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Responding to threatening online alternatives: Perceiving the partner's commitment through their social media behaviors

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Abstract

Two studies examined how committed people perceived their partners' social media behaviors and how the presence of these behaviors impacted feelings of relationship security and satisfaction. Study 1 identified the specific social media behaviors that signal commitment by a romantic partner. Study 2 then manipulated the identified partner social media behaviors to examine if buffering occurred for people with high levels of attachment insecurity. Study 2 found that when a person was led to believe their partner engaged in high commitment online behaviors, they reported greater felt relationship security and relationship satisfaction. Attachment avoidance, but not attachment anxiety, moderated the manipulation's effect on relationship satisfaction. Perceiving that a partner signals high commitment when the threat of online alternatives is salient may be one specific route to mitigate attachment avoidance's impact on relationship satisfaction.

Keywords

Social media, alternative threat, perceived partner commitment

Introduction

Researchers have noted the role that social media plays in the maintenance of close relationships (e.g., Ellison et al., 2007). However, social media can also open up the door

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for interactions with attractive alternatives that can threaten existing romantic relationships (McDaniel et al., 2017). Romantic partners have greater access to the social media accounts of attractive, desirable alternatives and many individuals' social media networks include past romantic partners (Muise et al., 2009). Additionally, information regarding the partner's social media activity (e.g., with threatening alternatives) is often ambiguous and can be perceived in a way that threatens the relationship (Bevan, 2017a). Social media connections to threatening alternatives can create jealousy and uncertainty for any committed person, but may be especially distressing to people who are sensitive to relationship threats (i.e., people high in attachment anxiety; Fraley, 2019; Muise et al., 2009). The present research aims to identify the specific partner social media behaviors that communicate commitment and buffer people high in attachment anxiety from the threat of online alternatives.

Encountering the partner's online alternatives

Social media can make potential threats to existing relationships salient. Drouin and colleagues (2015) found that participants who were asked to identify alternatives from their Facebook "friends" list reported significantly more alternatives than participants who listed alternatives from their memory, highlighting easier access to alternatives in an online context. Information regarding the partner's behavior on social media (e.g., liking an alternative's picture) often lacks context. This lack of context can allow pre-existing relationship insecurities (e.g., high levels of attachment anxiety and feelings of romantic jealousy) to color interpretation of the partner's online interactions with alternatives and negatively impact relationship satisfaction (Bevan, 2017b). Therefore, social media provides a unique context for assessing how a partner's online alternatives threaten the perceived stability and felt security within an existing relationship.

Romantic jealousy. Common responses to online exposure of romantic rivals and the partner's previous romantic interests include feelings of romantic jealousy. Social media usage has consistently been examined with the experience of romantic jealousy (Tandon et al., 2021). Jealousy responses to online alternatives can signal a desire to protect the current relationship, such as when greater Facebook jealousy has been associated with greater commitment (Drouin et al., 2015). However, jealousy responses to a partner's social media can also involve unhealthy relationship behaviors, such as greater social media surveillance of one's romantic partner (i.e., "creeping"; Tokunaga, 2011). This suggests the importance of better understanding how people perceive their partners' behaviors on social media, as these perceived intentions can have downstream consequences for relationship interactions and quality.

Romantic jealousy × attachment anxiety. Greater attachment anxiety has consistently been associated with greater levels of romantic jealousy (Guerrero, 1998). People higher in attachment anxiety also tend to report experiencing jealousy more intensely and frequently during instances of relationship threat, resulting in more destructive behaviors towards their partners (Huelsnitz et al., 2018; Sharpsteen & Kirkpatrick, 1997). These

unhealthy jealousy responses occur online as well, with people higher in attachment anxiety exhibiting higher levels of daily partner surveillance on social media (e.g., Facebook) as a result of jealous feelings (Marshall et al., 2013), which can impact relationship satisfaction (Bevan, 2017b).

The partner's social media may be particularly threatening to anxious people because of the salience of the partner's alternatives and visibility of the partner's romantic history (Frampton & Fox, 2018) making it a relevant context to assess how anxious people perceive and respond to online relationship threats. Perceiving desirable alternatives on the partner's social media network can also bring into question the partner's commitment level, which can trigger attachment anxiety's core fear of abandonment (Fraley, 2019; Rusbult, 1983). I therefore propose that the partner's interactions with online alternatives will exacerbate the positive association between romantic jealousy and attachment anxiety.

A multiple serial mediation model found that greater attachment anxiety was associated with the mediators of greater anticipation of partner infidelity, greater dyadic distrust, and greater cognitive jealousy, all of which were associated with greater cyber dating abuse (i.e., abusing a partner through the use of technology; Toplu-Demirtas et al., 2022). Additionally, Young and colleagues (2020) found that greater problematic social media usage (e.g., cognitive preoccupation and compulsive use of social media) and lower mental health were largest among highly anxious participants, highlighting the unhealthy impact social media can have on anxious people. It is therefore crucial for both individual and relationship well-being to better understand how people high in attachment anxiety interpret and respond to the partner interacting with threatening online alternatives.

Buffering attachment anxiety from online alternatives through perceived commitment

One way for relationships to avoid some of the harmful interpersonal consequences associated with high levels of attachment anxiety during threatening situations would be for *the partner* to buffer the anxious person. Attachment researchers have proposed that the *quality* of romantic relationships involving persons with high levels of attachment insecurity may even *depend* on their partners' regulation attempts (Overall & Simpson, 2015).The responses of romantic partners when anxious persons' attachment systems are activated from relationship threat are therefore crucial determinants of positive relationship interactions that lay the groundwork for achieving greater feelings of security. According to Arriaga and colleagues' Attachment Security Enhancement Model (ASEM; 2014), partners of people with high levels of attachment insecurity may be able to provide *momentary* mitigation of an activated attachment system specifically during instances of *relationship threat*. Step 1 of the ASEM posits how state-like attachment anxiety, which is activated by a threatening situation, can be mitigated by partner buffering. Because online alternatives are threatening, the current work is focused on mitigating feelings of insecurity in the moment.

With attachment anxiety's fear of abandonment, Arriaga et al. (2018) proposed that *perceiving greater commitment from one's partner* is one way to specifically buffer

attachment anxiety *in the moment* and promote *greater relationship well-being* as a result. Greater levels of within-person variability in (i.e., state) attachment security are associated with greater levels of relationship well-being by having one's basic psychological needs met through a secure relationship (La Guardia et al., 2000). Within-person fluctuations in attachment have also been associated with relationship well-being across time (Girme et al., 2018) and is why it is important for assessing *state* attachment security in the current work as an indicator of relationship well-being. Identifying online behaviors that communicate high partner commitment may help to buffer relationships from high levels of attachment anxiety.

Expressing relationship commitment through online communications. Online expressions that convey one is in a committed relationship are known in the literature as dyadic displays (DDs). Managing an online relationship status, for example, has previously been linked with greater relationship quality (Brody et al., 2016). Krueger and Forest (2020) found that participants who endorsed greater motivation to protect the relationship from alternative threat (e.g., "I want to discourage any romantic or sexual interest from others") reported greater use of DDs on Facebook. These studies suggest that there are specific online behaviors that romantically involved people express their commitment through. Signaling greater commitment is beneficial for any relationship (e.g., Joel et al., 2018), but may especially be meaningful for anxious people during situations with threatening online alternatives. It is important to note, however, that these previous studies referenced public facing online behaviors that were available for anyone in the participant's social media network to perceive. How these behaviors are then in turn perceived by the poster's romantic *partner* remains an empirical question and is a focus of the current work.

To create an effective perceived partner commitment manipulation for people high in attachment anxiety, it is important to acknowledge the barrier anxiety's perceptional bias creates with accurately detecting the partner's commitment; anxiety consistently has been associated with *under*perceiving the partner's commitment (e.g., Rodriguez et al., 2019). I therefore propose that the partner would need to *explicitly* disclose the high commitment online behaviors to the anxious person in order to maximize the chance that they are accurately detected. Few studies have assessed buffering attachment anxiety with alternative threat (e.g., Kim et al., 2018), or have assessed this association within the context of social media. With social media's ability to serve as a platform for communicating commitment to a romantic partner, social media is an important context to assess partner buffering of attachment anxiety.

Hypotheses. I hypothesized that people with high levels of anxiety would perceive information regarding their partners interacting with online alternatives as distressing and that I would not find this association with people high in avoidance. Specifically, I predicted a positive association between attachment anxiety and reported levels of discomfort, worry, and jealous emotions after inducing alternative threat, and no significant association between attachment avoidance and those outcomes (H1). When threatened by the partner interacting with online attractive alternatives, I proposed that online behaviors signaling high levels of partner commitment could be used as buffers

against a hyperactivated anxious attachment system. Specifically, I hypothesized that anxious participants in a perceived partner commitment buffering condition would report greater levels of momentary feelings of relationship security (controlling for baseline levels; H2a) and higher levels of relationship satisfaction (H2b) compared to participants in a control condition. Attachment avoidance was included in all models in order to determine the partner buffering's unique effect on attachment anxiety.

The current research

The present research identified an extensive list of specific online behaviors that express commitment to a partner and examined these behaviors as potential buffering strategies for anxious people against alternative threat. Two pilot studies first identified the specific social media behaviors that communicate commitment by a romantic partner. A repeated-measures design in Study 1 then examined the list of piloted social media behaviors to select the final four that elicited the greatest levels of perceived partner commitment and likelihood that the behavior would occur. These behaviors were then randomly assigned to participants in Study 2 after experimentally inducing alternative threat in a social media context. Study 2 assessed how the commitment behaviors impacted participants' momentary feelings of relationship security and relationship satisfaction. The University of Rochester's Institutional Review Board approved all study protocols. Hypothesis 1, part of Hypothesis 2, and their respective analyses were preregistered on OSF[1]: https://osf.io/9sj6t/?view_only=80725a03f6de4c08938996f5b810bcee.

Pilot studies

To create a comprehensive list of online commitment behaviors, I needed to answer two research questions: 1) Which specific online behaviors express romantic commitment? and 2) Of these identified behaviors, which express the greatest levels of commitment and are the most likely to occur in real life?

In the first pilot study, I asked 240 undergraduates at the University of Rochester to list up to 25 online behaviors that, "might announce through social media to the rest of their social network that they are taking part in a committed relationship." I then had a research assistant sort through the provided answers and provide an organized list of the behaviors. This list of 81 online behaviors was then given to a second sample of 149 undergraduates and they were asked to report on 1) how likely someone would do the behaviors if, "they were starting to date someone and wanted to communicate their interest in continuing the relationship" and 2) how committed their partners would be perceived as if they did the behaviors. The 81 online behaviors included any technologically mediated behaviors provided by participants. Using information from the pilot studies, I was able to condense the list to 24 online behaviors. These 24 behaviors were reported by participants as the most likely to occur and as eliciting the greatest commitment (see Table S1 in the supplemental online material for the exact wordings).

Study 1

My goal in Study 1 was to include as many relevant online behaviors as possible, without taxing participants in a follow-up survey. I sought to answer the question: Which online behaviors make the greatest differences in perceived commitment with their presence or absence? From the 24 behaviors identified by the pilot studies, I created vignettes with hypothetical couples in which one partner performed the online behavior, or did not perform the behavior (i.e., to include instances of lower perceived commitment). By doing this, I was able to assess which online behaviors make the greatest *difference* in perceived commitment. There were 48 online behaviors in total tested to be as comprehensive as possible in determining the online behaviors that influence perceived partner commitment to the greatest extent.[2]

Methods

Participants and procedure. Participants in Study 1 provided consent before starting the online survey. An a priori power analysis (G*Power 3; Faul et al., 2007) was conducted and determined that to detect a small effect size (f) = 0.20, with power = .90 and alpha = .05 for 12 groups with 4 repeated measures, approximately 72 participants were needed per cluster of four vignettes (12 clusters total). However, I took into account a 20% attrition rate and aimed for around 100 participants per cluster. Participants from ResearchMatch (N = 900) self-identified as 82.5% Women, 3.3% Non-Binary; 71.3% Heterosexual, 14% Bisexual, 3.2% Pansexual, 2.8% Lesbian, 2.7% Gay; 84.4% white, 5% Black or African, 4.2% Asian, 4.7% wrote in their race (e.g., multiracial); 92.1% non-Hispanic/Latinx; M_{age} = 37.42, SD_{age} = 14.30, *Median* = 33.00, *Range* = 17–95.

Participants in Study 1 were required to indicate they have been in at least one previous committed, romantic relationship lasting at least 2 months, frequently use at least one of the main social media platforms (e.g., Facebook, Instagram), and have familiarity with the most popular dating applications (e.g., Tinder, Bumble) in order to participate. In the sample, 75.5% of participants indicated they have previously been in 2–5 committed romantic relationships lasting at least 2 months (M = 4.62 relationships, SD = 4.30; 32.8% currently in a committed relationship, 30.1% engaged or married, 19.0% single). For social media, 91.6% of participants reported frequently using Facebook and 71.9% frequently used Instagram. With dating applications, 40.1% of participants reported having used Tinder, 29.6% used Bumble, 27.6% used OkCupid, and 23.6% used Match.com. Participants who indicated never being in a romantic relationship (n = 3), who did not provide a frequency for social media usage (n = 86), did not complete the attention check (n = 80), or failed the attention check (n = 43) were excluded from analysis.

Participants were randomly assigned to read four out of the possible 48 vignettes (24 high commitment items and 24 low commitment items) and report on the perceived commitment level of the partner performing the online behavior. Difference scores were then calculated between the high and low perceived partner commitment versions for each of the 24 behaviors. The top four online behaviors that resulted in the greatest difference in perceived partner commitment were selected for Study 2 (see Table 1).

Vignettes. Each participant read four total vignettes, which only differed based on the names of the couple (some being gender neutral), the number of months the couple had been dating (all designed to be newly formed couples that were dating for either three, four, five, or 6 months) and the commitment behavior that was expressed.

The prompt language included, "Please imagine a couple, Matt and Emily, who have been dating for about four months. Since they have started dating, Matt [deleted his dating apps, without Emily having to ask Matt to (*high commitment version*)] or [has not deleted his dating apps, although Emily has not asked him to (*low commitment version*)]. They are going to go see a movie together tonight, with dinner afterwards. Things seem to be going well with Matt and Emily, although they haven't talked yet about where the relationship might be going from here."

Outcome measures

Perceived partner commitment. Participants filled out a 4-item version of the Dedication Subscale of Owen et al.'s (2011) Revised Commitment Inventory Dedication (e.g., "Matt's relationship with Emily is clearly part of Matt's future life plans," and "Matt may not want to be with Emily a few years from now," on a scale of 1 (strongly disagree) to 7 (strongly agree).

Results

To test for differences across the clusters of four vignettes that each participant was randomly assigned to, a one-way ANOVA was conducted with the clusters (12 levels) predicting the average level of the outcomes (i.e., perceived partner commitment). No significant difference across clusters was observed, $F(11,26) = 0.10$, $p = 1.00$, indicating that it did not make a difference which cluster of four vignettes a participant received. To then assess which social media behaviors made the greatest impact on perceived partner commitment, the low commitment item version was subtracted from the high commitment item version's level of perceived partner commitment. By doing so, the greatest difference in the presence and absence of a behavior was determined to implement in Study 2. The four items that resulted in the greatest difference in perceived partner commitment are presented in Table 1. All of the items involved attenuating online alternative threat (e.g., "Your partner has deleted their dating applications, without you having to ask them to," and "Your partner has ignored flirtatious messages from other people on social media").

Brief discussion

Findings from Study 1 provide the specific social media behaviors that communicate the greatest levels of perceived partner commitment. By identifying these behaviors, researchers now have a better sense of which social media behaviors are effective in communicating commitment by a romantic partner. It is interesting to note that \ the social media behaviors specifically addressing alternative threat (i.e., the partner deleting one's dating applications, ignoring flirtatious online messages, indicating that they are in a

relationship, and unfollowing alternative threats on social media) produced the greatest differences in perceived commitment. The presence of online alternatives may therefore make perceived partner commitment more salient. Indeed, Black and Reis (2022) found that perceived partner commitment is positively associated with perceptions of the partner's devaluation of attractive alternatives. After identifying these behaviors, I sought to experimentally manipulate the partner engaging in these commitment-signaling online behaviors in response to a hypothetical online alternative threat in Study 2.

Study 2

The purpose of Study 2 was to empirically test the protective function of the high commitment partner online behaviors identified from the pilot studies and Study 1. In Study 2, I experimentally manipulated the threat of one's partner interacting with attractive alternatives on social media before randomly assigning participants to either read a partner buffering response or a control response to assess how people high in attachment anxiety perceived the encounter. By inducing the partner to respond in a way that expresses high commitment to the anxious person when threatened by alternatives, I was able to assess if these online behaviors promoted momentary relational well-being (i.e., greater momentary feelings of relationship security and relationship satisfaction). Attachment concerns regarding a romantic partner may be especially salient when in newly formed relationships and before partner expectations are stable (Hazan & Shaver, 1994). I therefore only recruited people in newly formed relationships for Study 2.

The current study's hypothetical scenario involving alternative threat was developed with the support of previous research to induce feelings of jealousy. Miller et al. (2014) found that online photos of the current partner touching alternatives (e.g., lower back touch) resulted in greater reports of participant jealousy than in the no touch condition. In Study 2, I had participants first read that they had scrolled through the partner's social media page and saw that a recent photo showed the partner's arm around an attractive alternative. Participants in the current study went on to read that when looking at the attractive alternative's account, the participant realized that the alternative had been liking and commenting on the partners' social media content in a flirtatious manner. Fleuriet et al.'s (2014) hypothetical social media scenario involved an attractive alternative leaving a flirtatious post on the partner's profile and also lead to increased reports of jealousy. I hypothesized that attachment anxiety would have a positive association with reported feelings of discomfort, worry, and jealous emotions after imagining their partner interacting with an online alternative (H1).

Participants were then randomly assigned to read either that their partners responded with two high commitment buffering behaviors online, or read a control vignette in which the partner discussed a funny animal video. It is important to note that in this study, the partner explicitly communicates to the participant that they have engaged in high commitment online behaviors. Because the high partner commitment behaviors both involved the partner attenuating alternative threat, manipulation check items measuring both perceived partner commitment and perceived partner devaluation of the alternative were included. This allowed me to test which construct(s) the buffering condition elicited.

Participants filled out a pre- and post-measure of felt security, and post-measure of relationship satisfaction to determine to which extent the safe strategies enhanced individual and relational well-being in comparison to the control condition. Specifically, I hypothesized that anxious participants in the perceived partner commitment buffering condition would report higher levels of momentary felt security (controlling for baseline security) (H2a) and higher levels of relationship satisfaction (H2b) compared to a control condition with no partner buffering. Attachment avoidance was included in all models in order to determine the partner buffering's unique effect on attachment anxiety.

Methods

Participants and procedure. An a priori power analysis (using G*Power 3.1) testing a difference in slopes across two conditions and specifying: two tails, a small effect size (Δ in slope = .062), an alpha of .05, and power of .80 resulted in a needed sample size of 289 per condition (Faul et al., 2007).

Participants were recruited through the University of Rochester's undergraduate Psychology participant pool, Prolific, and ResearchMatch. Fifty-seven participants were excluded for not indicating that they were in a committed, monogamous relationship, 31 participants were excluded for dating less than 3 months or greater than 2.5 years (i.e., the final sample was of people in newly formed relationships), 112 participants were excluded for providing blank survey responses, 33 participants were deleted for writing about something other than what the alternative threat prompt instructed (e.g., did not imagine the provided scenario), 47 participants were deleted for writing about something other than what the partner buffering threat prompt instructed, six participants were deleted for misinterpreting the control prompt, three participants were deleted for not providing their partners' names to fill in the prompt, and two participants failed both attention checks.[3] The final sample consisted of 573 total participants ($n_{prolific}$ = 338; n_{sona} = 131; $n_{researchmatch}$ = 106; n_{PPC} = 291; $n_{control}$ = 282). Twenty-three percent of the sample were students.

A majority of the participants self-identified as Women (70.8%), reported their partner's self-identified gender as being a man (69.6%), self-identified as Heterosexual (72.3%; 15.1% Bisexual), 97.6% reported being in a committed monogamous relationship (2.4% married or engaged), self-identified as White or European (58.6%; 12.3% Black, African, or Caribbean; 14.6% Asian; 15% Latin American; 1.6% Middle Eastern or Arab; 0.9% Native or Indigenous), 71.1% Non-Hispanic/Non-Latino(a), were an average of 25.00 years old (SD_{age} = 9.05 years, *Median* = 22.00 years old, *Range* = 18–87), and reported an average relationship length of 11.50 months (SD_{length} = 6.69 months).

Pre-manipulation measures

Trait attachment security. Participants completed the 12 most informative items (i.e., those items having the greatest loadings on the factor) of the Experiences in Close Relationships Scale-Revised scale (ECR-R; Fraley et al., 2000) assessing attachment anxiety (e.g., "I'm afraid that I will lose my partner's love") and attachment avoidance (e.g., "I don't feel comfortable opening up to romantic partners"). The factor structure of

the ECR-R was presented by Sibley and Liu (2004) and used to select these items. Participants were asked to reflect on how they generally feel in romantic relationships and to use 7-point scales to answer the items (1 = *strongly disagree*, 7 = *strongly agree*). Both the anxiety subscale (α = .87) and avoidance subscale (α = .79) reached adequate internal consistency.

State attachment security. Participants rated 7 items from the Murray et al. (2003) Felt Acceptance subscale on items such as "my partner loves me" and "my partner overlooks my faults" on a scale of 1 (not at all) to 7 (very much so) as a measure of felt security. The items were internally consistent (α = .84).

Alternative threat prompt. All participants read the following prompt:

> "Please imagine that you are scrolling through [partner's name]'s Instagram account one day and you notice that [partner's name] was tagged in a recent group picture. In the picture, [partner's name]'s arm is around an unfamiliar, attractive [same gender identity as the participant] in an intimate way. You click on the picture to see who this attractive [same gender identity as the participant] is and realize that the attractive [same gender identity as the participant] has been liking and complimenting [partner's name] in a flirtatious way on all of [partner's name]'s pictures. You find yourself wondering how [partner's name] feels about this attractive [same gender identity as the participant]. Even if you don't think [partner's name] would act this way, we encourage you to try to imagine the possibility. Please take the next minute to try to visualize this situation in your mind as best you can and write a few sentences (at least 150 characters) about how it might make you feel."

Partner buffering prompt. After participants provided at least 150 characters in the response box, they responded to two items regarding their level of worry and discomfort surrounding the alternative and a list of jealous emotions.

Participants were then randomly assigned to either read the perceived partner commitment buffering condition, "While you are wondering how [partner's name] feels about the attractive [same gender as the participant], [partner's name] mentions that they have told anyone who has direct messaged or flirted online with them that they are in a relationship and have unfollowed anyone on social media who has expressed romantic interest in them," or the control condition, "While you are wondering how [partner's name] feels about the attractive [same gender as the participant], [partner's name] mentions a funny animal video that [partner's name][4] saw on Instagram earlier that day." After participants provided at least 50 characters in the response box, they responded to four items regarding the level of perceived partner commitment and perceived partner devaluation as checks for the buffering prompts.

Post-alternative threat manipulation measures

Alternative threat manipulation checks. Participants read the prompt, "Please answer the following questions as if the preceding situation had actually occurred," and answered the items, "How uncomfortable would you feel if you saw a picture on social media with

[partner's name]'s arm around an attractive [same gender identity as participant]?" on a scale of 1 (not at all uncomfortable) to 7 (extremely uncomfortable) and, "How worried would you be that an attractive [same gender identity as the participant] was liking and flirtatiously complimenting [partner's name] on all of [partner's name]'s Instagram pictures?" on a scale of 1 (not at all worried) to 7 (extremely worried) to assess for levels of threat induced by the imagined alternative.

Jealous emotions. Participants were instructed to indicate, "to which extent would you be feeling the following if the preceding situation had actually occurred," and responded to a list of 12 jealous emotions (e.g., betrayed, angry, distrustful, and hurt; Reactions to Relational Threats Scale; Buunk, 1997) on a scale of 1 (not at all) to 7 (very strongly; $\alpha = .96$).

Post-perceived partner commitment manipulation measures

Partner buffering check. To assess if the high partner commitment social media behaviors elicited greater feelings of perceived partner commitment and perceived partner devaluation, participants rated the follow items on a scale of 1 (not at all) to 7 (very much so) after the following prompt, "Please answer the following questions as if [partner's name] had actually responded in the way previously described."

Perceived partner commitment. "…to which extent would you feel [partner's name] is committed to your relationship?"

Perceived partner devaluation of alternatives. "…to which extent would you think [partner's name] is romantically interested in attractive people?". This item was reverse-coded with higher values reflecting greater perceived partner devaluation.

Outcome variables

Momentary felt acceptance. Participants rated the 7 items that had previously been rated before the manipulation, but were now adapted to reflect *momentary* feelings of security (e.g., "*In this moment*, I feel like my partner loves me"; $\alpha = .92$).

Relationship satisfaction. Participants filled out the 4-item Couples Satisfaction Index (CSI; Funk & Rogge, 2007), rating items such as, "I have a warm and comfortable relationship with my partner," on a scale of 1 (not at all true) to 6 (completely true) and items such as, "In general, how satisfied are you with the relationship between you and [partner name]?" on a scale of 1 (not at all) to 6 (completely; ($\alpha = .94$).

Data analytic plan

Correlations between the key variables are presented in Table 2. A dummy variable was created to represent the difference between the perceived partner commitment buffering (coded "1") and control conditions (coded "0" and served as the reference group). T-tests on the manipulation checks sought to determine the level of perceived partner

commitment and perceived partner devaluation that the buffering and control conditions elicited. The main effects of mean-centered attachment anxiety ($M = 3.53$, $SD = 1.38$) and avoidance ($M = 2.48$, $SD = 1.04$), the condition dummy code, and their interactions were regressed on the manipulation checks (alternative threat and partner buffering), followed by the outcomes of felt security[5] (($M = 5.48$, $SD = 1.31$) (while controlling for baseline felt security)) and relationship satisfaction ($M = 5.04$, $SD = 0.97$). The regression analyses predicting the alternative threat manipulation outcomes (i.e., discomfort, worry, and jealous emotions) determined online alternative threat's association with attachment insecurity. The regression analyses predicting the outcomes of felt security and relationship satisfaction determined if partner buffering on social media resulted in more positive outcomes for attachment anxiety, uniquely from attachment avoidance.

Results

Was the alternative threat manipulation threatening to anxious participants?. The first analysis examined the experiences of participants with greater levels of attachment insecurity and how they felt after reading the alternative threat prompt. Attachment anxiety and avoidance were entered as predictors of the item asking about the level of discomfort they would have felt seeing a picture on social media with their current partner's arm around an attractive alternative. Both attachment anxiety and avoidance were significant predictors, with greater levels of *anxiety* being associated with *greater* levels of reported discomfort, $\beta = .28$, $F(2, 569) = 43.23$, $p < .001$, 95% C.I. [.26, .49], while greater levels of *avoidance* were associated with *lower* levels of reported discomfort, $\beta = -.12$, $F(2, 569) = 7.45$, $p = .007$, 95% C.I. [−.36, −.06].

Attachment anxiety and avoidance were then entered into a model predicting the item asking about how worried they would have been regarding the attractive alternative liking and flirtatiously complimenting their partner on social media. Both attachment anxiety and avoidance were significant predictors, with greater levels of *anxiety* being associated with *greater* levels of worry, $\beta = .34$, $F(2, 570) = 64.03$, $p < .001$, 95% C.I. [.34, .56], and greater levels of *avoidance* associated with *lower* levels of reported worry, $\beta = -.09$, $F(2, 570) = 3.98$, $p = .047$, 95% C.I. [−.30, −.00].

Lastly, attachment anxiety and avoidance were regressed onto the composite of jealous emotions. Attachment anxiety was a significant predictor, $\beta = .37$, $F(2, 570) = 76.14$, $p < .001$, 95% C.I. [.35, .55], with greater levels of anxiety being associated with significantly *greater* levels of jealous emotions after the alternative threat manipulation. Avoidance was not a significant predictor, $\beta = -.06$, $F(2, 570) = 1.92$, $p = .166$, 95% C.I. [−.23, .04]. Together, these analyses found evidence that the partner's interactions with attractive alternatives on social media result in anxious people reporting significantly greater levels of discomfort, worry, and jealous emotions. These results support Hypothesis 1.

Did the partner buffering condition elicit its intended constructs?. In order to determine how the conditions impacted participants, a series of t-tests were performed on the post-manipulation perceived partner commitment and devaluation items. Participants in the partner buffering condition reported significantly greater perceived partner commitment

(M_{PPC} = 5.39, SD = 1.62) and greater perceived partner devaluation (M_{PPD} = 5.12, SD = 1.65) than participants in the control condition (M_{PPC} = 4.27, SD = 1.77; M_{PPD} = 4.21, SD = 1.76), t (571) = 6.36, $p < .001$ and t (571) = 7.87, $p < .001$, respectively. Together, these results confirm that the partner buffering manipulation was successful in creating higher levels of relationship-promoting cognitions regarding the partner's online behaviors.

Did the partner buffering result in greater felt security for anxious participants?. First, the main effects of centered attachment anxiety and attachment avoidance, the condition dummy code, their interactions, and baseline felt security (M = 5.86, SD = 0.89) were regressed on post-manipulation momentary feelings of felt security. Full results are presented in Table 3. The condition dummy code produced a significant effect on the outcome, β = .09, F (1, 564) = 6.63, p = .010, 95% C.I. [.05, .40], with participants in the partner buffering condition reporting greater levels of momentary felt security. There was also a significant main effect of baseline felt security predicting the post-manipulation felt security, β = .55, F (1, 564) = 200.79, $p < .001$, 95% C.I. [.70, .93], with greater baseline levels being associated with greater post-manipulation levels. Neither the main effect of attachment anxiety, β = −.04, F (1, 564) = 0.75, p = .388, 95% C.I. [−.14, .05], or attachment avoidance, β = −.02, F (1, 564) = 0.09, p = .768, 95% C.I. [−.15, .11] were significant predictors. No other effects in the model were significant, $ps > .431$.[6] I therefore did not find evidence in support of H2a.

Did the partner buffering result in greater relationship satisfaction for anxious participants?. A third model predicted the outcome of relationship satisfaction with full results presented in Table 4. The condition dummy code produced a significant effect on the outcome, β = .10, F (1, 565) = 7.20, p = .008, 95% C.I. [−.33, −.05], with participants in the partner buffering condition reporting greater levels of relationship satisfaction. There were also significant main effects of both attachment anxiety and avoidance with greater levels of both being negatively associated with relationship satisfaction, β = −.19, F (1, 565) = 11.56, $p < .001$, 95% C.I. [−.21, −.06], and β = −.47, F (1, 565) = 79.40, $p < .001$, 95% C.I. [−.53, −.34], respectively. Anxiety did not significantly moderate the condition comparison as I had predicted, β = .01, F (1, 565) = 0.06, p = .813, 95% C.I. [−.09, .12]. I therefore did not find evidence in support of H2b. Unexpectedly, attachment avoidance did significantly moderate the perceived partner commitment buffering condition's effect on relationship satisfaction, β = .12, F (1, 565) = 4.84, p = .028, 95% C.I. [.02, .30]. Simple effects analyses revealed that greater avoidance was associated with lower relationship satisfaction in both the control, β = −.47, F (1, 565) = 79.40, $p < .001$, 95% C.I. [−.53, −.34], and buffering conditions, β = −.30, F (1, 565) = 27.25, $p < .001$, 95% C.I. [−.38, −.17]. Of note is that the negative association was smaller in magnitude in the buffering condition. This suggests potential mitigation of the harmful impact of attachment avoidance on relationship satisfaction in the buffering condition and will be explored further in the general discussion.

Why was the partner buffering ineffective for anxiety?. To determine a potential cause for the lack of moderation with anxiety and the partner buffering condition, I conducted some

post-hoc regressions with the main effects of anxiety, avoidance, the condition difference, and their interactions on the condition manipulation checks (i.e., perceived partner devaluation and commitment). Regardless of condition, greater attachment anxiety was significantly associated with *lower* perceived partner devaluation, $\beta = -.24$, $F(1, 567) = 16.74$, $p < .001$, 95% C.I. [−.46, −.16], whereas avoidance was not, $\beta = -.06$, $F(1, 567) = 1.15$, $p = .285$, 95% C.I. [−.29, .09]. Attachment avoidance, however, regardless of condition was significantly associated with *lower* perceived partner commitment, $\beta = -.13$, $F(1, 567) = 4.97$, $p = .026$, 95% C.I. [−.41, −.03], whereas anxiety was not, $\beta = -.11$, $F(1, 567) = 3.22$, $p = .073$, 95% C.I. [−.29, .01]. Together, these results suggest that the two conditions did not produce differences in perceptions of the partner for people high in attachment anxiety. Regardless of condition, higher levels of anxiety were a barrier for people to perceive the partner as uninterested in alternatives and may therefore have been ineffective at quieting their activated attachment systems after experiencing alternative threat.

Brief discussion

I hypothesized that the threat of an attractive alternative interacting with a partner online would be extremely distressing to an anxious person. Study 2's results supported Hypothesis 1, with anxious participants reporting greater discomfort, worry, and jealous emotions after the alternative threat manipulation. These findings could speak to a hyperactivated attachment system. Avoidant participants instead reported significantly lower levels of discomfort and worry, potentially speaking to a deactivating reaction to alternative threat (Bowlby 1969/1982, 1973; Mikulincer & Shaver, 2019).

I found evidence that the partner buffering manipulation induced greater levels of both perceived partner commitment and partner devaluation in comparison to the control condition. I hypothesized that attachment anxiety would moderate the partner buffering effect to create greater momentary feelings of security and relationship satisfaction, but did not find evidence to support hypothesis 2a or 2b. Unexpectedly, in the model predicting relationship satisfaction, attachment *avoidance* significantly moderated the condition effect. Study 2 found some evidence of perceiving greater partner commitment through online communications as dampening the harmful effect of attachment avoidance on relationship satisfaction.

Together, these results suggest that situations with alternatives are perceived as threatening to anxious people (supporting Hypothesis 1) and that the partner buffering manipulation was successful in creating greater perceptions of partner commitment and devaluation, regardless of attachment orientation. However, Hypothesis 2a and 2b were not supported in that attachment anxiety did not produce a significant main effect or significantly interact with the condition effect to produce differences in the outcomes. Implications for the significant moderation of avoidance on the condition effect will be discussed in the general discussion.

General discussion

Social media can be relationship-promoting by giving individuals an opportunity to express their commitment to their romantic partners (Krueger & Forest, 2020), but social

media can also be relationship-threatening by exposing individuals to their partners' online interactions with attractive alternatives (McDaniel et al., 2017). The current work provided two important theoretical contributions. The first contribution was the identification of an extensive list of specific interpersonal behaviors that communicate to one's romantic partner and social media network that they are romantically committed and uninterested in alternatives. The second contribution was the confirmation that online alternatives are perceived as distressing to people high in attachment anxiety and that this association was not observed with avoidant or secure people. The present work's findings therefore have identified a context in which anxious people, who already experience relational difficulties, experience greater negative relationship affect (e.g., jealous emotions). Although the buffering paradigm was unsuccessful for people high in anxiety, I have identified a situation that anxious people could benefit from partner buffering. For example, Kim et al. (2018) found that affectionate touch was one way to buffer anxiety from the experience of romantic jealousy in response to threatening alternatives and could be applied to the context of social media. The high partner commitment condition did, however, produce greater levels of reported relationship security and satisfaction across participants and should be further explored as a way to buffering relationships from online alternative threats, regardless of attachment style.

Theoretical implications and future directions

Buffering attachment anxiety. The lack of support for Hypothesis 2 may speak to Study 2's manipulation ineffectiveness, or it may be the case that it is more difficult to buffer anxious partners' discomfort, worry, and jealousy once activated by online alternative threats. In reviewing the written responses provided by the participants in the buffering condition, there was some consensus that it was not completely believable for the partner to be highly committed if the partner had just previously had their arm around an alternative in an Instagram photo. Perhaps the manipulation needs a more realistic transition from inducing alternative threat to inducing partner buffering to make them more believable, especially for anxious people who may already be skeptical of the partner's commitment level (Campbell et al., 2005). Brady and Baker (2022, p. 2) emphasized, "there is a critical need to expand how attractive alternatives are conceptualized and studied." This sentiment, coupled with the prevalence of alternatives found online (Muise et al., 2009), suggests that future research should continue to assess how online alternatives pose threats to committed relationships.

Buffering attachment avoidance. Surprisingly, there was significant moderation of attachment avoidance in Study 2. Avoidants reported significantly *lower* levels of worry and discomfort after the alternative threat manipulation. These results suggest that highly avoidant people may disengage from or deactivate in response to situations involving the partner and alternatives, or at least outwardly communicate less distress than their anxious or secure counterparts (Bowlby 1969/1982, 1973; Mikulincer & Shaver, 2019). It is important to note that this finding does *not* mean that avoidants do not find the partner's alternatives to be threatening. Previous research has found that highly avoidant people

tend to *amplify* their own alternatives, and it is possible that through projective effects, highly avoidant people perceive their partners as amplifying alternatives as well (DeWall et al., 2011; Neal & Lemay, 2017; Overall & Sibley, 2008). Projection may help to explain why the negative association between avoidance and relationship satisfaction was lessened when the partner expressed commitment through social media. For the partners of people high in avoidance, an online setting may be a softer way to express commitment in a manner that respects the avoidants' autonomy concerns (Arriaga et al., 2014; 2018) and should be explored in future studies.

Limitations

The present research used self-report measures to test the proposed associations, and it is therefore necessary to examine these processes with more diverse methods (i.e., behavioral measures) to determine how buffering online alternative threat unfolds in ongoing online interactions. Similarly, attachment was measured by a self-report measure and some researchers advise using a behavioral assessment for attachment. The order of the alternative threat manipulation check items and the jealous emotions measure in Study 2 were not randomized. Therefore, the alternative threat manipulation check items could have influenced participants' responses on the jealous emotions measure. A pre-manipulation measure of relationship satisfaction was not included in Study 2 and therefore changes in levels of satisfaction as a result of the partner buffering manipulation cannot be established. The samples consisted of participants from America and the United Kingdom and therefore represent data from people in W.E.I.R.D. (Western, Educated, Industrialized, Rich, Democratic) populations (Henrich et al., 2010). The results therefore cannot be generalized to interdependent cultures. Study 2's sample consisted of only people in less-established relationships; relationship length should be included as a potential moderator of these processes in future research. Participants were not asked about disability and this should have been included in the demographics. Lastly, the samples primarily consisted of women reporting that they were involved in monogamous relationships with men. It is therefore necessary to explore these buffering processes in a more diverse sample, with participants represented from various gender identities, sexual orientations, and involved in consensually non-monogamous relationships.

Conclusion

The present work found that romantic partners interacting with attractive alternatives on social media is a uniquely distressing situation for people high in attachment anxiety. Anxious people reported greater levels of discomfort, worry, and jealous emotions in comparison to less anxious people and avoidants in response to a hypothetical online alternative threat. Study 1 identified the specific online behaviors that express commitment to a romantic partner and interestingly, they were all related in some way to the partner dealing with attractive online alternatives. I found that participants who were led to believe their partners expressed greater commitment on social media reported greater levels of perceived partner commitment and devaluation as well as greater felt relationship

security and relationship satisfaction in comparison to participants in the control condition. The negative association between avoidance and relationship satisfaction was mitigated to an extent in the perceived partner commitment condition in comparison to avoidants in the control condition. Perceived partner commitment should be explored in additional studies as a potential softening strategy for highly avoidant partners when facing online alternatives and with a more representative sample to determine if these effects generalize to men and non-binary people, and people in the LGBTQ+, BIPOC, and CNM communities.

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Open research statement

As part of IARR's encouragement of open research practices, the author has provided the following information: This research was preregistered. The aspects of the research that were preregistered were Hypothesis 1, Hypothesis 2a, and their respective analyses. The preregistration was submitted to: https://osf.io/9sj6t. The data and materials used in the research are available and can be obtained by emailing Dr. Alexandra E. Black at alexandra.black@pitt.edu.

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Supplemental Material

Supplemental material for this article is available online.

Notes

1. The preregistration should have included jealous emotions as a *post*-alternative threat check and not a *pre*-manipulation variable for Hypothesis 1. The only tested outcome for Hypothesis 2 that was preregistered was felt security—relationship satisfaction was not. I acknowledge that this is a limitation of the preregistration.
2. A within-persons design with four vignettes per participant was determined as the most feasible design, given limited funding.
3. None of the data were outliers on all of the independent and dependent variables, using a Leverage criterion of .031304 ((3*6)/575).
4. The control condition originally had the wording, "[partner's name] mentions that they saw a funny animal video," and participants misinterpreted this gender-neutral pronoun as meaning the

partner had watched the video with the alternative and was changed accordingly. Six participants were removed from the final sample for this reason.

5. As preregistered, analyses were also performed with felt insecurity as an outcome, although these results were similar to the felt security model (i.e., no evidence of moderation) and did not materially add to the current manuscript (which is focused on well-being outcomes).
6. Gender was included in a secondary analysis predicting felt security, $\beta = .06$, $F(1, 563) = 2.93$, $p = .087$, 95% C.I. [−.01, .12], and relationship satisfaction, $\beta = .05$, $F(1, 564) = 2.19$, $p = .139$, 95% C.I. [−.01, .09]; Gender was not a significant predictor in either analyses. Including the gender term did not materially change the results and was therefore excluded from additional analyses.

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Appendix

Table 1. Difference values between the high and low perceived partner commitment items.

	PPC
Your partner has [not] deleted his/her/their dating applications, without you having to [although you did not] ask him/her/them to.	1.79
Your partner has [not] unfollowed people on social media who have expressed romantic interest in him/her/them.	1.43
Your partner has [not] told people who have direct messaged or flirted online with your partner that he/she/they is in a relationship.	1.42
Your partner has ignored [responded to] flirtatious messages from other people on social media.	1.08

Note. "PPC" represents perceived partner commitment. The bracketed text represents how the items were worded to represent the low commitment versions of the online behaviors in Study 1; only the high commitment versions were included in Study 2.

Table 2. Correlations of key variables in Study 2.

Variable	Anxiety	Avoidance	B. Felt Accep	Jealous Emotions	Uncomfortable	Worried	M. Felt Accep
Anxiety	1						
Avoidance	.35**	1					
B. Felt Accep	−.34**	−.46**	1				
Jealous Emotions	.35**	.07	−.07	1			
Uncomfortable	.24**	−.02	.01	.65**	1		
Worried	.31**	.03	−.06	.74**	.60**	1	
M. Felt Accep	−.27**	−.32**	.60**	−.17**	−.14**	−.17**	1

Note. "B. Felt Accep" refers to the baseline felt acceptance and "M. Felt Accep" refers to the momentary felt acceptance. "Jealous emotions," "uncomfortable," and "worried" refer to the items participants rated after the alternative threat prompt.
** = $p < .01$.

Table 3. Study 2's attachment and condition effect predicting felt security.

Variable	β	F	p	LL	UL
Condition	.09	6.63	.010	.05	.40
Anxiety	−.04	0.75	.388	−.14	.05
Avoidance	−.02	0.09	.768	−.15	.11
Anxiety × Condition	−.02	0.14	.711	−.16	.11
Avoidance × Condition	−.04	0.62	.431	−.25	.11
Baseline Security	.55	200.79	<.001	.70	.93

Note. The outcome variable is post-manipulation momentary felt security. Each effect has the df (1, 564).

Table 4. Study 2's attachment and condition effect predicting relationship satisfaction.

Variable	β	F	p	LL	UL
Condition	.10	7.20	.008	.05	.33
Anxiety	−.19	11.56	<.001	−.21	−.06
Avoidance	−.47	79.40	<.001	−.53	−.34
Anxiety × Condition	.01	0.06	.813	−.09	.12
Avoidance × Condition	.12	4.84	.028	.02	.30

Note. The outcome variable is relationship satisfaction. Each effect has the df (1, 565).