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Psychological distress with relationship satisfaction is moderated by anticipatory relational savoring among non-deployed military partners

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Abstract

This study recruited participants whose partners were deployed for active-duty military service to examine whether anticipatory relational savoring moderated the association of psychological distress with relationship satisfaction. Two weeks prior to their partner's deployment (T1), participants ($N = 73$) completed a self-report measure of relationship satisfaction. Then, 2 weeks into their partner's deployment (T2), participants completed self-report measures of stress, loneliness, and depression (combined into a composite index of psychological distress), and relationship satisfaction. Participants also

Statement of Relevance: Non-deployed military partners of military service members are at heightened risk for psychological distress, and military couples experience significant relationship disruptions that ultimately are associated with lower relationship satisfaction, especially during a deployment. Therefore, it is important to identify whether psychologically positive processes are related to resilience during deployment. The results of the current study illuminate the importance of a positive cognitive and emotional process – anticipatory relational savoring – or anticipating future moments of reconnection with one's partner.

completed a stream-of-consciousness task at T2 in which they imagined and discussed their partner's return from deployment. We coded the stream-of-consciousness task for anticipatory relational savoring regarding their upcoming reunion with their deployed partner. We found that anticipatory relational savoring moderated the association of psychological distress with during-deployment relationship satisfaction after adjusting for demographics, interpersonal variables, and deployment-specific variables; the association did not hold after adjusting for pre-deployment relationship satisfaction, and thus was robust when considering the distress-satisfaction association during the deployment but was not when considering *changes* in relationship satisfaction from pre- to during-deployment. We discuss the potential importance of anticipatory relational savoring for this unique population.

KEYWORDS

attachment, deployment, marital satisfaction, mental health, relational savoring

Relationship satisfaction provides an important window into how a relationship may be faring. This is especially critical in the context of non-deployed military partners of deploying military personnel (i.e., at-home civilian partners). These individuals are separated from their romantic partner as they embark on a deployment that lasts months on end. The deployment involves potentially dangerous missions that may cause non-deployed military partners to experience unique psychological distress that may relate to lower relationship satisfaction during the deployment period. However, there are ways that non-deployed military partners can regulate their emotions during the deployment that may help to minimize its impact on the relationship. In the current study, we used attachment theory as a lens to predict whether anticipatory relational savoring moderated the association of self-reported psychological distress with relationship satisfaction among a sample of non-deployed military partners.

1 | PSYCHOLOGICAL DISTRESS AND RELATIONSHIP SATISFACTION AMONG NON-DEPLOYED MILITARY PARTNERS

Improving relationship satisfaction may be a port of entry for alleviating couple distress (Randall & Bodenmann, 2009)— if a relationship is more satisfying, it can mitigate the possibility of relationship deterioration or dissolution (Karney & Crown, 2011). The relationship satisfaction of non-deployed military partners may be impacted due to the nature of their partner's

work, which can pose challenges to the dynamics of the relationship (Klaric et al., 2011; McCray, 2015; Morton, 2021). In fact, the deployment time is a rich space in which to understand relationship dynamics under stress given that partners are separated for long periods with considerable uncertainty and because it involves imminent risk of physical harm during periods of active military engagement. Furthermore, couples face communication problems, worry over the deployed partners' safety, and face a general lack of knowledge over the characteristics of the deployment (Allen et al., 2011; Larsen et al., 2015; Verdeli et al., 2011).

Unsurprisingly, in the face of these challenges, couples experience psychological distress, which is one important factor that may negatively relate to relationship satisfaction (for a review, see Randall & Bodenmann, 2009). Among non-deployed military partners, wives of active duty personnel who are deployed suffer from higher rates of depressive disorders (along with stress and anxiety disorders) compared to wives of active duty personnel who are not currently deployed (Mansfield et al., 2010). Furthermore, psychological distress is related to lower relationship satisfaction among military wives (Andres, 2014). For this reason, non-deployed military partners may need unique regulatory strategies to combat the impact of psychological distress on their relationship satisfaction.

2 | ANTICIPATORY RELATIONAL SAVORING

Anticipatory relational savoring is a regulatory strategy that involves focusing on experienced or imagined positive moments of close connection with another person, and marinating in the thoughts, feelings, and meaning associated with that experience (Borelli et al., 2020; Borelli, Kerr, et al., 2022). Whereas savoring as a general emotion regulation strategy has been extensively studied (Bryant & Veroff, 2017) and found to be associated with a wide array of positive outcomes, including life satisfaction, positive emotions like gratitude, lower rates of depression, and overall better psychological well-being (Geiger et al., 2017; Kiken et al., 2017; Smith & Hollinger-Smith, 2015), *relational* savoring is a relatively recently delineated form of savoring with an explicit focus on attachment relationships (Borelli et al., 2020). In relational savoring, people savor past, present, or future moments of closeness. When people engage in relational savoring, they experience heightened feelings of support, comfort, and closeness (Borelli et al., 2020). In addition to being an emotion regulation strategy (Borelli, Hong, et al., 2022), relational savoring has been developed into an intervention that has been shown to improve emotional and relational outcomes (e.g., Borelli, Kerr, et al., 2022).

In the context of a military deployment, anticipatory relational savoring may have positive benefits that can be understood through the lens of attachment theory (Borelli et al., 2020). Attachment theory (Bowlby, 1969) posits that physical separation from an attachment figure, such as a romantic partner, can be distressing and threatening to one's well-being (Diamond et al., 2008), but once physical closeness is reestablished, the distress may resolve (Bowlby, 1969). Nonetheless, there is a state of despair that occurs when one feels their emotional or physical connection with their attachment partner may not be re-established (e.g., abandonment or death; Hazan & Shaver, 1992). However, even amid a prolonged physical separation, including one characterized by threats of loss, such as military deployment, human beings have the unique capability of being able to mentally represent their relationships to themselves – they can use their imaginations to recall past interactions and envision future ones – and in doing so, they may avoid completely losing their connection with their partners. One way in which non-deployed military partners can avoid this despair state

during a prolonged separation (like a deployment) is by engaging in anticipatory relational savoring.

By focusing on anticipated positive moments of connection with their deployed partner, the non-deployed military partner can use their mental representation of their relationship to stay emotionally connected to their partner, maintain high levels of relationship satisfaction, and keep their "relationship magic" alive, despite physical distance. The non-deployed military partner might envision the warm embrace of their deployed partner, be ecstatic at the thought of the deployed partner once again walking through the front door, or imagine how, after reuniting, they fondly share how they missed each other. Engaging in anticipatory relational savoring has been found to be associated with higher relationship satisfaction among a sample of civilians (Lenger & Gordon, 2019).

Anticipatory relational savoring may involve the activation of *person schemas*, which are mental representations of the roles and characteristics of self or others (Horowitz et al., 1991). This concept of person schemas bears some resemblance to mental representations of relationships but is somewhat distinct in that it focuses on one's representation of their roles in relationships. Data from the broader psychological science literature suggests that activating these schemas can be highly beneficial. For example, in a preregistered experimental study, mentally activating images of one's romantic partner attenuated blood pressure reactivity to an acute physical stressor in the laboratory (Bourassa et al., 2019). By activating person schemas through anticipatory relational savoring, non-deployed military partners can utilize their mental representations of their attachment relationship as a source of strength.

Anticipatory relational savoring may also have an impact on this population by enhancing positive emotional experiences and/or positive outlooks, which could be especially important during times of psychological distress. Focusing on anticipated moments of future closeness with a partner can bring to mind positive emotion and cognitions connected to the self, the partner, and the relationship. Positive emotion buffers against the negative impacts of stress and creates opportunities for positive connection between people (Fredrickson, 2004). In support of this argument, one study found that when non-deployed military partners stay positive throughout the deployment, they experience less distress (Patterson & McCubbin, 1984), while another revealed that wives who are optimistic about the upcoming reunion more thoroughly enjoy the actual reunion with their deployed partner (Wood et al., 1995).

3 | CURRENT STUDY

In this study, we predicted that anticipatory relational savoring would moderate the association of self-reported psychological distress with relationship satisfaction. Specifically, we expected the association of higher psychological distress with lower relationship satisfaction to be attenuated among non-deployed military partners who demonstrated *higher* anticipatory relational savoring. We also expected the association of higher psychological distress with lower relationship satisfaction to be stronger among non-deployed military partners who demonstrated *lower* anticipatory relational savoring. In examining the association of psychological distress with relationship satisfaction, we were first interested in *change* in relationship satisfaction (from pre-deployment to during-deployment) and then in only concurrent (during-deployment) associations between the variables. Furthermore, we tested the strength of our model by including different sets of covariates to determine if our model held after holding conceptually relevant variables constant. We wish to note that our analyses were not preregistered and should thus be considered exploratory.

4 | METHOD

4.1 | Participants

The current study included participants from the first and second data collection time-points from a two-site study (Time 1 (T1), $N = 86$: Location 1 $n = 41$, Location 2 $n = 45$; Time 2 (T2), $N = 74$: Location 1 $n = 37$, Location 2 $n = 37$; Dates of data collection: Location 1 (2009–2010), Location 2: (2010–2012)). One participant from the second time-point did not complete the current study key measures, resulting in a final sample size of 73. Inclusion criteria required that participants be in a romantic relationship with a military person who would be undergoing a deployment within the next 3 months, yielding a sample of adult female non-deployed military partners (Location 1: $M_{age} = 30.41$, $SD_{age} = 6.81$ at baseline (T1); Location 2: $M_{age} = 30.92$, $SD_{age} = 7.93$ at baseline (T1)). The combined sample identified racially as White ($n = 56$), Hispanic ($n = 8$), Black ($n = 3$), Asian ($n = 3$), Multi-racial ($n = 3$), and Other ($n = 1$). The median household income fell between \$61,000–\$80,000 ($n = 12$), and the median level of education was a bachelor's degree ($n = 27$). Participants resided in Arizona (41.9%), California (11.6%), Texas (10.5%), Georgia (5.8%), Washington (3.5%), and other states across the United States (26.7%).

The sample size was determined by available financial resources for recruiting this community-dwelling sample. Given that our recruitment efforts were limited by financial resources and that our sample size was not planned as a function of a priori power, we conducted a sensitivity analysis. This allowed us to determine what effect our design was powered to detect at 80%, which is consistent with best practices in sample size justification (cf. Lakens, 2022). We used the *InteractionPower R* Shiny App (Finsaas et al., 2021) to run this sensitivity analysis. This package requires specifying a series of correlations, including that between the focal interaction and the outcome in question. In the current data, we observed a correlation of $r = .20$ (95% CI [−.06, .47]) between the psychological distress * anticipatory relational savoring interaction variable and the relationship satisfaction outcome variable. Maintaining the same pattern of association among the main effects and each main effect and outcome, our sensitivity analysis indicated that 70 participants yielded 80% power at $r = .32$ (for the association between the psychological distress * anticipatory relational savoring interaction variable and the relationship satisfaction outcome variable). In our data, the 95% CI for the correlation between the interaction and the outcome includes this effect size.

4.2 | Procedure

We combined two samples from two larger studies (specified above) that followed similar procedures, with the difference being that Study 1 was conducted in the laboratory and Study 2 was conducted online and over the phone. For full details on the protocols of the two studies, see (Borelli et al., 2014). The same investigative team conducted the two studies, but the data collections took place at two universities and the respective local Institutional Review Board (Study 1: University of Arizona, *Predictors of Risk and Resilience in Couples Experiencing Military Deployment*, #08-0846-02; Study 2: Pomona College, *Pomona Deployment Study*, #10262010JB-CS1) approved all the protocols. We recruited participants through online postings, flyers, and newspaper advertisements. Participants consented either in person or over the phone, during which research assistants read the consent form to participants and signed it on the participant's

behalf after receiving verbal confirmation. Participants then received an email copy of the signed consent form. The baseline self-report questionnaires were completed online 2 weeks before the scheduled deployment. The baseline measures, pre-deployment (T1), included demographics (completed once), relationship satisfaction, perceived stress, loneliness, depression, and perceived social support. Participants were then contacted approximately 2 weeks after their partner left for their deployment, during-deployment (T2), to repeat the same self-report measures, as well as questions regarding perceived partner communication effort since the deployment. Finally, during this same time-point, they completed a 3-min verbal stream-of-consciousness task.

4.3 | Measures

4.3.1 | Covariates

Demographics

Participants reported the number of children they have and their relationship length (e.g., "*How many years have you and your spouse been married?*"), which were both measured on an open-ended response scale. They also reported their age in years.

Perceived partner communication effort

Participants responded to one item regarding their perception of the communication effort put forth by their deployed partner during the deployment: *"Please select the choice that reflects how much effort your spouse has put into making contact with you since he deployed."* Choices included: *"He has not put much effort into contacting me" (1), "He has put a medium amount of effort into contacting me" (2)* or *"He has put a lot of effort into contacting me" (3)*. Higher scores indicate higher perceived communication effort put forth by the deployed partner.

Perceived social support

We used the Interpersonal Support Evaluation List (Cohen & Hoberman, 1983) to assess perceived availability of potential social support resources. Participants were asked to respond to 40-items using a 4-point Likert scale that ranged from *Definitely false (0)* to *Definitely true (3)*. Items were phrased to either refer to friends and family, multiple people, or one person in general (e.g., "*I often meet or talk with family or friends"*). Twenty items were reverse scored and then averaged with the remaining 20 items for a single composite score. Higher ratings represent higher perceived availability of general social support. The ISEL has shown good reliability and validity in a variety of populations (Bauman et al., 2012). Reliability in our study was high (Study 1 $\alpha = .93$; Study 2 $\alpha = .96$).

Deployment characteristics

Participants reported on whether their partner has been on a previous deployment (*Yes* (1), *No* (0)). They also reported on their partner's anticipated deployment length (e.g., *"How long is your spouse's current deployment projected to be?"*), which was measured on an open-ended response scale in metrics of months. Lastly, they reported which branch of the military their partner was enlisted in: Air Force (1), Army (2), Marines (3), Navy (4). See Table 1 for frequencies.

TABLE 1 Sample sizes for specific characteristics of the deployment

Variable	*N*
Previous deployments	73
Yes	36
No	37
Spouse's military branch	72
Air force	37
Army	24
Marines	3
Navy	8
Spouse's type of service	72
Active duty	66
Reserve	2
National guard	4
Type of deployment	73
Special operations	7
Infantry/Convoy	10
Aircrew	19
On base support	21
Other	16
Deployment location	73
Iraq	13
Afghanistan	36
Kuwait	6
Qatar	4
Other	14

4.3.2 | Self-reported psychological distress (predictor)

Perceived stress

Participants completed the Perceived Stress Scale-4 (PSS-4; Cohen & Williamson, 1988), which uses 4-items to measure perceived stress over the past month. Participants used a 5-point Likert scale ranging from *Never (0)* to *Very often (4)* to answer how often they felt a particular way including "*How often have you felt that you were unable to control important things in life?*", "*How often have you felt confident about your ability to handle personal problems?*", "*How often have you felt things were going your way?*", and "*How often have you felt difficulties were piling up so high that you couldn't overcome them?*" We reverse coded two of the items before including them in the psychological distress composite score. The PSS-4 demonstrates good reliability and validity in individuals of different nationalities (Lesage et al., 2012), and most importantly, in military couples and spouses (Giff et al., 2019). Reliability in our study was moderate-to-high (Study 1 $\alpha = .79$; Study 2 $\alpha = .76$).

Loneliness

We used the UCLA Loneliness Scale-version 3 (Russell, 1996) to assess how often one feels lonely or isolated on a 4-point Likert scale ranging from *Never (1) to Always (4)*. From the original 20-item scale we used 3-items (Hughes et al., 2004) that included "*How often do you feel left out?*", "*How often do you feel isolated from others?*", and "*How often do you feel that you lack companionship?*" These items exhibit good reliability and validity in nationally representative samples of older adults (Hughes et al., 2004) and military partners (Borelli et al., 2019). Reliability in our study was high (Study 1 $\alpha = .80$; Study 2 $\alpha = .82$).

Depressive symptoms

The Beck Depression Inventory-II (Beck et al., 1996) was used to assess depressive symptoms. Participants were asked to respond to 21-items rating to what degree they experienced a depressive symptom (e.g. sad, agitated) over the past 2 weeks on a 4-point scale ranging from *I do not feel...(0)* to *I am so...that I can't stand it (3)*. Two items were presented on a 7-point Likert scale (reflecting increased or decreased behavioral changes) that were then re-coded to match the 4-point scale scoring with the rest of the items (Hubley, 2021). This allowed all items to fall on a 4-point scale to be included in the composite psychological distress index. The BDI-II constitutes good reliability and validity in both general and clinical populations of different nationalities (Ginting et al., 2013). Reliability in our study was high (Study 1 $\alpha = .85$; Study 2 $\alpha = .90$).

Composite psychological distress index

We created a composite psychological distress index that combined our measures of perceived stress, loneliness, and depression. Stress, loneliness, and depression are commonly used indices of psychological distress (Lane et al., 2012; SteelFisher et al., 2008) and are highly prevalent in this population (Lapp et al., 2010; Padden et al., 2011). Each of these indices represents a different view into psychopathology and distress – whereas loneliness and depression can reflect more longstanding states, stress can be a more transitory experience that can reflect the environmental circumstances of one's situation. Each of these indices – stress, loneliness, and depression – are important components of distress and mental health. Consistent with transdiagnostic views of psychopathology (Dalgleish et al., 2020), the incorporation of multiple measures of distress and mental health expands the measurement of adjustment and the ultimate external validity of the work. This method of creating composite measures has been employed in previous work to effectively capture a wider and complex range of psychological distress rather than single clinical syndrome such as depression (Chau et al., 2022).

Furthermore, all three factors were highly correlated in our dataset. The composite psychological distress index was calculated by standardizing the scores within the sample across the three scales using a linear transformation to Percent of Maximum Possible (POMP) scores, by giving raw scores a theoretical range from 0 to 100 (Cohen, Cohen, et al., 1999). This method of standardization has been used by psychological scientists (e.g., Srivastava et al., 2003), to allow for more meaningful interpretations among those who study similar or tangential research to one another (Cohen, Cohen, et al., 1999). We calculated POMP scores by subtracting the minimum score from the raw score and then dividing by the possible scoring range. The standardized POMP scores from each of the three self-reported measures were then combined using an arithmetic mean. In this study, all these measures were moderately to highly correlated with one another, with intercorrelations of 0.55 and above. Higher scores on this composite index reflect worse psychological distress. In summary, we chose perceived stress, loneliness, and depression as the three measures of self-reported psychological distress because they were

highly intercorrelated in this sample, are conceptually related, and together combine to form a transdiagnostic picture of psychological distress that is more comprehensive and insightful than their individual contributions.

4.3.3 | Anticipatory relational savoring (moderator)

Participants were asked to engage in a stream-of-consciousness task where they were encouraged to speak aloud for 3 minutes about the expected reunion with their deployed partner and to describe the anticipated "homecoming scene" with as much detail as possible. These narratives were audiorecorded, transcribed verbatim, and subsequently coded for anticipatory relational savoring by assessing how positively the participant described the anticipated reunion with their deployed partner (see below for details).

Anticipatory relational savoring involves focusing on a future positive moment with a close other and marinating in the feelings or thoughts associated with that moment. To capture this construct, we coded participants' responses to the stream-of-consciousness task, modeled after other scientific investigations (Borelli et al., 2014). Training in the coding system was led by two graduate students. They taught a pair of undergraduate research assistants, who coded the transcripts in pairs using the following scale: "To what extent does the participant's overall narrative involve positive emotions?" This item was scored on a 5-point Likert scale, *Not at All (1)* to *A Great Deal (5)* to represent how positively the participant was conceptualizing (i.e., describing and visualizing) the impending reunion with their deployed partner, rather than directly focusing on the positive affect they were experiencing. Once reliability was acceptable (inter-class coefficient above .70), the research assistants coded in sets of 10 transcripts and discussed disagreements to calibrate their coding for future coding. After each set of 10 transcripts, reliability between the two sets of coders was recomputed to ensure no divergence (still above .70). After coding the transcripts, codes from each pair were averaged together for final codes (see Table 2 for examples from transcripts), where higher averaged codes indicate higher anticipatory relational savoring (ICC = .80). Stream-of-consciousness ratings aimed to capture the core of anticipatory relational savoring by focusing on positive emotions conveyed by the participants, which is similar to how other researchers have also assessed savoring by focusing on positive events and emotions (e.g., Bryant., 2003). Construct validity of this measure was indicated by the positive association ($r = .57$, $p < .001$) with positive emotion words during the reunion stream-of-consciousness task identified through Linguistic Inquiry and Word Count (Pennebaker et al., 2001).

4.3.4 | Relationship satisfaction (outcome)

Participants completed the Dyadic Adjustment Scale (Sabourin et al., 2005), which used 4-items to measure relationship satisfaction, at two time-points: pre-deployment (T1) and during-deployment (T2). Participants used a 5-point Likert scale ranging from *All the Time (1)* to *Never (5)* for the items "How often do you discuss, or have you considered divorce, separation, or terminating your relationship?," "In general, how often do you think that things between you and your partner are going well?" and "Do you confide in your partner?" Additionally, participants used a 5-point Likert scale ranging from *Very Unhappy (1)* to *Very Happy (5)* to answer, "Please choose the one response that best describes the degree of happiness, all things considered, in

TABLE 2 Excerpts from transcripts coded as containing low, average, and high anticipatory relational savoring content

Low	Average	High
Alright, um, well I've sort of tried to imagine him getting back and it's hard for me to, you know get excited about it. I'll believe it when the boat pulls up and I see him and I can, you know, touch him and know that he's coming home with us, um, he should get back right before Christmas which would be really special. After that we want to take a vacation, um, to Charleston, um, which would be really special for us too. Uh, and then go maybe see my parents. But I kind of want to keep us together uh before we go see other people... My husband was a medical student and then an intern, he did an internship last year so um I'm really used to him not being around too much. We have pretty set routine for how our home life goes so I do not, I do not think that's going to be too much trouble...I know that it's going to be really emotional, especially seeing his [son]... That's what I'm most looking forward to just having time for us to be together to have dinner together.	Um, well, I'm looking forward to this, reuniting with my husband when he comes home. Uh, I know all of the anger feelings and feeling left behind and all that stuff that I've been feeling it'll go away you know as time gets closer. He just left so... I know that, you know, as the time goes by and everything and it gets closer I'll get more excited and more happy. Um, I'll have some more you know achievements under my belt as far as school is concerned. I'll by then have a job, I'll, hopefully by then, you know, things will be a lot easier. Um, I have hope for the future, so, um... I'm looking forward to it- it just it seems so far away right now.	I am incredibly excited for my husband's homecoming and I cannot wait to see him, hug him and touch him and kiss him I get really excited when I think about the boys and opening his mouth and the little boys and stuff. They are gonna be so excited and...it makes me think of the last deployment he got back from October um and just how excited and amazing that was just a good feeling I get butterflies, happy anxious um it sums up happiness and love and uh I [want] to be able to be in love with my husband has a great family and whether they are here or not or what if they have a uh a life that I would not trade for anything else and he chose this line of work for us and I am proud of what he does and I just get really excited about the homecoming. I see pictures of you know my other. He just ends up crying so happy and um it is a good day. This one is gonna be awesome. We have had quite a few, hanging out with the boys so still um extra special.

your relationship." The first three items were reverse coded and combined using an arithmetic mean with the last item so that higher scores reflected higher relationship satisfaction. Reliability in our study was moderate-to-high (Study 1 $\alpha = .72$; Study 2 $\alpha = .79$).

5 | DATA ANALYTIC PLAN

We tested whether psychological distress was related to relationship satisfaction and whether this association was moderated by anticipatory relational savoring using a hierarchical linear regression. To test this hypothesis, we combined perceived stress, loneliness, and depression into a single measure of psychological distress (cf: Mansfield et al., 2010; Padden et al., 2011).

Doing so enabled us to reduce the number of analyses we conducted and to adopt a trans-diagnostic approach to the measurement of distress. We used this composite measure of psychological distress as our predictor variable, relationship satisfaction as our outcome variable, and anticipatory relational savoring as our moderator variable in five statistical models.

1. We first tested our model examining *change* in relationship satisfaction from pre-deployment to during-deployment. Specifically, we examined whether the model held after accounting for pre-deployment relationship satisfaction as a covariate (Model 1).

We then examined relationship satisfaction at a single time point: during the deployment. In these models, we tested how robust anticipatory relational savoring was as a moderator, which we tested through sequential testing of sets of important conceptual covariates. We added these covariates in four sets, resulting in four additional models (Models 2–5).

2. The first set included no covariates as our base model, and we predicted that anticipatory relational savoring would be a significant moderator (Model 2).
3. Next, our second set included demographic variables as covariates, and we predicted that anticipatory relational savoring would be a significant moderator (Model 3).
4. We then explored whether the model held after accounting for interpersonal variables as covariates (Model 4). Interpersonal variables such as how one communicated with their partner and how supported they felt by their partner during the deployment may also influence how anticipatory relational savoring is related to relationship outcomes. Additionally, communication and social support can wane after the deployment begins but both are important variables for the attachment system.
5. Lastly, we also explored whether the model held after accounting for deployment-specific variables (how long the deployment was projected to be, whether the deployed partner experienced a previous deployment, and the military branch the deployed partner was enlisted in) as covariates (Model 5), because differences in the deployment can be associated with the outcome of the relationship.

The moderation analyses were computed using the PROCESS Macro v3.3 for SPSS (Hayes, 2012) by creating a bias-corrected 95% confidence interval for the interaction coefficient using 1000 bootstrapped samples. As the output from the PROCESS macro only provides unstandardized effects, we generated standardized effects using the standard hierarchical linear regression function in SPSS. If a model revealed that anticipatory relational savoring was a statistically significant moderator, we were able to determine at what level of anticipatory relational savoring that psychological distress was (or was not) significantly related to during-deployment relationship satisfaction. To do this, we tested the simple slopes of the moderator at three standard levels of anticipatory relational savoring: 1 standard deviation below the mean, the mean, and 1 standard deviation above the mean. We also used the Johnson-Neyman approach to determine regions of significance where anticipatory relational savoring moderated the association of psychological distress with during-deployment relationship satisfaction. Lastly, we examined at what level of psychological distress that anticipatory relational savoring was significantly related to during-deployment relationship satisfaction by reversing the independent variable and the moderator.

6 | RESULTS

6.1 | Preliminary analyses

Descriptive analyses and Pearson correlations (Table 3) were conducted between key study variables and key demographic variables. Psychological distress was not significantly associated with pre-deployment relationship satisfaction ($r = -.21$, $p = .08$), during-deployment relationship satisfaction ($r = .19$ $p = .11$), communication effort ($r = .16$, $p = .17$), nor anticipatory relational savoring ($r = -.14$, $p = .24$). However, in line with previous literature, we found that psychological distress was strongly negatively associated with perceived social support ($r = -.64$, $p < .001$).

6.1.1 | Change in relationship satisfaction

Model 1

In our first model, we aimed to determine how anticipatory relational savoring and psychological distress interacted to predict during-deployment relationship satisfaction, after accounting for pre-deployment relationship satisfaction.[1]

After accounting for this covariate ($R^2 = .54$, $p < .001$), anticipatory relational savoring did not moderate the association of self-reported psychological distress with during-deployment relationship satisfaction ($\Delta R^2 = .01$, $b = 0.01$, $t\,(64) = 1.38$, $p = .17$; see Table 4). Given the high correlation between pre-deployment and during-deployment relationship satisfaction ($r = .73$, $p < .001$), we interpret this model to suggest that there was little variation in our satisfaction outcome to be explained by the anticipatory relational savoring moderator after accounting for pre-deployment relationship satisfaction. Thus, in the remainder of the analyses, we focused on during-deployment relationship satisfaction.

6.1.2 | Relationship satisfaction during the deployment

Model 2: No covariates

In our second model, we examined only during-deployment variables by omitting pre-deployment relationship satisfaction. We entered anticipatory relational savoring as a moderator without any covariates. This became our base model for examining the association of psychological distress with during-deployment relationship satisfaction.

After removing pre-deployment relationship satisfaction as a covariate, ($R^2 = .14$, $p = .02$), anticipatory relational savoring moderated the association of self-reported psychological distress with during-deployment relationship satisfaction ($\Delta R^2 = .06$, $b = 0.02$, $t\,(66) = 2.19$, $p = .03$; see Table 4). Decomposition of the simple slopes (see Figure 1) revealed that higher psychological distress was related to lower relationship satisfaction at low ($b = -0.02$, $p < .01$) levels of anticipatory relational savoring but not mean ($b = -0.01$, $p = .13$), nor high ($b < 0.01$, $p = .57$) levels of anticipatory relational savoring.

To further understand the interaction, we reversed the independent variable and the moderator. We found that higher anticipatory relational savoring was related to higher during-deployment relationship satisfaction at mean ($b = 0.20$, $p < .05$), and high ($b = 0.43$, $p = .01$) levels of psychological distress but not at low ($b = -0.03$, $p = .80$) levels of psychological distress.

TABLE 3 Means, standard deviations, and zero-order correlations among key study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
Variables reported pre-deployment													
1. Age	**30.63 (7.39)**												
2. Children	0.41**	**1.48 (1.43)**											
3. Deployment Length	0.18	0.19	**7.45 (3.60)**										
4. Relationship Length	0.70**	0.27*	0.19	**6.18 (5.80)**									
5. Relationship Satisfaction (T1)	−0.21	−0.02	−0.07	−0.32**	**4.48 (0.55)**								
Variables reported during-deployment													
6. Social Support	−0.06	0.14	−0.18	0.08	0.05	**2.36 (0.43)**							
7. Communication Effort	0.11	0.24*	0.12	−0.14	−0.05	−0.10	**1.15 (0.40)**						
8. Perceived Stress	0.04	−0.10	0.13	−0.07	0.02	−0.61**	0.10	**31.08 (18.01)**					
9. Depression	0.19	0.07	0.23	−0.20	0.18	−0.56**	0.02	0.69**	**14.26 (11.32)**				
10. Loneliness	0.01	0.01	0.23*	−0.21	0.03	−0.49**	0.21	0.57**	0.49**	**46.58 (23.55)**			
11. Psychological Distress	0.07	−0.02	0.23*	−0.19	0.07	−0.64**	0.16	0.87**	0.78**	0.87**	**30.64 (15.01)**		
12. Relational Savoring	−0.02	0.20	−0.04	0.21	−0.10	0.00	−0.00	−0.06	−0.09	−0.18	−0.14	**2.55 (0.70)**	
13. Relationship Satisfaction (T2)	−0.19	−0.22	0.04	0.73**	−0.23	0.11	−0.16	−0.13	−0.33**	−0.14	−0.21	0.19	**4.49 (0.56)**

Note: Means and standard deviations are bolded along the diagonal. Variables reported pre-deployment are considered Time 1 (T1) and variables reported during-deployment are considered Time 2 (T2). Psychological distress and its components (perceived stress, depression, loneliness) are standardized across the three measures using POMP scoring methods, ranging from 0 to 100.

*$p < .05$.

**$p < .01$.

TABLE 4 Regression analyses predicting relationship satisfaction from psychological distress × anticipatory relational savoring.

PANEL A	Model 1				Model 2			
Step	***b***	***SE***	***β***	**95% CI**	***b***	***SE***	***B***	**95% CI**
R^2	0.54***	--	--	--	0.14*	--	--	--
Constant	1.83**	0.62	--	0.60, 3.07	5.37***	0.54	--	4.28, 6.45
Psychological distress	−0.02	0.01	−0.56	−0.05, 0.01	−0.05*	0.02	−1.21*	−0.08, −0.01
Relational savoring	−0.16	0.15	−0.19	−0.46, 0.15	−0.26	0.20	−0.32	−0.67, 0.14
Interaction	0.01	0.01	0.52	−0.00, 0.02	0.02*	0.01	1.09*	0.00, 0.03
Relationship satisfaction (T1)	0.70***	0.09	0.68***	0.51, 0.88	--	--	--	--
ΔR^2	.01	--	--	--	.06	--	--	--

PANEL B	Model 3				Model 4				Model 5			
Step	***b***	***SE***	***β***	**95% CI**	***b***	***SE***	***β***	**95% CI**	***b***	***SE***	***β***	**95% CI**
R^2	0.22*	--	--	--	0.23*	--	--	--	0.28*	--	--	--
Constant	5.27***	0.60	--	4.07, 6.47	5.18***	0.95	--	3.28, 7.08	4.78***	1.01	--	2.76, 6.80
Psychological distress	−0.04*	0.02	−1.15*	−0.08, −0.01	−0.04*	0.02	−1.11*	−0.08, −0.00	−0.04*	0.02	−1.10*	−0.08, −0.00
Relational savoring	−0.22	0.20	−0.27	−0.62, 0.18	−0.23	0.21	−0.28	−0.64, 0.19	−0.22	0.22	−0.27	−0.65, 0.21
Interaction	0.01*	0.01	1.02*	0.00, 0.03	0.01*	0.01	1.04*	0.00, 0.03	0.01	0.01	0.99	−0.00, 0.03
Age	0.01	0.01	0.10	−0.02, 0.03	0.01	0.01	0.13	−0.02, 0.04	0.01	0.01	0.13	−0.02, 0.04
Children	−0.09	0.05	−0.22	−0.18, 0.01	−0.08	0.05	−0.20	−0.18, 0.03	−0.12*	0.06	−0.30*	−0.23, −0.00
Relationship length	−0.02	0.02	−0.21	−0.05, 0.01	−0.02	0.02	−0.25	−0.06, 0.01	−0.03	0.02	−0.29	−0.06, 0.00
Social support	--	--	--	--	0.07	0.20	0.06	−0.33, 0.47	0.16	0.21	0.12	−0.27, 0.58
Communication effort	--	--	--	--	−0.16	0.17	−0.11	−0.49, 0.18	−0.12	0.17	−0.08	−0.46, 0.23
Previous deployment	--	--	--	--	--	--	--	--	−0.08	0.15	−0.07	−0.38, 0.22
Deployment time	--	--	--	--	--	--	--	--	0.02	0.02	0.09	−0.03, 0.06
Spouse branch	--	--	--	--	--	--	--	--	0.10	0.07	0.17	−0.05, 0.24
ΔR^2	.05	--	--	--	.06	--	--	--	.05	--	--	--

Note: Model 1 and 2 are the base models (Panel A) and Models 3–5 are testing different variables that were collected during deployment (Panel B).

*$p < .05$.

**$p < .01$.

***$p < .001$.

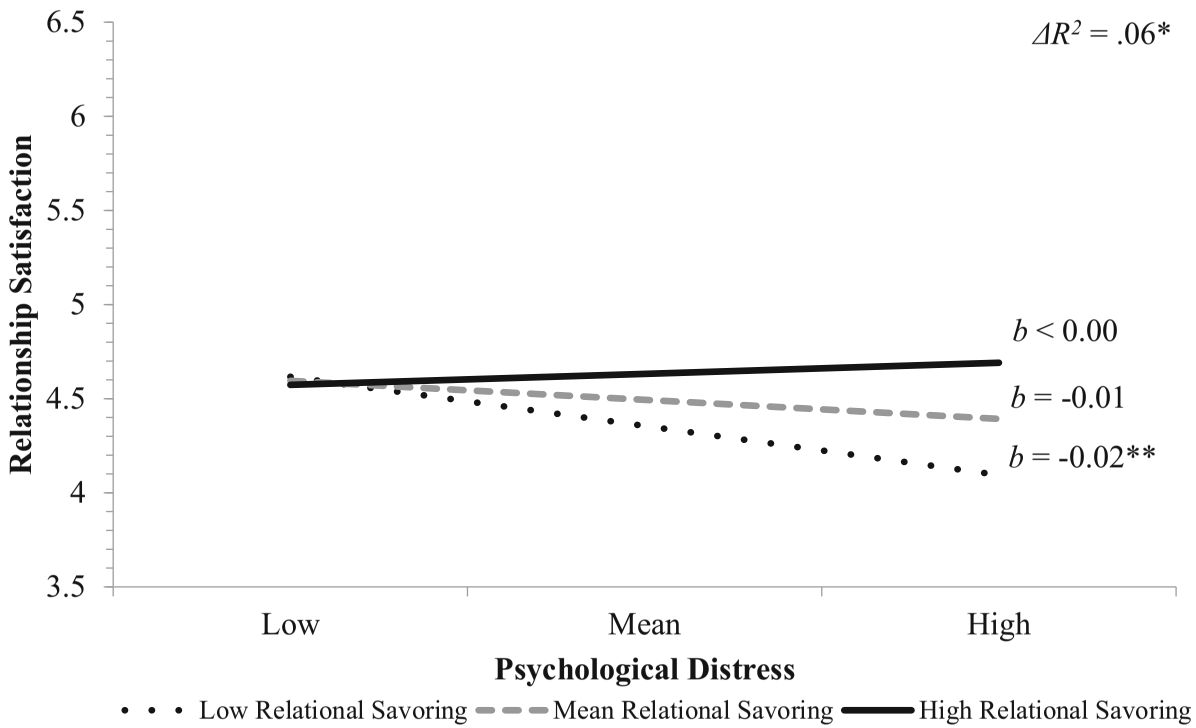

FIGURE 1 The association between psychological distress and during-deployment relationship satisfaction at differing levels of anticipatory relational savoring with no covariates (Model 2).

Model 3: Demographics as covariates

In our third model, we used the same predictor, moderator, and outcome variables and also included our demographic variables as covariates to determine if anticipatory relational savoring was a significant moderator over and above demographic covariates.

After accounting for these covariates, ($R^2 = .22$, $p = .01$), anticipatory relational savoring continued to moderate the association of self-reported psychological distress with during-deployment relationship satisfaction ($\Delta R^2 = .05$, $b = 0.01$, $t\,(63) = 2.10$, $p = .04$; see Table 4); the pattern followed similarly as the above model (low [$b = -0.02$, $p < .01$]; mean [$b = -0.01$, $p = .13$]; high [$b = 0.00$, $p = .61$] levels of anticipatory relational savoring).

Model 4: Demographics and interpersonal variables as covariates

In our fourth model we used the same predictor, moderator, and outcome variables and also included our demographic variables as well as perceived social support and satisfaction with partner communication effort as covariates to determine if anticipatory relational savoring was a significant moderator over and above interpersonal covariates.

After accounting for these covariates, ($R^2 = .23$, $p = .03$), anticipatory relational savoring continued to moderate the association of self-reported psychological distress with during-deployment relationship satisfaction ($\Delta R^2 = .06$, $b = 0.01$, $t\,(61) = 2.11$, $p = .04$; see Table 4). However, the simple slopes that included low (1SD below the mean; 1.85 units), average (2.55 units), and high anticipatory relational savoring (1SD above the mean; 3.25 units), were not significantly different from zero ($ps > .05$). Decomposition of the interaction using the Johnson-Neyman procedure revealed that there was only a significant negative association of psychological distress with during-deployment relationship satisfaction among participants with anticipatory relational savoring scores between 1.0 and 1.77 ($bs = -.03$ to $-.02$; $ps = .03$ to $.05$). However, there was no significant negative association of psychological distress with during-deployment relationship satisfaction among participants with anticipatory relational savoring scores between 1.88 units and 4.5 units, ($ps > .05$). Therefore, after including interpersonal covariates, we have evidence to believe that the association of psychological distress with during-deployment relationship satisfaction was only present among non-deployed partners with *very* low levels of anticipatory relational savoring; in other words, this association was completely attenuated when non-deployed military partners engaged in higher anticipatory relational savoring.

Model 5: Demographics, interpersonal variables, and deployment characteristics as covariates

In our fifth model, we used the same predictor, moderator, and outcome variables and also included our demographic variables, interpersonal variables, and deployment-specific variables to determine if anticipatory relational savoring was a significant moderator over and above deployment-specific covariates.

After accounting for these covariates, ($R^2 = .28$, $p = .04$), anticipatory relational savoring did not significantly moderate the association of self-reported psychological distress with during-deployment relationship satisfaction ($\Delta R^2 = .05$, $b = 0.01$, $t(57) = 1.93$, $p = .06$; see Table 4); however, the effect size of the simple slopes were comparable to the previous model (low [$b = -0.02$, $p = .05$]; mean [$b = -0.01$, $p = .35$]; high [$b = 0.00$, $p = .62$] levels of anticipatory relational savoring). With this in mind, and due to our small sample size, we removed all covariates except the deployment-specific variables and found that the moderation held and followed the same pattern as the base model (low [$b = -0.02$, $p < .01$]; mean [$b = -0.01$, $p = .10$]; high [$b < 0.01$, $p = .67$] levels of anticipatory relational savoring). Therefore, we interpret this model in a similar way as the previous models.

Exploratory analyses: Separating the compositive predictor variable

As a final step in our analytic process, we also examined whether the base model held when separating stress, loneliness, and depression as individual predictors. The motivation for conducting this analysis was to examine whether the moderating association of anticipatory relational savoring with relationship satisfaction was differentially related based on the separate components of the composite variable, as the results of these analyses could inform future work.

The pattern of results was very similar for depression and loneliness but differed for stress such that anticipatory relational savoring was not a statistically significant moderator of the association of stress with during-deployment relationship satisfaction ($\Delta R^2 = .03$, $b = 0.01$, $p = .14$). We discuss this finding below for what it suggests regarding stress during the deployment time-period.

7 | DISCUSSION

The current study contributes to the literature on relational savoring, relationship science, and the study of military couples. Although non-deployed military partners may not always have access to social networks or partners during times of distress, anticipatory relational savoring is a process that they can engage in by themselves. Our findings suggest that one's engagement in anticipatory relational savoring may be important in predicting the strength of the association of psychological distress with relationship satisfaction among non-deployed military partners.

In considering the contribution of our study, it is important to remember that our study was not preregistered and thus our hypotheses should be understood as largely exploratory in nature. However, it is noteworthy that there was no significant association of psychological distress with relationship satisfaction when participants engaged in higher levels of anticipatory relational savoring. These findings suggest that psychological distress was linked with lower relationship satisfaction unless individuals were able to engage in high levels of anticipatory relational savoring. Specifically, when participants reported average or high levels of anticipatory relational savoring (one standard deviation above the mean), for every one unit increase in psychological distress there was essentially no change in relationship satisfaction (< .01). When anticipatory relational savoring was low, for every one unit increase in psychological distress, relationship satisfaction decreased by .05 units. This is a small effect given that the standard deviation of relationship satisfaction is 0.55 but our composite score of psychological distress had a large range from 0 to 100. This large range means that if distress scores rise more than a single unit, the .05 unit decrease in relationship satisfaction could be severely meaningful. Even at the highest levels, relationship satisfaction is a relationship factor that is especially vulnerable to be impacted during deployment periods (Andres, 2014). Therefore, identifying ways to mitigate this impact, no matter how small, is imperative. This finding may reveal underlying mechanisms at play and begs the key questions: who benefits the most from anticipatory relational savoring as well as who can do anticipatory relational savoring and what allows them to do it well?

7.1 | Who benefits the Most from anticipatory relational savoring?

First, we tackle this question of who benefits the most from anticipatory relational savoring. Anticipatory relational savoring might be especially protective during deployment when one's

partner is not physically accessible. The more that non-deployed military partners engaged in anticipatory relational savoring, the weaker the association was of psychological distress with relationship satisfaction. Interestingly, we also found that anticipatory relational savoring was related to relationship satisfaction among non-deployed military partners who were suffering from high psychological distress, but not those low in psychological distress, suggesting that anticipatory relational savoring may be adaptive, especially under high levels of distress. In support of this theorizing, relational savoring buffered against a reduction in relationship satisfaction of long-distance couples (whose partners are also physically absent) after they completed laboratory tasks that elicited relationship stress (Borelli et al., 2015).

Our exploratory analyses deconstructing the composite psychological distress variable revealed that the moderation effect held when both loneliness and depression were the predictor variable, but not when stress was the predictor variable. It may be that stress, as compared to constructs such as loneliness or depression, is a more complex aspect of psychological distress and thus it may be harder to mitigate its impacts on relationship satisfaction in this specific context. Stress is a broadly defined term, and thus can vary in its interpretability and how it may impact relationship satisfaction. For example, if one experiences stress outside the relationship (i.e., work stress, childcare), this may not be easily buffered by anticipatory relational savoring that focuses on the partner and their relationship. Perhaps alternate approaches to stress regulation (such as deep breathing or mindfulness) might be more effective at buffering the association of stress with relationship satisfaction than anticipatory relational savoring within this population. Therefore, we argue that those who are not experiencing high levels of non-relationship stress may benefit the most from anticipatory relational savoring.

Although our focus was on the benefit of anticipatory relational savoring, we do not want to omit a discussion on the possibility that savoring may be unhelpful for some non-deployed military partners during a deployment. The reunion period can be extremely challenging for couples (Knobloch & Theiss, 2012; Pincus et al., 2001) and thus if the focus of anticipatory relational savoring is on unrealistic, idealistic, or unattainable reunion behavior, this may not always be beneficial.

7.2 | Who can engage in anticipatory relational savoring?

Next, we will consider who can engage in anticipatory relational savoring. Like other emotion regulation strategies, there may be trait-like characteristics that make it more likely that certain individuals will be able to utilize anticipatory relational savoring as an emotion regulation strategy more than others, or that they will be able to use it effectively. One such characteristic is attachment security –people higher in attachment security (Bond & Borelli, 2017) exhibit higher quality relational savoring and savor more (Palmer & Gentzler, 2018). In fact, relational savoring might be a behavioral manifestation of secure mental states. However, the link may go the other way as well – not only may attachment predict relational savoring proficiency, but relational savoring proficiency may predict attachment security.

The premise of the relational savoring intervention that has been developed (Borelli et al., 2020) is to enhance the practice of relational savoring with the goal of enhancing attachment security. However, enhancing relational savoring may be a lower hanging fruit than trying to change something as stable and monolithic as attachment security. Thus, although individuals with higher attachment security may more naturally fit the pattern described here (being more proficient in relational savoring), perhaps the findings also lend support to the idea

that relational savoring is a teachable skill that anyone can learn. In other words, perhaps people who are insecure in their attachment can also benefit from training in this emotion regulation strategy. Through repeated practice of savoring, people may be able to strengthen mental representations of security, enhancing attachment security. It may be important for anticipatory relational savoring to be implemented among non-deploying military partners who have lower attachment security and higher psychological distress, as these individuals are at the highest risk for the spillover of distress into their relationship satisfaction.

Second, the ability to describe a positive anticipatory moment might reveal personality differences in non-deployed military partners. Some non-deployed military partners attempt to remain optimistic amid the deployment (Padden et al., 2011) and enjoy their upcoming reunion more (Wood et al., 1995), despite experiencing personal distress. Thus, it is possible that the higher anticipatory relational savoring levels in this study reflect higher dispositional optimism on the part of the non-deployed military partners rather than higher attachment security. Both trait-like differences may set partners up to be able to utilize this emotion regulation skill more readily, but also may mean that individuals with lower levels of these traits may have more to gain from interventions focused on relational savoring. Indeed, the results of one study found that people with higher levels of attachment insecurity benefitted more from a savoring intervention (Burkhart et al., 2015).

7.3 | Preliminary findings on social support

An ancillary but notable finding emerged between a covariate and our independent variable. Our findings revealed that higher perceived social support was related to lower psychological distress at a correlation level of −.64. This finding replicated prior work with military populations demonstrating that greater perceived social support is beneficial for psychological well-being (Skomorovsky, 2014). Although our findings are correlational and cross-sectional, when combined with other experimental evidence suggesting that social support reduces the prevalence of psychological distress, our findings may suggest that making social support resources more readily available through networks for military families (e.g., the USO Military Spouse Networking Events Program) could be effective for the well-being of non-deployed military partners and should be examined further.

7.4 | Strengths and limitations

The current study had several strengths that should be noted. First, we used a robust step-down process to run separate statistical models that included sets of covariates (demographic, interpersonal, and deployment-specific) in our moderation model. This allowed us to test the robustness of our moderation analyses to contextualize our findings. Second, we examined non-deployed military partners, a population that is generally vulnerable to distress and yet woefully understudied. Third, we measured how non-deployed military partners experienced their anticipation of the reunion by using a rich qualitative measure from a stream-of-consciousness task that was specific to the context we were interested in understanding – how non-deploying military partners psychologically regulate during military deployments. This performance-based, standardized measure allowed us to focus our research questions on behavioral data that were not only self-reported, but also allowed us to understand the experiences of non-deployed military partners more deeply.

At the same time, it is critical to acknowledge several limitations of our study. Our findings should be considered within their context, among female non-deployed military partners of active service men, and therefore the generalizability of these findings should be further examined. Further, despite the general robustness of these findings in a relatively small sample, our sensitivity analysis revealed that based on our sample size, our main moderation analyses were only powered to detect a large effect. Thus, we encourage our findings to be replicated in a larger sample especially because our findings should be tested for their generalizability beyond our homogenous sample. Lastly, we found that anticipatory relational savoring did not moderate the association of psychological distress with *changes in* relationship satisfaction across the deployment. Given that we were accounting for about 70% of the variance in satisfaction during the deployment (when accounting for pre-deployment relationship satisfaction), the prediction of change appears to be quite a high hurdle to pass in this sample. We interpret this fact as a function of our small measurement interval, which was only about 4-weeks between satisfaction assessments and likely was not long enough to capture change in the construct over time. It also could be that deployment distress began before 2-weeks prior to the deployment for our sample (Erbes et al., 2012) and thus change would be hard to see if their distress pre-deployment was already similar to their during-deployment distress.

7.5 | Future directions

We suggest that future researchers measure deployment distress over a longer period of time when assessing any deployment-related constructs. It will be important for future studies to allow more flexibility in their measurement timing intervals, to allow more time to pass between measurements of constructs, and to capture change during deployment better. This will allow future studies to really determine the true impact of the deployment (pre, during, and post) on outcomes of interest and the amount of time that military families are burdened with this distress. Future studies should also examine the association of relational savoring among a sample dealing with more severe mental health distress (e.g., suicidal ideation) and lower relationship satisfaction. While anticipatory relational savoring may be beneficial, for this type of sample, additional resources may also be necessary. Furthermore, future studies should examine the association of anticipatory relational savoring longitudinally, right after the reunion and beyond (e.g., into future deployments) because individuals may experience disappointment when life returns to "normal." Finally, future research should examine different ethnic or socioeconomic groups as well as genders to understand the experiences of all types of military families more accurately as members of the armed forces continue to become more diverse. We also recognize the difficulty in recruiting samples of military families, and thus urge researchers to be aware of the inevitable smaller sample sizes that may result.

8 | CONCLUSION

Deployment separation provides a rich naturalistic space to examine attachment dynamics, and this study's findings demonstrate one unique factor that is related to the link of non-deployed military partners' psychological distress with their relationship satisfaction. Our findings show the preliminary support needed to demonstrate the possible long-term benefits that anticipatory relational savoring may have on military couples' relationship, such as continued or increased

relationship satisfaction, healthy relationship functioning, and prevention of relationship dissolution. As such, our findings provide support for integrating positive psychology within broader research on social psychology and interpersonal relationships.

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DATA AVAILABILITY STATEMENT

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

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ENDNOTE

[1] In a previous version of the manuscript, we examined how psychological distress predicted self-reported physical health. In response to reviewer feedback, we decided to remove the measure of self-reported physical health because it had too few of items to be a reliable and accurate measure of physical health. We re-focused our analyses on predicting relationship satisfaction as a function of psychological distress and anticipatory relational savoring.

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