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Increasing supportive responses to a peer's distress following a loss: The role of attachment orientations, security priming, and previous experience with loss

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ABSTRACT

Many bereaved college students find their peers' support to be unhelpful. This study explored whether previously unexamined individual-difference factors and experimental priming of felt security (i.e., confidence in support availability) can influence supportive responses to a bereaved peer among university students ($N = 202$; 76% female; 44% White, 24% Asian, 15% Black, 10% Multiracial, 8% other identities). Attachment insecurity (avoidance and anxiety) predicted less supportive responses, whereas previous personal experience with loss predicted more supportive responses. Students who were randomly assigned to a brief experimental intervention to boost felt security (i.e., security priming) reported being more likely to help a bereaved peer. Security priming also moderated the associations between attachment avoidance (but not anxiety) and both empathy and personal distress. Additionally, previous experience with loss strengthened the association between security priming and lower caregiving anxiety. This study offers insights into factors that may bolster peer support for bereaved individuals.

Introduction

College students are in a transitional period, navigating increased autonomy, new social environments, and higher academic demands, often while being away from their families and long-term friends (Credé & Niehorster, 2012). Experiencing an adverse event such as a death (i.e., loss) of someone close to them (i.e., bereavement) may contribute to further challenges during this transitional period. Studies have found that there are a substantial number of bereaved colleges students (22%–60%; Balk, 1997; Balk et al., 2010; Cox et al., 2015), and these students are vulnerable to developing mental health and social problems (Alonso et al., 2018; Auerbach et al., 2018), as well as feelings of isolation (Schultz, 2007). Thus, it is important to determine and understand ways in which bereaved college students can be supported.

A meta-analytic review of the literature on young adults' adjustment to college has shown that peer support is broadly important for social adjustment (Credé & Niehorster, 2012). Unfortunately, bereaved college students may struggle to receive adequate peer support regarding their loss, and their struggles may contribute to feelings of isolation and other problems. For example, in a study of both bereaved and non-bereaved college students, friendship support was positively associated with academic and social adjustment (Cousins et al., 2017). However, friendship support did not serve protective functions for the link between bereavement and social adjustment in the way that family support did (Cousins et al., 2017). Similarly, another study found that friendship support did not predict bereavement trajectories among bereaved college students, whereas family support was associated with more positive outcomes (Lipp & O'Brien, 2022). Given that many college students live far from their families and not all bereaved students have family support, researchers have stressed the importance of investigating how peers can serve as a

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source of support for bereaved college students (Hill & O'Brien, 2021; Lipp & O'Brien, 2022).

Barriers to college students providing support to bereaved peers

A systematic review of grieving students in higher education settings found that students often find the attempts at support from peers and faculty to be unhelpful and unempathetic (Hay et al., 2024). Although a qualitative study found evidence suggesting that college students are willing to support a bereaved peer (Tedrick Parikh & Servaty-Seib, 2013), other studies have found that emotional discomfort and lack of experience with death may hinder their ability to provide support (Bergene, 2013; Tedrick Parikh & Servaty-Seib, 2013). Reasons for discomfort included fear of not having enough experience with death and being emotionally overwhelmed. Many students reported feeling that having previous experience with grief is necessary to provide useful support (Tedrick Parikh & Servaty-Seib, 2013), yet many college students may not have personal experiences supporting a grieving peer, given their age. Further, students reported that closeness to the grieving peer would help facilitate providing support (Tedrick Parikh & Servaty-Seib, 2013). However, particularly in the early years of college, students may not have had the chance to build close and dependable peer relationships at their institution.

In the context of a college campus, where many students may lack personal experience with loss and have yet to establish close friendships, it might be particularly difficult for students to provide the support desired by a bereaved peer. This is problematic, given that bereaved college students' perception of worsening peer relationships following loss, such as increased isolation from peers, is associated with greater mental health difficulties (Cupit et al., 2016). Understanding the individual-difference factors that contribute to students' supportive responses toward a grieving peer is an important step in increasing students' supportive capacities. Additionally, examining what might bolster students' supportive responses toward a grieving peer is important for identifying ways to increase students' supportive capacities.

Attachment orientations and responses to a bereaved peer

Attachment orientation may be one factor that contributes to differences in supportive responses to a bereaved peer. Attachment theory posits that early relationship experiences shape the ways one views oneself and others, which guide an individual's responses to threat and influence one's attachment orientation (Bowlby, 1969). Individuals with a secure attachment orientation, stemming from experiences with consistently sensitive and responsive care from others, tend to be able to regulate their emotions and be compassionate and caring toward others (Mikulincer et al., 2005; Mikulincer & Shaver, 2016a; Shaver et al., 2016). Thus, when faced with the task of supporting a grieving peer, attachment-secure individuals may be well-equipped with the capacity to listen compassionately and provide support, without feeling distressed or overwhelmed themselves. Indeed, evidence suggests that those who have experiences of being treated well by others (i.e., attachment-secure individuals) are able to respond to death-related events with less distress and more confidence (Mikulincer, 2019; Mikulincer & Florian, 2000; Smith & Massey, 2012). Thus, secure individuals may be able to provide support to a bereaved peer more effectively.

On the other hand, insecure individuals (those scoring high on attachment anxiety or avoidance) may struggle to support a bereaved peer. Individuals characterized by attachment anxiety are often preoccupied with losing close relationships, contributing to difficulties regulating emotions (Mikulincer & Shaver, 2019). Thus, these individuals may experience challenges in supporting a grieving peer effectively, such as becoming overwhelmed and worried about how to provide support. Anxious attachment has been linked with higher caregiving anxiety (i.e., worries about one's ability to provide effective care; Cassidy et al., 2018), emotion dysregulation, and personal distress in response to others' distress (Mikulincer et al., 2001). Individuals characterized by attachment avoidance are often uncomfortable with closeness and are emotionally distant from others (Shaver et al., 2010); this may contribute to an inability to provide compassionate support to a bereaved peer because of discomfort with the vulnerability that the bereaved person shows and a lack of interest in comforting others (Gillath et al., 2005; Mikulincer et al., 2005). In fact, avoidant attachment has been linked with lower empathy (Cassidy et al., 2018; Feeney & Collins, 2001; Joireman et al., 2002; Lopez, 2001; Shaver et al., 2016; Wayment, 2006), higher caregiving avoidance (i.e., distancing oneself from providing care; Feeney & Collins, 2001), and lower personal distress in reaction to another's physical pain (Monin et al., 2010). Although no study to our knowledge has examined the associations between attachment insecurities (anxiety, avoidance) and responses to a peer's loss, the data reviewed here support the possibility of such links.

Security priming

A brief experimental manipulation to boost one's felt attachment security (i.e., security priming; Mikulincer & Shaver, 2007b) has been shown to relate to several outcomes relevant to considering supportive responses to bereaved individuals, such as increased compassion and altruism (Gillath et al., 2005; Mikulincer et al., 2005; see Gillath & Karantzas, 2019, for a review, and Gillath et al., 2022, for a meta-analysis showing a large pooled effect size overall, but also substantial between-study heterogeneity of effect sizes). Security priming is an experimental procedure designed to activate a sense of love, comfort, and safety (i.e., felt security) similar to when a security-providing attachment figure is present (Baldwin et al., 1993); Gillath & Karantzas, 2019). For instance, security priming (vs. neutral priming) is associated with enhanced empathy, lower caregiving avoidance, and more prosocial attitudes toward strangers (Cassidy et al., 2018; Mikulincer et al., 2005; Pardess et al., 2014). Studies have found that priming a sense of attachment security allows for better emotion regulation and an increased ability to cope with stressful situations (Mikulincer et al., 2003).

Further, studies have found interactions between security priming and dispositional attachment orientations in predicting positive outcomes by reducing concerns that characterize each insecure attachment orientation (Gillath & Karantzas, 2019). Specifically, security priming reduces concerns about being abandoned among attachment anxious individuals, whereas security priming reduces concerns about being vulnerable in relationships among attachment avoidant individuals (Cassidy et al., 2009). For example, one study found that higher attachment anxiety interacted with security priming to predict empathy, such that in a neutral prime condition, higher attachment anxiety predicted lower empathy, whereas in a security priming condition, there was no relation between attachment anxiety and empathy (Cassidy et al., 2018). Thus, security priming eliminated the effect of attachment anxiety on lower empathy. However, no study to our knowledge has examined whether boosting security enhances supportive responses toward bereaved individuals.

Previous experience with loss

No study has examined the impact of previous experience with loss on college students' supportive responses to a bereaved peer. As noted earlier, students in one study reported concerns about lacking personal experience with death, and suggested that having experienced a loss themselves would help them better relate to a grieving peer and provide more effective support (Tedrick Parikh & Servaty-Seib, 2013). This belief is bolstered by findings from a study of grieving older adults: Participants indicated increased empathy toward the physical pain of others after being reminded of their deceased beloved relative, but not after being reminded of a similarly important living relative (Yoshiike et al., 2023). Also previously unexamined is the interaction between the experience of loss and security priming. It is possible that security priming will have a stronger effect for those with previous experience with loss. To the extent that previous experience with loss increases confidence about providing comfort, having a sense of security may allow such individuals to feel even more confident in responding to a peer's distress following loss.

The present study

The present study had two principal aims: (1) to consider two previously unexamined individual-difference factors (i.e., attachment orientation and previous experience with loss) in responses to a peer's distress following parental death, and (2) to examine whether security priming (vs. neutral priming) can bolster students' self-reported supportive responses and reduce unsupportive responses in a previously unexamined bereavement context. Two forms of self-reported responses were: (a) supportive responses (i.e., empathy, helping) and (b) unsupportive responses (i.e., caregiving anxiety/avoidance, personal distress). The study protocol, measures, research questions, and hypotheses were pre-registered on Open Science Framework. The research questions regarding attachment orientations were pre-registered first after data collection and before analyses (https://osf.io/xmrv8). The research questions regarding previous experience with loss were pre-registered as follow-up questions after the research questions from the initial pre-registration were analyzed (i.e., before the follow-up analyses were conducted; https://osf.io/7nhdk/overview?view_only=213a785b04014d79a4c819f99acd75b3)

The first individual difference examined was attachment orientation. For reasons described earlier, we hypothesized that attachment anxiety would be associated with higher caregiving anxiety and higher personal distress but would not be associated with caregiving avoidance. We had no specific hypotheses for the association between attachment anxiety,

empathy, and helping. Although attachment-anxious individuals' own distress may make them more empathic or willing to help a grieving peer, it could make them so dysregulated that they are unable to be supportive. We hypothesized that attachment avoidance would be associated with lower empathy, lower helping, higher caregiving avoidance, and lower personal distress, but would not be associated with caregiving anxiety.

The second individual difference factor examined as a potential predictor of responses to a peer's loss was participants' previous experience with loss (i.e., death of someone close to them). For the reasons described earlier, we hypothesized that previous experience with loss would be associated with greater supportive responses and lower unsupportive responses.

Next, we addressed the second study aim by examining whether security priming (a) is directly associated with responses to a peer's loss and (b) modifies the links of both attachment orientation and previous experience with loss in predicting responses to a peer's loss. We hypothesized that security priming (vs. neutral priming) would enhance supportive responses and reduce unsupportive responses. For participants scoring higher on attachment anxiety, we hypothesized that security priming would reduce the positive links with caregiving anxiety and personal distress; we hypothesized that security priming would not interact with attachment anxiety in predicting caregiving avoidance. We had no specific hypothesis for the interaction between security priming and attachment anxiety on the links between attachment anxiety, empathy, and helping. For individuals scoring higher on attachment avoidance, we hypothesized that security priming would reduce the negative links with empathy, helping, and personal distress, as well as reducing the positive link with caregiving avoidance. We hypothesized that security priming would not interact with attachment avoidance in predicting caregiving anxiety. Further, we hypothesized that security priming would have a stronger effect on those with previous experience with loss compared to those without such experience; in particular, participants who had previous experience with loss and were security primed would report more supportive and less unsupportive responses.

Finally, as an exploratory question, we examined whether interactions between previous experience with loss and attachment orientations (avoidance and anxiety) predict responses to a peer's loss. We had no specific hypotheses for how attachment orientations would interact with previous experience with loss in predicting supportive responses, or personal distress.

Materials and methods

Participants

Undergraduate students from a public university in the Eastern United States were recruited through a participant research pool, through which they received course credit. A total of 241 enrolled in the study, of whom 36 (15%) met one or more pre-registered criteria for exclusion: (a) completed <50% of the pre-survey ($n = 5$), (b) experienced significant distractions or other problems during the priming portion of the study (e.g., loud noises, not paying attention to the visualization script; $n = 8$), (c) failed the attention check in the pre-survey ($n = 12$), (d) failed the attention check in the lab ($n = 2$), and/or (e) correctly identified the hypotheses of this study in an open-ended question, "What did you think this study was about?" ($n = 9$). Further, three additional participants who identified as a gender other than male or female were excluded; this decision was made given that gender was a pre-registered covariate, and there was not enough representation of genders other than male or female to examine this group with sufficient statistical power. Thus, the final analytic sample consisted of 202 participants. See Table 1 for participant characteristics.

Procedure

All procedures were approved by the institution's ethics board (IRB #687917). Participants completed an online consent form and pre-survey at least one hour before coming to the lab, which included measures of attachment orientation, previous experience with loss, depressive symptoms, and religiosity, as well as the demographic questions described below. Participants then came to the laboratory, and after signing a paper consent form, completed a 20-minute session in small groups (i.e., 1–4 participants). Each participant was seated in front of a computer on which they answered questions, while an experimenter verbally guided them through each part of the study.

First, participants were *randomly assigned* to one of two priming conditions; each set of written instructions appeared on their individual computer. In the *security priming* condition, participants were asked to think about "the person you can most depend on to be there to comfort you in times of trouble." In the *neutral priming* condition, participants were asked to think about "someone in one of your classes who you do not know well and rarely think about." In both conditions, participants were instructed to type the name of the person they identified. Next, an

Table 1. Participant characteristics and descriptive statistics for focal variables.

	N (%)	*M* (SD)	Range
Age		19.10 (1.21)	18–26
Gender			
Female	154 (76%)		
Male	48 (24%)		
Ethnicity			
Hispanic/Latinx	25 (12%)		
Racial identity			
Asian/Asian-American	48 (24%)		
Black/African-American	31 (15%)		
Middle Eastern/North African	5 (2%)		
White	89 (44%)		
American Indian/Alaska Native	1 (.5%)		
Multiracial	21(10%)		
Other	7 (3%)		
Disability status (% with disability)	4 (2%)		
Religiosity		2.53 (1.12)	1–5
Depressive symptoms		10.89 (5.30)	1–28
Friend experienced loss (% endorsed yes)	127 (63%)		
Personally experienced loss (% endorsed yes)	125 (62%)		
Number of personal losses		1.36 (1.65)	0–15
One	41 (33%)		
Two or more	83 (66%)		
Not reported	1 (1%)		
Relationship to most impactful loss			
Family member (e.g., parents, grandparents)	93 (74%)		
Friend	12 (10%)		
Other	6 (5%)		
Multiple impactful losses	11 (9%)		
Not reported	3 (2%)		
Closeness to person lost		7.48 (1.95)	1–10
Attachment anxiety		3.98 (0.99)	1.17–6.7
Attachment avoidance		3.36 (0.89)	1.0–5.61
Responses to peer's loss			
Empathy		6.26 (0.62)	4.2–7.0
Helping		6.02 (0.81)	3.4–7.0
Caregiving anxiety		3.94 (1.02)	1.0–6.5
Caregiving avoidance		2.19 (0.84)	1.0–5.4
Personal distress		3.07 (1.11)	1.0–6.3
Death anxiety		4.01 (1.40)	1.0–7.0

Note: Religiosity was rated from 1 = not at all religious, 5 = very religious. Closeness to person lost was rated from 1 = not very close to 10 = very close.

experimenter, blind to each participant's condition, guided participants through a two-minute face visualization procedure developed by Baldwin et al. (1996). This procedure has been used in previous studies examining the effects of attachment security priming (e.g., Cassidy et al., 2018; Mikulincer et al., 2005) on a broad range of outcomes.

After the priming visualization, participants read a fictional story on their computer about a friend's roommate's mother who died: "Imagine that you stop by to meet a friend at their dorm room. You arrive earlier than planned and your friend isn't back yet. When you come in, their roommate (Lee) looks really upset. They tell you that their mother died last month and that they are really struggling with grief and feeling a lot of pain about the loss. When they say that they are falling behind in their coursework, you realize that Lee is in one of your classes." Following the story, participants answered a battery of questionnaires about their responses to the peer's loss as described below, while the name of the person they identified in the priming procedure was displayed at the top right of their screen.

Measures

Attachment orientations

Participants completed the Experiences in Close Relationship Scale (ECR; 36-items; Brennan et al., 1998), a well-validated measure of adult attachment orientation, in the pre-survey. Eighteen items tap attachment *anxiety* (e.g., "I worry about being rejected or abandoned"), and 18 items tap attachment avoidance (e.g., "I prefer not to be too close to others"); participants rate each item on a 7-point scale ranging from 1 (*disagree strongly*) to 7 (*agree strongly*). The ECR has demonstrated good reliability and validity across diverse samples (Brennan et al., 1998; Crowell et al., 2016), and was also reliable in the present study ($\alpha_{anxiety}$ = 0.91; $\alpha_{avoidance}$ = 0.90; $\omega_{anxiety}$ = 0.93; $\omega_{avoidance}$ = 0.92).

Previous experience with loss

Participants' previous experience with loss was measured in the pre-survey with one item, "Have you experienced a death of someone close to you?" with binary response options, "yes" or "no." Additionally, participants who responded "yes" to the previous question reported their closeness to the person whose death was most impactful by rating one item, "How close would you say you were to this person?" from 1 (*not very close*) to 10 (*very close*).

Responses to peer's loss

The following constructs were examined as responses to a peer's loss following the priming procedure in the lab: (1) supportive responses (i.e., empathy, helping) and (2) unsupportive responses (i.e., caregiving anxiety and avoidance, personal distress).

Supportive responses. After reading a fictional story about a friend's roommate, "Lee," who recently lost their mother (see Procedure), participants were asked to report what their responses would be on a series of items about "Lee and other students who have experienced the death of a parent."

Participants reported their empathy on 5 items (e.g., "I feel sympathetic to them") and likelihood of

providing help on 5 items ("I would text them in a few days to check in"), on a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*). These items were developed in a previous study that examined the influences on caring for others (Cassidy et al., 2018) and adapted for the present study. In the present study, these items demonstrated moderate reliability ($\alpha_{empathy}$ = 0.57; $\alpha_{helping}$ = 0.72; $\omega_{empathy}$ = 0.70; $\omega_{helping}$ = 0.73).

Unsupportive responses. Participants completed the Caregiving System Scale (CCS; 20-items; Shaver et al., 2010) as a measure of comfort with providing care that was adapted for the present investigation by making the items specific to the fictional character in the story. Ten items tapped caregiving anxiety (e.g., "I worry that I might try to help Lee more than they actually want me to"), and 10 items tapped caregiving avoidance (e.g., "I prefer not to get involved with helping Lee or students in their situation"); participants responded on a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*). The original scale has demonstrated good psychometric properties and validity in diverse samples (see Shaver et al., 2010). Both the scree plot and principal axis factoring analysis with oblique rotation supported a one-factor solution for both subscales (see Supplementary material). The adapted version used here demonstrated good reliability in the present study ($\alpha_{caregiving\ anxiety}$ = 0.83; $\alpha_{caregiving\ avoidance}$ = 0.87; $\omega_{caregiving\ anxiety}$ = 0.88; $\omega_{caregiving\ avoidance}$ = 0.89).

Following the same format described above for supportive responses, participants also reported on their personal distress on 3 items (e.g., "I feel uncomfortable") on a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*). These items were also developed in a previous study (Cassidy et al., 2018) and demonstrated moderate reliability in the present study ($\alpha_{distress}$ = 0.66; $\omega_{distress}$ = 0.67).

Covariates

Covariates included in all analyses were age, gender, and depressive symptoms, all as pre-registered covariates because of their previous association with empathy and prosocial behaviors in multiple studies (Kamas & Preston, 2021; McDonald & Kanske, 2023; Pollerhoff et al., 2024; Schreiter et al., 2013). In addition, religiosity and having a friend who experienced a loss (assessed during the pre-survey) were included as covariates because, despite random assignment, the two experimental groups differed on these dimensions.

Participants reported their age on an open-ended question and indicated their gender from the following options: male, female, trans, non-binary, or other. Depressive symptoms were reported on the Center for Epidemiologic Studies Short Depression Scale (CESD-10; Andresen et al., 1994). Ten items assessed feelings and behaviors during the past week (e.g., "I felt depressed"), and participants rated each item on a 4-point scale from 1 (*rarely or none of the time*) to 4 (*all of the time*). This measure has demonstrated good reliability and validity in previous studies (Boey, 1999; Cheng & Chan, 2005). In the present study, the measure demonstrated good reliability (α = 0.81; ω = 0.86). Participants' level of religiosity was measured through one item, "how religious are you?" on a scale of 1 (*not at all religious)* to 5 (*very religious*). Finally, participants reported whether they have a close friend who has experienced a death of a close person in the last 5 years, with response options "yes" or "no."

Data analysis

Data analysis was conducted with R statistical software (version 4.4.2; R Core Team, 2024). Power analysis was carried out using the pwr package (Champely, 2020) for a multiple linear regression. The analysis showed that assuming a medium effect size (f^2 = 0.2), an alpha level of 0.05, and a desired power of 0.8, a minimum of 80 participants would be required to detect statistically significant effects in models including interaction terms and covariates. Thus, the study's sample size (N = 202) is satisfactory for performing the following analyses. Additionally, a Monte Carlo simulation-based sensitivity analysis was conducted to estimate the statistical power to detect interaction effects given the final sample size (N = 202) and planned analytic model. Sensitivity analyses indicated that statistical power reached approximately 80% at an interaction effect size of approximately $\beta \approx 0.20$–0.22, assuming independent standardized predictors and normally distributed errors.

First, the distributional differences in pre-survey measures between the two experimental groups were examined through *t*-tests and chi-squared tests. There were no distributional differences in pre-survey measures on the following constructs: attachment orientation, previous experience with loss, depressive symptoms, personality traits, empathy, age, gender, race, ethnicity, relationship status, and disability status. However, the distributions of religiosity (p = 0.04) and having a friend who experienced a loss (p = 0.03) assessed in the pre-survey were significantly different between the two experimental groups. As noted above, these variables were therefore included as covariates

to improve the precision of estimated effects, along with the pre-registered covariates of age, gender, and depressive symptoms.

Hypotheses were examined utilizing a series of linear regressions predicting each outcome of interest. The covariates (age, gender, depressive symptoms, level of religiosity, and having a close friend who has experienced a close person's death) and the focal predictors were entered together in the first step, and the interaction terms were entered together in the second step. Regression assumptions were assessed using diagnostic plots, which indicated nonnormality across models. Thus, the 95% bootstrap confidence intervals were obtained to account for nonnormality.

When examining interaction terms, continuous variables were centered when appropriate, as described in the Results section. When probing significant interactions involving continuous variables (i.e., attachment orientation), two complementary approaches were used. First, simple slopes analyses were conducted to examine the effect of attachment orientation on the outcome within each priming condition, allowing priming condition (security vs. neutral) to be interpreted as a contextual moderator of the association between attachment and the outcome. Second, Johnson–Neyman region of significance analyses were conducted to examine the conditional effect of security priming (vs. neutral) across levels of attachment orientation and to identify attachment orientation levels where priming effects were statistically significant. Finally, these two approaches were jointly considered to provide complementary interpretations of the same interaction, namely (1) how the association between attachment orientation and the outcome varies across priming conditions and (2) how the effect of security priming (vs. neutral priming) differs across levels of attachment orientation.

To control for Type I error inflation due to multiple testing, *p*-values were adjusted using the Benjamini–Hochberg False Discovery Rate (Benjamini & Hochberg, 1995) method (BH). Finally, as a sensitivity analysis, we re-ran the analyses above, including the three participants who identified as a gender other than male or female (total $N = 205$). The results of this sensitivity analysis are reported in the Supplementary material.

Pre-registration deviation

In the pre-registration, participants' own death anxiety in response to a peer's loss was included as an outcome for the research questions above, as well as a mediator for the link between security priming and responses to a peer's loss. However, after running the analyses, the data revealed that security priming did not predict death anxiety. Given that this association is a necessary condition for the hypothesized mediational mechanism (Baron & Kenny, 1986), the mediation analyses are reported in the Supplementary material and briefly noted in the Discussion section. Thus, the present study retains its focus on its two principal aims: (1) examination of individual differences (attachment orientations and previous experiences of loss) as predictors of responses to a peer's distress following parental death, and (2) examination of the role of security priming (vs. neutral priming).

Additionally, the pre-registered analyses for interactions were intended to probe significant interactions with simple slopes. However, to obtain a more nuanced understanding of the interactions, the analyses now examined both simple slopes and Johnson–Neyman regions of significance as described above.

Results

Preliminary analyses

Descriptive statistics are summarized in Table 1, and bivariate correlations are shown in Table 2. Pearson correlations revealed significant associations of both attachment anxiety and avoidance with higher personal distress ($r_{anx} = 0.18$; $r_{avo} = 0.14$) and higher depressive symptoms ($r_{anx} = 0.49$; $r_{avo} = 0.30$). Attachment anxiety also correlated with higher caregiving anxiety ($r = 0.41$). Attachment avoidance was significantly correlated with lower empathy ($r = -0.21$), lower helping ($r = -0.21$), and higher caregiving avoidance ($r = 0.30$). Further, previous experience with loss was correlated with lower caregiving anxiety ($r = -0.17$) and lower personal distress ($r = -0.17$).

Among the theoretically selected covariates, older age significantly correlated with lower caregiving anxiety ($r = -0.19$). For gender (1 = female, 0 = male), females reported significantly higher attachment anxiety ($r = 0.20$), empathy ($r = 0.27$), helping ($r = 0.17$), caregiving anxiety ($r = 0.16$), and lower caregiving avoidance ($r = -0.27$). Finally, higher depressive symptoms significantly correlated with higher attachment anxiety ($r = 0.49$), attachment avoidance ($r = 0.30$), and caregiving anxiety ($r = 0.16$).

Associations between attachment orientations and responses to peer's loss

We first examined the main effects of attachment orientations (anxiety, avoidance) in predicting each type of supportive response and unsupportive

Table 2. Bivariate correlations between study variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Attachment anxiety	—												
2. Attachment avoidance	0.14*	—											
3. Empathy	−0.08	−0.21**	—										
4. Helping	−0.04	−0.18*	0.57**	—									
5. Caregiving anxiety	0.41**	0.14	−0.03	−0.04	—								
6. Caregiving avoidance	0.13	0.30**	−0.54**	−0.55**	0.23**	—							
7. Personal distress	0.18**	0.14*	−0.25**	−0.24**	0.31**	0.50**	—						
8. Death anxiety	0.06	−0.05	−0.01	0.03	0.20**	0.08	0.19**	—					
9. Previous experience with loss	−0.04	−0.03	0.00	−0.04	−0.17*	−0.07	−0.17*	−0.06	—				
10. Age	−0.12	−0.00	−0.07	−0.05	−0.19**	0.03	0.02	−0.05	0.03	—			
11. Gender	0.20**	−0.03	0.27**	0.17*	0.16*	−0.27**	−0.06	0.08	−0.08	−0.10	—		
12. Depressive symptoms	0.49**	0.30**	−0.13	−0.12	0.16*	0.12	0.13	0.01	0.06	0.11	0.01	—	
13. Religiosity	−0.02	−0.09	0.07	−0.01	0.09	−0.09	−0.03	−0.04	0.06	−0.03	−0.01	0.05	—
14. Friend's loss	−0.04	−0.02	0.12	0.11	−0.03	−0.20**	−0.14	−0.02	0.07	0.10	0.10	−0.09	−0.05

Note: Gender is coded as 1 = female, 0 = male. Friend's loss = having a friend who experienced a loss, coded as 1 = yes, 0 = no.
*$p < 0.05$, **$p < 0.01$.

responses. Attachment *anxiety* was significantly linked with higher caregiving anxiety ($b = 0.41$, 95% bootstrap CI [0.25, 0.56], $p < 0.001$, adjusted $p < 0.001$, $R^2 = 0.23$), higher caregiving avoidance ($b = 0.15$, 95% bootstrap CI [0.03, 0.27], $p = 0.023$, adjusted $p = 0.039$, $R^2 = 0.22$), and higher personal distress ($b = 0.22$, 95% bootstrap CI [0.02, 0.41], $p = 0.022$, adjusted $p = 0.039$, $R^2 = 0.07$). Attachment anxiety was not associated with empathy or helping (p-values > 0.05). Attachment *avoidance* was significantly linked with lower empathy ($b = -0.12$, 95% bootstrap CI [−0.23, −0.02], $p = 0.012$, adjusted $p = 0.030$, $R^2 = 0.15$), lower helping ($b = -0.15$, 95% bootstrap CI [−0.26, −0.02], $p = 0.023$, adjusted $p = 0.039$, $R^2 = 0.13$), and higher caregiving avoidance ($b = 0.27$, 95% bootstrap CI [0.14, 0.41], $p < 0.001$, adjusted $p < 0.001$, $R^2 = 0.22$). Attachment avoidance was not associated with caregiving anxiety or personal distress (p-values > 0.05). See Table S1 in the Supplementary material for full results.

Associations between previous experience with loss and responses to a peer's loss

We next examined the main effects of participants' previous experience with loss (0 = no loss, 1 = loss) in predicting each supportive and unsupportive response. Previous experience with loss was associated with lower caregiving anxiety ($b = -0.37$, 95% bootstrap CI [−0.64, −0.07], $p = 0.010$, adjusted $p = 0.036$, $R^2 = 0.14$) and lower personal distress ($b = -0.39$, 95% bootstrap CI [−0.71, −0.10], $p = 0.014$, adjusted $p = 0.036$, $R^2 = 0.07$). Previous experience with loss was not associated with empathy, helping, or caregiving avoidance (p-values > 0.05). See Table S2 in the Supplementary material for full results. Further, exploratory analyses revealed that higher levels of *closeness* to the deceased predicted lower caregiving anxiety ($b = -0.04$, 95% bootstrap CI [−0.07, −0.00], $p = 0.003$), and lower personal distress ($b = -0.06$, 95% bootstrap CI [−0.10, −0.02], $p = 0.003$).

Effects of security priming on responses to a peer's loss

Analyses of the main effects of priming condition (0 = neutral prime, 1 = secure prime) showed that security priming significantly increased helping ($b = 0.39$, 95% bootstrap CI [0.16, 0.60], $p = 0.001$, adjusted $p = 0.004$, $R^2 = 0.13$) in response to the peer's distress, but did not significantly predict empathy, caregiving anxiety, caregiving avoidance, or personal distress (p-values > 0.05). See Table S1 in the Supplementary material for full results.

Interactions between attachment orientation and security priming

To examine whether attachment orientations moderated the effects of priming condition on each supportive and unsupportive response, two-way interactions between attachment dimensions and priming condition were entered in the regressions. Attachment anxiety and avoidance scores were grand mean-centered prior to creating the interaction terms.

Two significant interactions were found between attachment *avoidance* and the priming condition. First, attachment avoidance moderated the effect of security priming on empathy; after correction, the effect was marginal ($b = 0.22$, 95% bootstrap CI [0.03, 0.41], $p = 0.023$, adjusted $p = 0.080$, $R^2 = 0.18$). Simple slopes analysis indicated that avoidance predicted lower empathy in the neutral priming condition ($b = -0.22$, $p < 0.001$) but not in the security priming condition ($b = -0.01$, $p = 0.93$). Johnson–Neyman analyses indicated that the effect of security priming on empathy was only significant at higher levels of attachment avoidance (>0.21; mean-centered values); simple slopes indicated that at higher levels of attachment avoidance (95th percentile: 1.53), security priming was associated with higher empathy ($b = 0.45$, $p = 0.01$) compared to avoidant individuals in the neutral priming condition. In summary, security priming was most effective among individuals with higher attachment avoidance, for whom it enhanced empathic responding, but the effect of security priming disappeared at lower levels of avoidance (see Figure 1).

Second, attachment avoidance interacted with the priming condition in predicting personal distress; after correction, the effect was marginal ($b = -0.38$, 95% bootstrap CI [−0.77, −0.02], $p = 0.032$, adjusted $p = 0.080$, $R^2 = 0.10$). Simple slopes indicated that avoidance predicted higher personal distress in the neutral priming condition ($b = 0.33$, $p = 0.01$), but not in the security prime condition ($b = -0.06$, $p = 0.67$). Johnson–Neyman analyses indicated that the effects of priming on personal distress were only significant at lower levels of attachment avoidance (< −2.05; mean-centered values) and higher levels of attachment avoidance (>1.92; mean-centered values). Simple slopes indicated that at lower levels of attachment avoidance (5th percentile: −1.47), security priming predicted higher personal distress ($b = 0.55$, $p = 0.07$) compared to the neutral priming condition. On the other hand, at higher levels of attachment avoidance (95th percentile: 1.53), security priming predicted lower personal distress ($b = -0.59$, $p = 0.06$) compared to the neutral priming condition. In summary, security priming mitigated personal distress among individuals with higher attachment avoidance but enhanced personal distress among individuals with lower attachment avoidance (see Figure 2). See Table S1 in the Supplementary material for full results.

Although attachment *anxiety* and security priming significantly interacted in predicting empathy, this interaction became nonsignificant after correction ($b = -0.17$, 95% bootstrap CI [−0.32, −0.01], $p = 0.048$, adjusted $p = 0.242$).

Interaction between previous experience with loss and security priming

Participants' previous experience with loss moderated the effect of security priming on caregiving anxiety ($b = -0.73$, 95% bootstrap CI [−1.27, −0.17], $p = 0.009$,

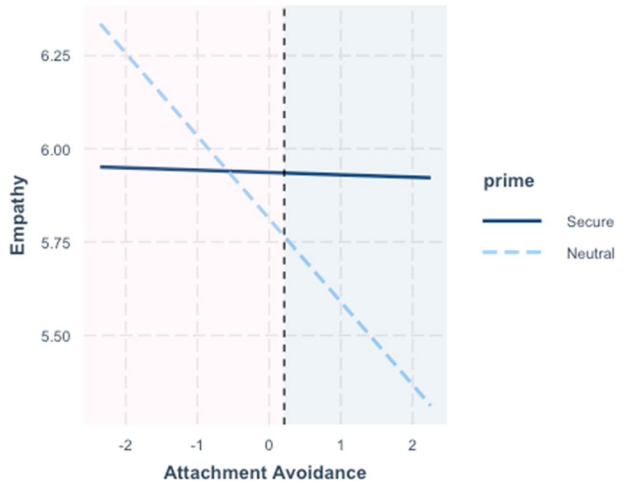


Figure 1. Security priming moderates the association between attachment avoidance and empathy.
Note. Attachment avoidance was mean-centered for the interactions, which re-scaled the avoidance measure around 0. The dotted vertical line indicates the Johnson–Neyman point of significance (mean-centered attachment avoidance = 0.21). The region to the right (shaded in blue) represents levels of attachment avoidance at which the effect of security priming on empathy is statistically significant, whereas the region to the left (shaded in pink) represents levels at which the effect of priming is not statistically significant.

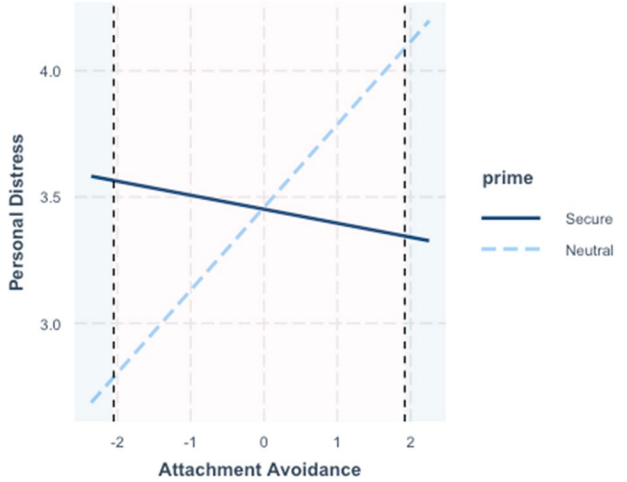


Figure 2. Security priming moderates the association between attachment avoidance and personal distress.
Note. Attachment avoidance was mean-centered for the interactions, which re-scaled the avoidance measure around 0. The dotted vertical lines indicate the Johnson–Neyman point of significance (mean-centered attachment avoidance = −2.05, 1.92). The regions to the far right and far left (shaded in blue) represent levels of attachment avoidance at which the effect of security priming on personal distress is statistically significant, whereas the region in the middle (shaded in pink) represents levels at which the effect of priming is not statistically significant.

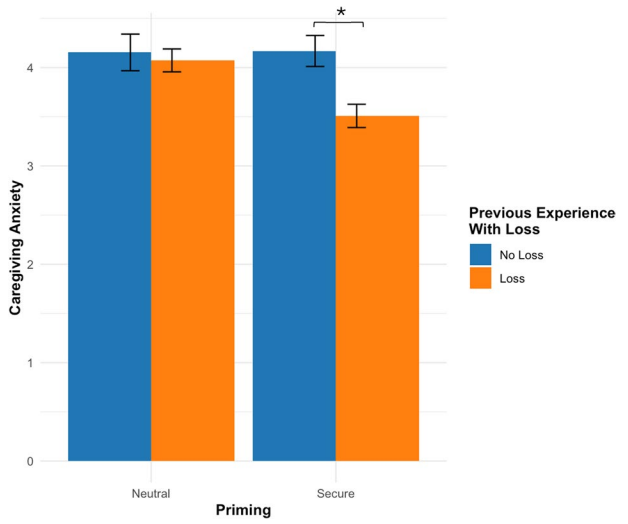


Figure 3. Previous experience with loss moderates the association between security priming and caregiving anxiety.

adjusted $p = 0.046$, $R^2 = 0.17$). Specifically, security priming predicted *lower* caregiving anxiety for those with previous experience with loss ($b = -0.55$, $p < 0.01$) but not for those without previous experience with loss ($b = 0.18$, $p = 0.41$; see Figure 3). No other interactions were significant (p-values > 0.05). See Table S2 in the Supplementary material for full results.

Exploratory analyses revealed that participants' closeness to the deceased also moderated the effect of security priming on caregiving anxiety ($b = -0.07$, 95% bootstrap CI [−0.14, −0.00], $p = 0.043$). Specifically, security priming predicted lower caregiving anxiety when participants reported greater closeness (+1*SD* above the mean; $b = -0.54$, $p = 0.005$), but not when closeness was at the mean or below (p-values < 0.05).

Interaction between previous experience with loss and attachment orientation

The interaction between participants' previous experience with loss and attachment orientations (controlling for priming condition) did not significantly predict any outcome (p-values > 0.05). See Table S3 in the Supplementary material for full results.

Discussion

Many college students experience loss (e.g., Balk et al., 2010), yet many bereaved students report support from peers to be unhelpful and unempathetic (Hay et al., 2024). The present research contributes to our understanding of barriers to student support by identifying individual differences in supportive responses to a bereaved peer. Additionally, the present study provides some experimental support for the idea that boosting students' sense of attachment security can enhance supportive responses.

Attachment orientations and supportive responses to a bereaved peer

The present research provides evidence that attachment orientations contribute to explaining individual variations in supportive responses to a bereaved peer. As expected, insecure attachment predicted less supportive responses. Attachment anxiety was uniquely associated with two outcomes that are related to self-focused forms of unsupportive responses: higher caregiver anxiety and higher personal distress. Both constructs can be considered self-focused responses because they concern personal feelings of worry and discomfort in response to another person's distress. These findings are consistent with previous studies that have consistently found attachment anxiety to be associated with both greater personal distress (Britton & Fuendeling, 2005; Joireman et al., 2002; Mikulincer et al., 2005; Monin et al., 2010; Westmaas & Silver, 2001) and greater caregiving anxiety (Cassidy et al., 2018) toward others experiencing non-beravement related hardships.

In contrast, attachment avoidance uniquely predicted unsupportive responses centered on a lack of interest in caring for others (i.e., other-focused): lower empathy and lower helping. Both constructs can be considered other-focused because they are about feelings of care or behavior toward others. These findings are unsurprising, given that avoidant attachment is typically associated with distancing strategies and concern about unwanted interdependence with others (Mikulincer & Shaver, 2016a). For example, avoidance has been linked to lower empathy (Cassidy et al., 2018), fewer observed supportive responses (Bailey et al., 2012; Westmaas & Silver, 2001), lack of prosocial orientation (Feeney & Collins, 2001), and less self-reported likelihood of helping (Drach-Zahavy, 2004; Kogut & Kogut, 2013) toward others in need.

Interestingly, both attachment anxiety and avoidance predicted greater caregiving avoidance. Caregiving avoidance can be considered other-focused, as it is focused on the desire to provide care to someone else. This is in contrast to a previous study that did not find significant associations of either attachment anxiety or avoidance with caregiving avoidance when the target was a woman experiencing homelessness or a young woman who was betrayed by a partner (Cassidy et al., 2018). In the present study, the association

between attachment avoidance and greater caregiving avoidance was expected, given that avoidant adults tend to be neglectful caregivers (Feeney & Woodhouse, 2016). For avoidant individuals, caregiving avoidance may grow directly from their lack of interest and care toward the bereaved. The presence of this link (that was absent in Cassidy et al., 2018) raises the possibility that the context of death may particularly exacerbate avoidant individuals' tendencies to distance themselves from caring for others. For avoidant individuals, a core threat is the experience of vulnerability and closeness, and death represents the ultimate form of human vulnerability – so mortality cues may be especially arousing even if they are managed through distancing Mikulincer & Florian, 2000). This may help explain why, when confronted with a grieving peer, they may feel uncomfortable facing caregiving demands that require emotional closeness, openness, and sustained engagement with distress, leading them to avoid providing care.

In contrast, for attachment anxiety, the association with greater caregiving avoidance was unexpected. For anxious individuals, increased personal distress in reaction to a bereaved peer may lead to a desire to ignore or flee the situation to alleviate one's own discomfort (Mikulincer & Shaver, 2016b). Alternatively, this unexpected finding may again reflect the uniquely vulnerable context of death. We speculate that the context of death may heighten anxiously attached individuals' concerns about providing the "right" kind of support (e.g., may raise fears of being rejected because of providing ineffective care; Feeney et al., 2013). These concerns may contribute to caregiving avoidance, as withdrawing from the situation could function as a way to reduce discomfort with the possibility of pushing other people away. To note, the bivariate association between attachment anxiety and caregiving was not significant, and this association emerged only when all other covariates were introduced. Thus, replication of this finding with more robust behavioral measures of caregiving can help determine whether the observed association reflects reliable effects or is influenced by shared variance among self-report constructs.

In summary, attachment anxiety and avoidance predicted unsupportive responses in two unique ways (i.e., higher caregiving anxiety and personal distress vs. lower empathy and helping), and in one shared way of higher caregiving avoidance. Taken together, the present study demonstrates that the two types of attachment insecurity (anxiety and avoidance) contribute to greater avoidance of providing care; we have speculated that the underlying reason for this avoidance may stem from different protective mechanisms. For anxious individuals, avoidance of care may stem from personal distress and feeling overwhelmed (self-focused reasons), whereas for avoidant individuals, this may stem from a lack of care or interest in helping others (other-focused reasons).

Attachment security priming: Enhancing supportive responses

The study provides evidence that security priming can increase supportive responses to a bereaved peer both directly and by modulating the role of avoidant attachment. First, security priming directly enhanced the self-reported likelihood of helping a bereaved peer, even in the context of not impacting feelings regarding support (e.g., empathy, caregiving, personal distress, or death anxiety). This suggests that security priming promotes helping by enhancing self-reported willingness to provide behavioral responses, independent of changes in self-focused emotions or distress, aligning with the well-established idea that a sense of security facilitates caregiving behaviors (Mikulincer & Shaver, 2007a, 2016b). Given that what is ultimately perceived by bereaved individuals is the help received from others, the finding that security priming boosts helping indicates an avenue for supporting people in distress. Security priming can be implemented in a very short time (i.e., 2 minutes in our study), and studies have found that security priming could be done even using text messages (Otway et al., 2014). Thus, this finding has practical implications for increasing the amount of help individuals may provide to bereaved others.

Second, the study found that security priming may modify the link between attachment avoidance and individuals' responses to a bereaved peer for two responses: empathy and personal distress. Although these interactions were marginal after correcting for multiple tests (pointing to the importance of replication in future studies with larger samples), the findings nonetheless can be useful for informing future research. Security priming mitigated lower empathy for avoidant individuals such that avoidance was associated with lower empathy in the neutral condition, but not in the security prime condition. Further, the findings reveal that security priming was most effective in enhancing empathy among individuals with high levels of attachment avoidance. As mentioned above, avoidant individuals exhibit unsupportive responses to the bereaved in the form of a lack of interest in caring for others. Empathic concern is a key component in caregiving (Batson, 1991, 2010), and research has found that

avoidant individuals often report less empathy (e.g., Feeney & Collins, 2001; Joireman et al., 2002; Lopez, 2001; Shaver et al., 2016; Wayment, 2006). According to attachment theory, lower empathy exhibited by avoidant individuals is thought to reflect a defensive strategy that down-regulates attachment needs in the context where intimacy, dependence, or others' distress are experienced as threatening (Cassidy et al., 2025). Thus, increasing felt security may lower avoidant individuals' inclination to distance themselves emotionally from someone else's distress.

Contrary to our hypothesis that attachment avoidance would be associated with *lower* self-reported personal distress, we found that higher avoidance was associated with *higher* personal distress in the neutral prime condition compared to the security prime condition. This unexpected finding about avoidant individuals is particularly interesting, as we did not find a main effect of attachment avoidance on personal distress, and the finding contrasts with previous research suggesting that avoidance is unrelated to or associated with *lower* expressions of personal distress (Cassidy et al., 2018; Feeney, 2005; Mikulincer et al., 2005). One possible explanation for this discrepancy lies in the context of the current study, which focused on a peer's distress following a death. Unlike previous studies that occurred within contexts of more resolvable stressors (e.g., helping a homeless person or an individual required to do a particularly aversive task; Cassidy et al., 2018; Mikulincer et al., 2005), the present study involved a context of an entirely different magnitude – that is, the irreversible event of death. The permanent nature of this situation may overwhelm avoidant individuals' typical deactivating strategies (e.g., emotional suppression; Mikulincer & Shaver, 2016a). As a result, exposure to a peer's distress in the context of death may trigger fear and heightened personal distress in avoidant individuals, consistent with findings that avoidance is linked with a greater fear of death (measured projectively; Mikulincer et al., 1990). That avoidant individuals reported greater personal distress in the neutral condition but not in the security priming condition suggests that security priming may buffer this distress. Given that heightened personal distress can lead to withdrawal as a self-protective strategy (Mikulincer & Shaver, 2016b), fostering a sense of security may reduce this barrier and enhance avoidant individuals' capacity to provide support. On the other hand, we observed the opposite pattern for those with lower attachment avoidance, such that security priming predicted higher personal distress. This may suggest that for low-avoidance individuals, security priming may amplify emotional attunement, including personal distress.

In contrast to the finding that security priming attenuated some unsupportive associations between attachment avoidance and responses to a bereaved peer, security priming did not significantly interact with attachment anxiety. This is interesting, considering that a systematic review of security priming found that attachment anxiety most consistently interacts with security priming (i.e., in all six included studies that examined interactions), and in five studies, security priming was more beneficial for individuals with higher attachment anxiety compared to those with lower attachment anxiety (Gillath & Karantzas, 2019). Again, this raises the question of whether, in this case, for anxious individuals, the context of death evokes strong emotional reactions, as supported by findings that anxious individuals exhibit both overt fear of death and greater fear of death at an unconscious level (Mikulincer et al., 1990). Security priming may not have been helpful for anxious individuals because it could have contributed to fear and ambivalent feelings of uncertainty and self-doubt regarding how to provide effective care. Further, anxious individuals help others when they feel more connected to the person, but provide less help when they do not (Kogut & Kogut, 2013); the present study's context, with a focus on a non-close person, may contribute to this finding.

Previous experience with loss

The present study is the first to examine the role of previous experience with loss as a contributor to individual differences in supportive responses to a bereaved peer. As mentioned above, there are two aspects to supportive responses: self-focused (i.e., caregiving anxiety and personal distress) and other-focused (i.e., empathy, helping, and caregiving avoidance). As hypothesized, previous experience with loss predicted lower caregiving anxiety and personal distress (reducing self-focused supportive difficulties). Further, reporting higher closeness to the deceased person predicted lower levels of both caregiving anxiety and personal distress as well. Unexpectedly, previous experience with loss or closeness to the deceased was unrelated to other-focused aspects of supportive responses (empathy, helping, or caregiving avoidance).

Perhaps those with previous experience with loss are less self-focused in their responses to a bereaved peer because their familiarity with the loss experience reduces personal discomfort. However, being less self-focused may not translate to increased care or compassion toward others who are bereaved, as suggested by our finding of a non-significant association

between previous experience with loss and other-focused responses. Given that no previous studies have examined this link, future research that examines the underlying mechanism for this pattern is warranted. One possible speculative explanation for this lack of other-focused supportive responses is that individuals who have personally experienced loss may recall that unhelpful support can make the grieving process more difficult. For instance, a qualitative study among bereaved parents found that certain types of social support can actually be stressful and have negative effects on the bereaved (Dyregrov et al., 2018). Because the vignette used in the present study described a friend's roommate who is merely a classmate, rather than a close friend, participants with prior experience of loss may have felt that they did not know the person well enough to offer meaningful or helpful support. Taken together, although previous experience with loss may not necessarily make someone more supportive in all ways, at a minimum, previous experience with loss did not predict unsupportive responses. Future research that examines how recency and the type of previous loss experience would further advance our understanding of how previous experience with loss impacts support toward bereaved peers.

In relation to priming, we found that security priming helped further minimize caregiving anxiety for those with previous experience with loss, who reported lower caregiving anxiety across the two experimental groups; security priming did not impact caregiving anxiety for individuals without previous experience of loss. This result supports our hypothesis that security priming has a stronger effect on people with previous experience with loss compared to those with no such experience. This finding aligns with the theoretical notion that attachment security provides confidence to effectively deal with difficult situations (Mikulincer & Shaver, 2016b). Thus, for those with previous experience with loss who already feel less caregiving anxiety about responding to another person's loss, a sense of security further strengthens their confidence in remaining emotionally regulated when confronted with someone else's distress. Finally, there were no significant interactions between previous experience with loss and attachment orientations in predicting supportive responses.

Limitations and future directions

Although this study provides valuable insight into factors associated with college students' responses to a peer's distress, there are some study limitations. First, outcomes were based on a fictional hypothetical situation, and all supportive response measures were self-reports. Specifically, it is not possible to determine whether these responses would translate to real-world behavior outside of the laboratory, although other security priming studies have found the impact of security priming on actual behavior (Gillath et al., 2025; Liu et al., 2018). Relatedly, the study did not examine whether the supportive responses reported are perceived as helpful by the bereaved individual. Indeed, there is converging evidence that attachment insecurity is associated with insensitive caregiving to others (Feeney & Collins, 2001; Feeney & Woodhouse, 2016). Additionally, the study did not examine changes in supportive responses from before to after the priming. Thus, longitudinal studies that employ behavioral measures and examine dyadic interactions between bereaved and non-bereaved peers, such as in peer support settings, would contribute to a more ecologically valid understanding of the present findings.

Second, the study does not uncover the mechanisms that explain how security priming alters responses to a peer's loss. The study examined death anxiety as a possible mediator (see Supplementary material), and found that it did not play a mediating role. Additionally, because death anxiety was measured at the same time point as security priming and responses to peers loss, this experimental study does not allow for examination of the causal directionality of a mediator underlying the link between security priming and responses to peers loss. Thus, future studies that employ a longitudinal design that includes repeated security priming would be important to understand the pathway through which security priming may mitigate unsupportive responses and enhance supportive responses. Further, future investigations of other potential mediating mechanisms (e.g., emotion regulation) are warranted, with special attention to how security priming impacts self-focused compared to other-focused responses.

Third, the study is limited by the relatively low reliability of some measures and low statistical power to examine interactive effects. The internal reliabilities (Cronbach's α) of empathy, helping, and personal distress were low to moderate. Although some meaningful relations were observed despite this limitation, measurement error may have underestimated the magnitude of associations. Importantly, Cronbach's α tends to produce higher reliability estimates with longer scales (Tavakol & Dennick, 2011); in the present study, empathy and personal distress were measured with short scales (five or fewer items), which likely contributed to lower reliability estimates. Additionally, both empathy and helping showed ceiling effects (i.e., negatively

skewed), which has also been shown to influence the accuracy of reliability estimates (Sheng & Sheng, 2012). Further, the ceiling effects of these measures may have contributed to an underestimation of the regression coefficients in the models tested (Hunter et al., 2006), potentially increasing the risk of false negatives (Type II error) in the present study. Although McDonald's omega (ω; McDonald, 1999), a measure that requires fewer assumptions and is more appropriate for scales with few items and skewed distributions, yields slightly more acceptable reliability estimates for empathy, helping, and personal distress (ω range: 0.62–0.73), these values are still lower than ideal. Additionally, this measurement limitation likely contributed to the predominance of small observed effects and may have reduced the power to detect weaker interaction effects. Although small effect sizes are not necessarily unimportant effects (Götz et al., 2022), the present study should be considered preliminary until replicated in future studies with more reliable measures of supportive responses that capture the full range of variation in responses, allowing for more precise estimates. Additionally, future larger studies that examine how attachment orientation, previous experience with loss, and security priming all interact with one another to predict responses to a bereaved peer would help inform understanding of nuanced individual differences in response to a bereaved peer.

Fourth, the study was specifically about college students and focused on a specific loss experience, which limits the generalizability of results. People experience various losses throughout the lifespan, and it is important to consider how bereaved individuals, regardless of age, can be better supported. Future studies should explore how attachment orientation, security priming, and previous experience with loss contribute to individual differences in responses to a bereaved person among emerging adults in general (i.e., beyond college students), as well as for younger and older populations. Further, it is possible that findings may differ for supporting relationally close others (as opposed to a friend's roommate, as in this study), calling for future investigation.

Fifth, the findings from this present study are limited to individuals who identify as either male or female. Given that gender has often been shown to be associated with empathy and related constructs (e.g., Britton & Fuendeling, 2005; Joireman et al., 2002), it is important to investigate how gender identities beyond the male-female binary may express empathy and related responses. Further, the sample is heavily female (76%); although gender was controlled for, this distribution may limit generalizability. Future studies should recruit more gender-diverse and representative samples to further investigate potential differences. This is particularly important, considering that gender was significantly associated with three of the five responses across models, suggesting that the predominance of female participants may have influenced the observed findings.

Implications and conclusions

Despite limitations, the present study provides evidence concerning individual-difference factors that contribute to responses to a peer's loss, and suggests that security priming may be beneficial in reducing unsupportive responses and increasing helping behavior to a bereaved peer. The study findings can ground future research that evaluates how attachment orientation, previous experience with loss, and other previously unexamined individual factors contribute to behavioral response toward a bereaved peer. Additionally, the findings have implications for developing peer support interventions. For example, bereavement support groups may benefit from evaluating individual areas in which peers struggle to provide support, and adding security-boosting exercises to minimize distress surrounding death and enhance supportive responses.

Taken as a whole, the present study provides evidence that attachment orientation, previous experience with loss, and security priming are factors that partially explain differences in supportive responses to a bereaved person. Identifying contributors of individual differences is the first step in understanding how supportive responses can be enhanced, so that more bereaved individuals can be better supported, and fewer bereaved individuals struggle with mental health and social problems after loss.

Ethics statement

This research received ethics board approval from the University of Maryland IRB (approval #687917-27). All participants provided written informed consent prior to data collection.

Disclosure statement

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Data availability statement

The data that support the findings of this study are available from the corresponding author, Sayaka Awao, upon reasonable request.

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