procedures (Brennan et al., 1998).

Study 4 was also conducted during the 2-day screening session described in Study 3. On the 1st day, participants completed the ECR (Brennan et al., 1998). On the 2nd day, participants were randomly divided into small groups and performed three group tasks. After completing all three tasks, they rated their socioemotional and instrument functioning as well as the level of cohesion of their group. They also completed Smith et al.'s (1999) Group Attachment Scale, tapping the attachment anxiety and attachment avoidance they felt toward their group. Instructors, who were in charge of the groups, acted as external observers and rated participants' socioemotional and instrumental functioning in the three group tasks. The predictions were similar to those of Study 3.

### Method

**Participants.** Another independent sample of 223 eighteen-year-old men participated in the study as part of a 2-day IDF screening session, in which their fitness for combat units was evaluated. The eligibility criteria and sociodemographic characteristics of the sample were identical to those described in Study 3. Originally, the sample was composed of 249 participants, but 26 were dropped because they failed to fill out all the research questionnaires or did not complete the entire 2-day screening session.

**Instruments and procedure.** The procedure of the 2-day screening session was identical to that described in Study 3. On the 1st day, all the participants completed a large IDF battery of questionnaires and ability tests. Among these scales, participants completed a Hebrew version of the ECR scale (Brennan et al., 1998; Mikulincer & Florian, 2000). Participants received 36 items and rated the extent to which each item was descriptive of their feelings in close relationships on a 7-point scale ranging from 1 (*not at all*) to 7 (*very much*). Eighteen items tapped attachment anxiety and 18 items tapped attachment avoidance. This scale was found to be highly reliable and valid (e.g., Brennan et al., 1998). Moreover, Mikulincer and Florian (2000, Study 5) found high correlations between the ECR and the 10-item attachment style scale used in Studies 1–3. In the current sample, Cronbach's alphas were high for anxiety items (.82) and avoidance items (.83). Then, two scores were computed by averaging the relevant items.

On the 2nd day, all the participants were randomly assigned to small groups of 6–8 participants wherein they completed three group missions. In this way, 33 groups were constructed (15 groups of 6 participants, 11 groups of 7 participants, and 7 groups of 8 participants). An army instructor escorted each group during the three missions. The three missions were identical to those described in Study 3.

Following the completion of the three missions, participants completed three self-report scales. The order of these scales was randomized across participants. In one scale, participants received two items in which they evaluated their functioning in the group tasks. In one item, participants rated their socioemotional functioning. Written instructions explained that *socioemotional functioning* referred to behaviors that contributed to the maintenance of a positive emotional tone within the group and positive relationships among group members. In the other item, participants rated their instrumental functioning. Written instructions explained that *instrumental functioning* referred to behaviors that contributed to the successful completion of the missions. Ratings were done on a 20-point scale ranging from 1 (*very poor functioning*) to 20 (*excellent functioning*).

While participants completed the self-report scales, instructors rated the instrumental and socioemotional functioning of each of the participants they observed during the group missions. These ratings were done using the two items and 20-point scales described above. Immediately before the 2-day screening session, instructors were trained to evaluate participants' socioemotional and instrumental functioning in group tasks. This training was conducted by Eldad Rom in a 6-hr workshop. Strong correlations were found between instructors' ratings and participants' self-reports,  $r(221) = .61$ ,  $p < .01$ , for socioemotional functioning;  $r(221) = .69$ ,  $p < .01$ , for instrumental functioning. Then we conducted the statistical analyses on the two instructors' ratings (instrumental, socioemotional).<sup>6</sup> These ratings provided an external assessment of functioning and overcame the problems of self-report assessments noted in Study 3. The two instructors' ratings were moderately associated,  $r(221) = .31$ ,  $p < .01$ .

Participants also completed a Hebrew version of Smith et al.'s (1999) Group Attachment Scale. This scale was designed to tap participants' feelings of attachment anxiety and attachment avoidance toward a particular group. The scale included 10 items that tap group attachment anxiety (e.g., "I worry my group does not want me"; "I cannot always depend on my group") and 9 items that tap group attachment avoidance (e.g., "I prefer not to depend on my group"; "I feel comfortable not being close to my group"). This scale was found to be reliable and valid, and a factor analysis supported the theoretical two-factor structure of the questionnaire (Smith et al., 1999).

On this basis, two bilingual psychologists translated the 10 anxiety items and the 9 avoidance items into Hebrew, using a back-translation technique, and the scale was tailored to the purposes of the current study. Specifically, participants were asked to think about the group with which they performed the three missions and to rate the extent to which each item was descriptive of their feelings towards this specific group. Ratings were made on a 5-point scale ranging from 1 (*not at all*) to 5 (*very much*). A factor analysis with Varimax rotation performed on the 19 items yielded two main factors ( $\lambda > 1$ ) that explained 58% of the variance and validated the factor structure of the scale. Factor 1 (34% of explained variance) included the 10 group attachment anxiety items (loading  $> .40$ ). Factor 2 (24%) included the 9 group attachment avoidance items (loading  $> .40$ ). Cronbach's alphas were acceptable for the attachment anxiety items (.81) and the attachment avoidance items (.82). Then, we computed two scores by averaging items that loaded high on a factor. These scores were not significantly correlated (.08).

Participants also completed the 10-item group cohesion scale described in Study 3. In the Study 4 sample, the Cronbach's alpha coefficient was high for the 10 items (.89), allowing us to compute a total group cohesion score by averaging the 10 items. Statistical analyses supported the operationalization of this score as a group-level construct. First, an ANOVA revealed a significant difference between groups in the appraisal of group cohesion,  $F(32, 190) = 4.32$ ,  $p < .01$ . Second, intraclass correlations of group cohesion were adequate, with a reliability coefficient of .77. Then, we computed a cohesion score for each group by averaging cohesion scores across individual members.

Attachment and functioning scores did not fulfill the statistical conditions for group-level constructs. All the ANOVAs performed with group as the independent variable revealed that the  $F$  ratio was neither meaningfully less than nor meaningfully greater than 1,  $F_{s}(32, 190)$  ranging from 0.95 to 1.27,  $ps$  ranging from .19 to .47. Furthermore, intraclass reliability coefficients for these variables were low (between .05 and .21).

<sup>6</sup> Identical results were obtained when we computed the analyses for a participant's own evaluation of his or her functioning or for an averaged score of 1 participant's and one instructor's ratings.

### Results and Discussion

The data were analyzed by hierarchical linear modeling procedures identical to those described in Study 3. The relevant coefficients are presented in Table 4.

**Functioning ratings.** Results for functioning ratings replicated the findings of Study 3. With regard to instrumental functioning, the unique within-group contributions of attachment anxiety and attachment avoidance were significant (see Table 4). Fitting findings of Study 3, the higher a participant's attachment anxiety or avoidance in close relationships, the lower his or her instrumental functioning across the groups ( $p < .01$ ). In addition, group cohesion significantly contributed to instrumental functioning: The higher the cohesion of a group, the better the instrumental functioning of its members ( $p < .01$ ). Furthermore, the interaction between group cohesion and attachment anxiety was significant, implying that group cohesion significantly moderated the within-group association between attachment anxiety and instrumental functioning ( $p < .05$ ). In line with findings of Study 3, the slope of instrumental functioning regressed on attachment anxiety was significant (different from zero) when group cohesion was one standard deviation below the mean but not when group cohesion was one standard deviation above the mean (see coefficients in Table 4). That is, high levels of group cohesion weakened the negative impact of attachment anxiety in close relationships to instrumental performance in group tasks.

It is interesting that the interaction between group cohesion and attachment avoidance was also significant. As can be seen in Table 4, the slope of instrumental functioning regressed on attachment avoidance was significant when group cohesion was one standard deviation above the mean but not when group cohesion was one standard deviation below the mean. That is, high levels of group cohesion exacerbated the negative impact of attachment avoidance in close relationships to instrumental performance in group tasks.

With regard to socioemotional functioning, the unique within-group contribution of attachment avoidance was significant: The higher the attachment avoidance in close relationships, the lower the socioemotional functioning in group tasks ( $p < .01$ ). The unique within-group effect of attachment anxiety was not significant (see Table 4). In addition, group cohesion significantly predicted socioemotional functioning: The higher the cohesion of a group, the better the socioemotional functioning of its members ( $p < .05$ ). However, the interactions between group cohesion and attachment scores were not significant (see Table 4). That is, group cohesion did not significantly moderate the contribution of relationship attachment scores to socioemotional functioning.

**Group attachment.** With regard to group attachment anxiety, the unique within-group contribution of relationship attachment anxiety was significant (see Table 4): The higher the attachment anxiety in close relationships, the higher the attachment anxiety toward a group ( $p < .01$ ). Interestingly, the unique within-group effect of relationship attachment avoidance was also significant (see Table 4): The higher the attachment avoidance in close relationships, the higher the attachment anxiety toward a group ( $p < .01$ ). The group-level effect of group cohesion on group attachment anxiety was also significant (see Table 4): The higher the cohesion of a group, the lower the group attachment anxiety reported by its members ( $p < .05$ ). These analyses also revealed a significant interaction between group cohesion and relationship attachment anxiety (see Table 4). As can be seen in Table 4, the slope of group attachment anxiety regressed on relationship attachment anxiety was significant when group cohesion was one standard deviation below the mean but not when group cohesion was one standard deviation above the mean. That is, high levels of group cohesion weakened the impact of attachment anxiety in close relationships to the attachment anxiety participants felt toward their group. The interaction between group cohesion

Table 4  
*Hierarchical Linear Modeling Coefficients Predicting Participants' Functioning and Group Attachment Scores From Their Own Global Attachment Scores and the Averaged Cohesion of Their Group (Study 4)*

Effect	Functioning		Group attachment	
	Instrumental	Socioemotional	Anxiety	Avoidance
<b>Participant level</b>				
Attachment anxiety	-1.54**	-0.14	0.20**	-0.02
Attachment avoidance	-1.32**	-1.23**	0.17**	0.24**
<b>Group level</b>				
Group cohesion	1.49*	2.24**	-0.10*	-0.12*
<b>Interaction effects</b>				
Cohesion × Anxiety	0.87*	-0.34	-0.20**	0.06
Cohesion × Avoidance	-0.95*	0.01	0.05	0.01
<b>Slopes for anxiety in</b>				
High cohesion <sup>a</sup>	-0.69	0.20	-0.01	-0.07
Low cohesion <sup>b</sup>	-2.39**	-0.46	0.41**	0.05
<b>Slopes for avoidance in</b>				
High cohesion <sup>a</sup>	-2.27**	-1.24**	0.23**	0.26**
Low cohesion <sup>b</sup>	-0.37	-1.22**	0.13*	0.22**

<sup>a</sup> +1 standard deviation. <sup>b</sup>-1 standard deviation.

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

and relationship attachment avoidance was not significant (see Table 4).

With regard to group attachment avoidance, the unique within-group effect of relationship attachment avoidance was significant (see Table 4)—the higher the relationship attachment avoidance, the higher the attachment avoidance toward a group ( $p < .01$ ). The within-group effect of relationship attachment anxiety was not significant (see Table 4). In addition, group cohesion significantly contributed to group attachment avoidance: The higher the cohesion of a group, the lower the group attachment avoidance reported by its members ( $p < .05$ ). However, the interactions between group cohesion and attachment scores were not significant (see Table 4).

After finding the significant associations between relationship and group attachment scores, we wanted to examine whether these scores were redundant or not in predicting functioning. That is, we examined the unique effects of each set of attachment scores (relationship or group) on functioning ratings while controlling for the contribution of the other set of attachment scores. Then we computed two series of hierarchical linear modeling equations (similar to those described in Study 3) examining these unique within-group effects. In one series of equations, we examined the unique effects of relationship and group scores of attachment anxiety. In the other series of equations, we examined the unique effects of relationship and group scores of attachment avoidance. We decided to avoid the concurrent introduction of four within-group predictors because of the fact that the equations were conducted within small groups of 6–8 members. This decision was also guided by the fact that anxiety and avoidance were not significantly associated at both relationship and group levels. In fact, the introduction of the four within-group predictors in a single equation did not change the strength and significance of the reported results.

With regard to instrumental functioning, the analyses revealed significant unique within-group coefficients for all the four predictors:  $-1.65$  for relationship attachment anxiety,  $t(31) = -4.21$ ,  $p < .01$ ;  $-1.14$  for group attachment anxiety,  $t(31) = -2.19$ ,  $p < .05$ ;  $-1.49$  for relationship attachment avoidance,  $t(31) = -2.55$ ,  $p < .01$ ; and  $-1.22$  for group attachment avoidance,  $t(31) = -2.18$ ,  $p < .05$ . With regard to socioemotional functioning, the analyses revealed significant unique effects for both relationship and group scores of attachment avoidance:  $-0.84$  for relationship avoidance,  $t(31) = -2.34$ ,  $p < .05$ ; and  $-1.85$  for group avoidance,  $t(31) = -3.12$ ,  $p < .01$ . These findings imply that both relationship and group attachment scores made unique, nonredundant contributions to a participant's performance in group tasks.

**Conclusions.** Taken as a whole, the findings of Study 4 replicated those of Study 3 while using external observer's ratings of participants' functioning and different measurement techniques. At the within-group level, relationship attachment anxiety was significantly associated with impaired instrumental functioning in group tasks, and relationship attachment avoidance was significantly associated with deficits in both the instrumental and socioemotional realms. At the between-groups level, the cohesion of a group made a significant positive contribution to the instrumental and socioemotional functioning of its members. Moreover, group cohesion significantly tempered the association between relationship attachment anxiety and instrumental functioning. Unlike Study 3,

group cohesion exacerbated the negative impact of relationship attachment avoidance on instrumental functioning.

With regard to group attachment scores, the findings revealed an interesting and coherent pattern of associations. On the one hand, our findings replicated Smith et al.'s (1999) findings. First, attachment style in close relationships was significantly related to the specific attachment orientation a person developed toward a group. Whereas persons scoring high on relationship attachment anxiety tended to feel higher group attachment anxiety, persons scoring high on relationship attachment avoidance tended to feel higher group attachment avoidance. Second, group attachment scores had unique significant effects on functioning over and above the contribution of relationship attachment scores. On the other hand, one finding was at odds with Smith et al.'s results: Relationship attachment avoidance significantly contributed to the development of group attachment anxiety. This discrepancy can be due to the use of different scales for measuring relationship attachment style, the different focus on romantic relationships versus close relationships, and the measurement of attachment toward large social groups versus small, task-oriented groups.

In addition, our study adds to Smith et al.'s (1999) findings by delineating the moderating effects of group cohesion. Specifically, whereas the association between relationship and group scores of attachment anxiety was significantly tempered by group cohesion, the association between relationship and group scores of attachment avoidance was not significantly affected by this group-level variable. We deal with these findings in the General Discussion.

## General Discussion

The current studies provide important information about the usefulness of attachment theory for explaining individual differences in group-related representations, memories, and goals as well as the quality of performance in actual group tasks. Studies 3 and 4 also indicated that group-level constructs (i.e., group cohesion) are highly relevant for understanding attachment-style differences in the functioning of group members. Study 4 also shed further light on Smith et al.'s (1999) concept of group attachment, showing how attachment style in close relationships contributed to the formation of group attachment style, how group cohesion contributed to this group attachment style, and how group attachment style contributed to performance in group tasks.

With regard to persons scoring high on attachment anxiety in close relationships, the findings seemed to represent direct manifestations of the basic components of their working models. First, anxiously attached persons' negative representation of the self as a group member (Studies 1 and 2) seems to be a direct reflection of their negative model of the self as unworthy, vulnerable, and helpless (Mikulincer, 1995, 1998). Second, their appraisal of group interactions as a threat (Study 1) fits their tendency to appraise person–environment transactions in catastrophic terms (Mikulincer & Florian, 1998). Third, their negative emotional reaction toward group interactions (Studies 1 and 2) seems to be a specific manifestation of the negative affectivity that characterizes their inner world (Shaver & Hazan, 1993). Fourth, anxiously attached persons' pursuit of security–love goals in group interactions (Study 2) and their impaired instrumental functioning during group tasks (Studies 3 and 4) seem to reflect their chronic search for external sources of support and comfort and the consequent diver-

sion of attention from instrumental task performance (Shaver & Mikulincer, 2002).

Following Shaver and Mikulincer's (2002) integrative representation of the dynamics of the attachment system, the observed findings can be succinctly explained by the underlying action of hyperactivating strategies. According to Shaver and Mikulincer, these strategies involve heightened vigilance to threat- and attachment-related cues, reduced threshold for detecting threats and cues of rejection, and distress exacerbation. In this way, these strategies create a self-exacerbating cycle of attachment-system activation and threat oversensitivity, which interferes with cognitive functioning and reinforces catastrophic appraisals of person-environment interactions. In our terms, these strategies seemed to be activated during group interactions, accounting for anxious persons' negative representations and memories of these interactions, their pursuit of love and security, and their poor instrumental contribution to the completion of group tasks.

With regard to persons scoring high on attachment avoidance in close relationships, the pattern of findings seemed to reflect the activation of deactivating strategies and the concomitant breakdown of these strategies during group interactions. According to Shaver and Mikulincer (2002), avoidant persons' negative models of others lead these persons to adopt deactivating strategies, which are manifested in distancing from distress-eliciting events and frustrating attachment figures. These strategies involve the dismissal of interdependent social interactions and relationships, the suppression of threat- and attachment-related thoughts and needs, and the repression of threat- and attachment-related memories. These strategies can account for our findings showing that avoidant persons held negative models of group members (Study 2), dismissed the potential benefits of group interactions (Study 1), pursued self-reliance and distance goals during group interactions (Study 2), and showed poor contribution to the promotion of closeness and consensus among group members (Studies 3 and 4). These socioemotional outputs violate avoidant persons' goals of distance and self-reliance.

Although these deactivating strategies can be effective ways of preventing threat acknowledgment and interdependent social interactions, there are cases in which the strategies may fail to achieve their deactivating goals. In these cases, the attachment system is activated, painful cognitions and memories about rejection and insecurity become accessible, and avoidant people are overwhelmed with negative emotions that could interfere with cognitive functioning (Shaver & Mikulincer, 2002). One of these cases may be group interaction, in which avoidant persons are demanded to cooperate with other group members, and they cannot dismiss or deny the interdependent nature of the interactions. During group interactions, avoidant persons may be unable to distance from the group without creating overt conflicts with other group members, and their basic attachment insecurity may be elicited by this highly interdependent situation. This breakdown of deactivating strategies can account for the observed failure of avoidant persons to suppress negative memories of task-oriented groups (Study 2) and negative emotional reactions to these groups (Study 1), and then to maintain an adequate level of instrumental functioning during actual group tasks (Studies 3 and 4). On this basis, one can claim that whereas avoidant persons' impaired socioemotional functioning may reflect the activation of deactivating strategies, their impaired instrumental functioning may result

from the breakdown of these strategies and the resulting arousal of distress.

In examining attachment-style differences in the quality of performance in group tasks, Studies 3 and 4 also explored the effects of group-level constructs. Specifically, we focused on the most prominent group-level construct, group cohesion, and found that high group cohesion weakened the detrimental effects of relationship attachment anxiety on instrumental functioning during actual group tasks. In our terms, high group cohesion activated a group-specific sense of attachment security, which, in turn, inhibited anxious persons' hyperactivating strategies and then enabled the deployment of psychological resources to more instrumental, task-oriented behaviors. High group cohesion could also signal that closeness and support, the main goals of anxious persons, have been reached during group interactions, thereby freeing resources to the fulfillment of instrumental goals. Further research should explore in more depth the effects of group cohesion on attachment-related goals and cognitions during group interactions.

Alternatively, one can claim that the high level of cooperation and coordination among members of a cohesive group facilitated their instrumental functioning. That is, fewer psychological resources may be needed to reach optimal performance, and then even anxious persons, who have few available resources, could improve their functioning. However, even if this alternative is correct, it does not necessarily reject the possibility that group cohesion activated a group-specific sense of attachment security. In fact, Study 4 revealed that high group cohesion reduced the level of group attachment anxiety, even among members who were high on attachment anxiety in close relationships.

The findings for attachment avoidance were at odds with our hypothesis. Specifically, the interaction between participants' attachment avoidance in close relationships and group cohesion was not significant in accounting for functioning variations. Furthermore, Study 4 revealed that group cohesion tended to exacerbate the detrimental effects of attachment avoidance on instrumental functioning. These findings may imply that the deactivating strategies of avoidant persons are impervious to the activation of a group-specific sense of attachment security. That is, deactivating strategies may remain relatively active even when attachment figures are available and supportive. In fact, deactivating strategies are directed against the search for attachment figures (Shaver & Mikulincer, 2002), leading avoidant persons to divert attention away from attachment-related cues and dismiss positive behaviors of attachment figures. As a result, these persons remain suspicious about others' intentions even when these figures actually behave in a supportive manner. In our case, these deactivating strategies may sustain avoidant persons' negative cognitions even within highly cohesive groups.

Alternatively, one can claim that the imperviousness of attachment avoidance may be specific to group interactions. As discussed earlier, interdependent group interactions may be so threatening to avoidant persons that they may elicit high levels of distress and then prevent any effect of a group-specific sense of attachment security. One can also claim that group cohesion, which implies the highest level of interdependence among group members, may exacerbate avoidant persons' distress rather than reduce it. That is, highly cohesive groups may represent a threat to avoidant persons' sense of self-reliance rather than a source of comfort and relief. This alternative explanation fits findings of

Study 4 that high group cohesion exacerbated the performance deficits associated with relationship attachment avoidance.

Findings of Study 4 also shed light on the association between relationship and group attachment styles. Whereas relationship attachment anxiety contributed to the experience of group attachment anxiety, relationship attachment avoidance contributed to the formation of group attachment avoidance. These findings were in line with Bowlby's (1988) notion about the generalization of working models to new social interactions and relationships as well as with past findings on the association between relationship and group attachment styles (Smith et al., 1999).

However, the findings did not imply that relationship and group constructs were completely redundant. In fact, group attachment orientations had significant effects on functioning ratings, even after controlling for the contribution of relationship attachment style. In addition, specific group processes and dynamics also affected group attachment orientations. First, group cohesion significantly attenuated the development of group attachment insecurity, either anxious or avoidant, and weakened the effects of relationship attachment anxiety on group attachment anxiety. This finding was in line with our idea about the security-promoting role of group cohesion and its positive effects on the functioning of anxiously attached persons. Second, relationship attachment avoidance was found to contribute to group attachment anxiety. This finding was in line with our tentative idea about the breakdown of avoidant persons' defenses during group interactions. It seems that some task-oriented group interactions are so threatening for avoidant persons that they may fail to prevent the reactivation of their basic sense of attachment insecurity, which, in turn, may result in the formation of group attachment anxiety and the consequent impairment of instrumental functioning.

Before ending this discussion, it is important to note some specific limitations of the current studies that can limit the generalizability of the findings. First, the participants in all the studies were Israeli Jews. The findings should be replicated using other cultural and religious samples. Second, all the studies focused on task-oriented groups. Further studies should attempt to examine the generalizability of the current findings to other types of groups (e.g., support groups). Third, with the exception of group cohesion, we focused on individual-level cognitions, emotions, and behaviors during group interactions. Further studies should attempt to examine whether the attachment orientations of group members affect the affective tone and functioning of the group as a whole. Fourth, Studies 3 and 4 examined functioning in mandatory groups within a military context. Further research should examine the impact of attachment style on participants' functioning in voluntary groups. Fifth, further studies should also examine the effects of the attachment style of the other group members on the person. For this purpose, studies should be conducted on larger groups in which one could reliably estimate the effects of a participant's attachment anxiety and avoidance, other members' attachment anxiety and avoidance, and the interactive effects between participant's and other members' attachment scores. Despite these possible limitations, the current studies emphasize the relevance of attachment theory within group contexts and contribute to the conceptual and empirical integration of the fields of group processes and interpersonal relationships.

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