

Stress Appraisal of Co-experienced Stressors in Romantic Relationships in Both Genders

Varsha Sayana

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In the busy lives of people, understanding whether an individual perceives an experience to be more or less severe when they are with another person compared to when they are alone is an important insight. People tend to spend the most amount of time with their romantic partners, and romantic couples commonly face stressful situations in the time they spend together. Prior research sheds light on contradictory evidence suggesting that it is unclear whether the presence of a romantic partner amplifies or dampens how severe a stressful co-experience seems. This research examines if romantic partners perceive stressful co-experiences to be more or less severe when experienced with their romantic partner compared to when experienced alone. Through a 14-day period, romantic couples who live together in the New York City area (the participants in this study) filled out a survey each evening where romantic partners reflected on external stressful events individually. Participants rated how severe they perceived a stressful co-experience to be and how severe the experience would've been had they experienced it alone. In terms of the typical person, the most likely value of the severity of a stressor when experienced with a partner minus the severity of the same stressor experienced alone for females and males, respectively, is -0.16 and -0.18. By subtracting the typical female distribution from the typical male distribution, the author obtained a different distribution with a most likely value of -0.019. The author found evidence to support the hypothesis that females would perceive events to be less severe when together with a romantic partner versus alone, and the author found evidence indicating that males perceive stressful co-experiences as more severe when alone. This depends on the traits of both genders, as men are less likely to express emotion than females.

Introduction

This research investigates whether people perceive stressful situations as more or less severe when they are with a romantic partner compared to when they are alone and whether this effect varies according to the participant's biological sex. Stress appraisal is the cognitive process of weighing the demands of a situation against the resources one has to deal with those demands¹. The greater the ratio of situational demands to available resources, the greater the stress reactivity. Understanding whether romantic partners' presence influences stress appraisal is important because people spend more time with their romantic partners than anyone else². Some of that time is spent in stressful situations³. Therefore, knowing whether stressful situations are appraised as more or less severe depending on the presence of a romantic partner would provide insight into a common stress context⁴.

Much of the existing literature examines stress appraisal as it occurs in a laboratory setting rather than as it occurs in people's lives naturally. The use of the daily diary methodology in this study creates the opportunity to examine stress appraisal in a natural environment, which generates more accurate and more generalizable data. Based on tend-and-befriend theory, male and female partners may showcase differences in ap-

praising stressful co-experiences. The author expects that females will perceive events to be less severe when experienced with their romantic partners. Since fight-or-flight is a solitary stress response, the author expects to find that there will be no noticeable effect on how severe males perceive a stressful co-experience to be, on average, regardless of whether a romantic partner is present. Understanding stress appraisal in the context of romantic relationships could resolve the discrepancy in the existing literature, which makes it unclear whether the presence of another person amplifies or dampens the stress response. Additionally, these findings could provide insight into how romantic couples could make their lives more manageable and less stressful due to their romantic partners. A daily diary methodology was utilized in this study. Romantic couples completed daily surveys throughout a 14-day period in which they recorded stressful co-experiences as well as their ratings for how severe the co-experience was and for how severe the co-experience could've been had it been experienced alone.

Literature Review

Prior research provides seemingly contradictory evidence about the role of another person on the stress response. In

one line of inquiry, researchers found that sharing an experience with another person amplifies the perception of the experience for the individual, regardless of whether the experience was pleasant or unpleasant⁵⁻⁷. This implies that a partner could appraise an experience to be even more stressful when co-experienced with their romantic partner. However, more specifically, in the stress literature, researchers repeatedly found that sharing a stressful experience with another person could dampen the stress response^{3,8}. This implies that a partner could appraise a co-experience as less stressful when their romantic partner is present. Taken together, these conflicting findings leave unclear whether the presence of a romantic partner amplifies or dampens how severe a co-experienced stressful situation seems.

To investigate this discrepancy on whether the presence of a romantic partner amplifies or dampens the stress response, the author studied romantic couples in New York City who completed daily surveys over a 14-day period. Prior to filling out their daily survey, participants reflected on their day and identified something stressful that they experienced together (i.e., they identified a co-experienced stressor). They then filled out the survey individually, indicating the co-experienced stressor as well as their ratings for how severe the co-experience was. For this part of the survey, participants were asked to complete the questions individually and refrain from sharing their answers with their romantic partners to ensure they provided the most accurate responses. It is important to recognize that these surveys were completed during the evening time. To maintain the integrity of this study, couples were required to appear together in a video call to make sure that couples were truly in a cohabitating relationship.

This daily survey methodology augments prior research by investigating appraisal as it occurs in people's natural, everyday lives rather than in the lab. By working outside of a lab environment, the author gathered more generalizable data, which is less vulnerable to incorrect extrapolations⁹. Moreover, this methodology allows us to estimate within-person, rather than between-person, differences¹⁰. This means that the author will be able to see not only whether people appraise situations as more severe when alone on average but also whether individual participants deviate from that trend. Furthermore, this research examines stress appraisal in terms of co-experiences that occur between real romantic couples rather than between virtual others⁸ or with strangers⁶. The relationship between romantic partners is fundamentally different from the relationships people have with strangers or virtual others. Romantic partners share a connection that cannot be found in a relationship with a stranger¹¹, and relationships with virtual others do not account for physical presence. By studying stress appraisal of co-experiences in a new relationship context, this study contributes to the scope of co-stressor literature, aiding in the determination of whether previous findings are univer-

sal.

This research also adds to existing knowledge by building off of “tend and befriend theory.” Taylor et al.'s tend and befriend theory takes sex assigned at birth into account when considering how individuals cope during stressful experiences. More specifically, tend and befriend theory states that females typically befriend others during threatening situations for their own safety and the protection of offspring. Based on this aspect of the theory, the author expects to find that females will perceive events to be less severe when experienced with their partner. On the other hand, Berger et. al and Nickels et al.^{12,13} indicate that fight-or-flight—a solitary response—is the primary stress response for males. Taking this information into account, the author expects to find that there will be no noticeable effect on how severe a co-experience is perceived to be on average, regardless of whether a romantic partner is present or not for males. Taken together, the author expects that the effect will be moderated by sex, such that male and female partners may appraise co-experiences differently based on hypotheses generated using the tend and befriend theory.

Results

Because the author ran the models using Bayesian estimation, each parameter has a probability distribution of likely values. The author reports the most likely value for the difference in severity for shared versus alone stressors (i.e. the 50th percentile of the distribution) for males and females. The author also reports the 95% credibility interval for those differences (i.e. the 2.5th percentile and the 97.5th percentile). This interval was chosen in order to align with the standard $\alpha = .05$. Note that because the author does not specify priors on the parameters, the results from the Bayesian model are identical to the results obtained from Frequentist estimation. The author uses this probability distribution from the Bayesian model to report the range of possible values for the “typical person” among females and males¹⁰.

Because the models are multilevel, the author also reports the 95% heterogeneity intervals in accordance with prior studies' methods¹⁴.

Females

In terms of the typical person, the most likely value of the severity of a stressor when experienced with a partner minus the severity of the same stressor experienced alone is -0.16. Since the value is negative, this implies that female participants viewed the stressor as more severe when alone. To determine whether this value was obtained by chance, the 95% credibility interval was analyzed. The credibility interval suggests there is a 5% chance that the difference could be between

-0.13 and -0.19 in absolute terms. Because the entire credibility interval falls below zero, the author concludes that the typical female perceives events as more severe when alone.

The author also analyzed the heterogeneity interval, which represents the difference scores for individuals at the 2.5th and 97.5th percentiles. In other words, how small of a difference does a female at the low end of the distribution have, and also how large of a difference does a female at the high end of the distribution have? Females who reported similar severity scores when they were together and alone could have had a difference score as small as -0.05. On the other hand, females who reported significantly different severity scores when they were together and alone could have had a difference score as big as -0.27. Because the entire heterogeneity interval falls below zero, the author concludes that basically, every female (typical or not) perceives events as more severe when alone.

Males

In terms of the typical male, the most likely value of the severity of a stressor when experienced with a partner minus the severity of the same stressor experienced alone is -0.18. Since the value is negative, this implies that male participants viewed the stressor as more severe when alone. To determine whether this value was obtained by chance, the 95% credibility interval was analyzed. The credibility interval suggests there is a 5% chance that the difference is between -0.15 and -0.21 in absolute terms. Because the entire credibility interval falls below zero, the author concludes that the typical male perceives events as more severe when alone.

The author also analyzed the heterogeneity interval, which represents the difference scores for individuals at the 2.5th and 97.5th percentiles. Males who reported similar severity scores when they were together and alone could have had a difference score as small as -0.09. On the other hand, males who reported significantly different severity scores when they were together and alone could have had a difference score as big as -0.28. Because the entire heterogeneity interval falls below zero, the author concludes that basically, every male (typical or not) perceives events as more severe when alone.

Males Compared to Females

To obtain the difference distribution, the author subtracted the typical female distribution from the typical male distribution. The most likely value is -0.019. Since this value is negative, the effect may be stronger for males in comparison to females. Based on the analysis of the 95% credibility interval, there is a 5% chance that the difference could be between -0.15 and 0.12. Since there is a chance that the value is positive, this could mean that the effect is indeed stronger for females. Because there is no evidence to support whether the effect is

stronger for males or females, the author couldn't support the hypothesis that females would perceive being alone as more severe compared to males.

Methods

All of the analyses for this study were pre-registered on aspre-dicted¹⁵.

Participants

To be a part of this study, participants had to meet the following requirements: 1) over the age of 21; 2) were currently in a romantic relationship in which they lived with their partner and no other individuals living with them; 3) had to remain in the New York City area throughout the duration of the study; and 4) have consistent access to high-quality internet to complete online daily surveys and attend Zoom calls. For the purposes of this study, participants were only included in the analyses if the couple was both heterosexual and heteronormative, with one cis-male and one cis-female. A total of 102 couples participated in this study, and 90 couples co-experienced at least one stressor during the 14-day period. The average couple was 28 years old, married, and in a relationship for at least 4 years. 50% of the participants identified as white, 26% as Asian, 5% as Black or African American, 80% as mixed race, 17% as Hispanic or Latino, and 11% in the "other" category.

Procedures

Couples were recruited through online postings, crowdsourcing, word of mouth, and flyers posted around the New York City area between March 2021 and August 2022. A new cohort began every third Tuesday to ensure that all couples completed their daily surveys from Thursday to Thursday in a 14-day window. A total of 345 couples were invited to attend Zoom calls with a research assistant who answered any study-related questions the couple may have had and verified whether both partners were truly in a cohabitating relationship. The research assistant also provided the couple with instructions on how to identify co-experienced stressors mutually. Of the 345 invitees, 165 couples completed the Zoom call with the research assistant and were emailed baseline surveys, the results of which are not used in this paper. Ultimately, 250 people were deemed eligible to take part in the study; however, romantic partners became eligible for the daily diary study only after both partners completed the baseline questionnaire. 126 couples did so and were sent an email link with the survey each evening around 7 p.m. Eastern Standard Time. In the survey, each person was prompted to answer whether or not they had co-experienced a stressful event that day. If they selected "yes," they were then prompted to reflect on the

shared stressor. The couple indicated “no” if they did not co-experience a stressful event that day and completed an equal number of separate questions. At the conclusion of each cohort, participants were debriefed.

Measures

Co-experienced Stressor Participants were instructed to discuss and identify an external stressful event that impacted both members of the couple and was new to them each day (i.e., the co-experienced stressor). On the survey, couples first answered “yes” or “no” when asked if they had a co-experienced stressor that day. If the participant answered “no”, the participant was prompted to identify a non-stressful co-experience that did not necessarily have to be the same between romantic partners. If the participant answered “yes,” the participant was then prompted to enter what the co-experience was into a textbox. These textbox responses were coded by two coders (ICC=.082, $p<.001$), who confirmed that the stressful event was indeed a co-experienced stressor.

Stressor Severity Participants provided a rating on a scale of 1 to 5 (1=*not at all severe*, 5=*extremely severity*) how “severe [the co-experienced stressor]...was.” They were also asked to rate on a scale of 1 to 5 (1=*not at all severe*, 5=*extremely severity*) how “severe a stressor [they believe the (co-experienced stressor)] would have seemed had [they] experienced it alone (i.e. without [their] partner).” As described below, the difference between these ratings was used as the dependent variable.

Statistical Analysis

The data were analyzed as a multivariate multilevel model in the brms package of the R statistical software. The independent variable is the stressful co-experience identified by participants in the daily survey. There were two dependent variables: 1) the difference between how severe a co-experienced stressor was perceived minus how severe that event would have been had it been experienced alone *for males*, and 2) the same difference score for *females*. These dependent variables were regressed on a random intercept.

Discussion

At the outset, the author aimed to investigate whether romantic partners perceive co-experiences to be more or less stressful when they are experienced together versus alone.

After analyzing the data, the author found evidence to support the hypothesis that females would perceive events to be less severe when together with a romantic partner versus alone. Since the entire credibility interval (5% chance that the difference could be between -0.13 and -0.19 in absolute terms)

falls below zero, the author concludes that the typical female perceives events as more severe when alone. This is interesting in light of a prior contradiction in the literature, with some studies finding that other people amplify experiences^{5,6} and others finding that conspecifics dampen the stress response³. Therefore, the fact that additional research was completed on this topic and found further evidence for the dampening hypothesis (i.e. Goldring et. al, 2022) helps resolve the discrepancy. The author thinks that the most reasonable explanation for the failure to replicate Boothby et. al’s finding is that she was not studying stress. While Boothby said that all experiences are amplified by the presence of another person, the author’s findings suggest it is more likely that some experiences (i.e. taste perception) are amplified while others (i.e. stress processes) are dampened by conspecifics.

Additionally, the author found that males also perceive events to be less severe when they are with their romantic partners. Since the entire credibility interval (5% chance that the difference is between -0.15 and -0.21 in absolute terms) falls below zero, the author concludes that the typical male perceives events as more severe when alone. Because these results are the same as what the author found for females, romantic partners of any sex may find that sharing stressful experiences with their significant others could make daily tasks seem more manageable. For example, rather than trying to fix the internet at home individually, partners could work together to resolve the issue.

Finally, the author was unable to find evidence to support the author’s hypothesis that the effect would be stronger for females. The most likely value obtained from the difference distribution is -0.019. Since this value is negative, the effect may be stronger for males in comparison to females. Based on the analysis of the 95% credibility interval, there is a 5% chance that the difference could be between -0.15 and 0.12, meaning that the effect is indeed stronger for females. However, according to tend and befriend theory¹², only females bond with others during stressful situations. The author’s findings, however, indicate that even males could potentially benefit from experiencing a stressor with their romantic partner.

Taken together, the author’s findings contribute to the stress and romantic relationship literatures by suggesting that co-experienced stressors are perceived less severely when experienced alongside a partner rather than alone.

Limitations

This study focuses on the perceptions of stressors among heterosexual and heteronormative couples, with one partner being cis-male and the other being cis-female in each couple. As a result, other gender identities and sexual orientations aren’t included in the participant pool, limiting the generalizability of the findings to gender binary couples. Furthermore, the

relatively small sample size of 102 couples may not be representative of the broader population. The participants were all recruited from the New York City area, which further limits the generalizability of the findings to other populations or cultural contexts. Additionally, since this is a correlational study that does not include a control group of individuals who do not have a romantic partner, it difficult to isolate the specific effects of the romantic partner on stress perception from these findings. Since the study does not have a long-term follow-up or examine changes in stress perceptions over time, the understanding of how these perceptions may vary in different contexts or circumstances is limited. The responses indicating that no stressful events occurred during the survey are unreliable for the results and create ambiguity in the measurement.

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