



Articles

The Paradoxical Influence of Stress on the Intensity of Romantic Feelings Towards the Partner

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Abstract

According to Brehm's emotional intensity theory (EIT), the strength of feelings of romantic affect towards a romantic partner should vary as a cubic function of increasing levels of relationship stress (i.e., deterrence to feelings of romantic affect). The study tested this hypothesis in a true experiment with 80 young adults actually engaged in a romantic relationship, by systematically manipulating stress, through a recall procedure, across four distinct levels of intensity (control vs. low vs. moderate vs. high levels of manipulated stress). As predicted by emotional intensity theory, feelings of romantic affect were strong in the control condition, reduced in the low stress condition (low deterrence), maintained intense in the moderate stress condition (moderate deterrence), and reduced, again, in the high stress condition (high deterrence). Findings and both theoretical and practical implications for professionals and future research are discussed, with special emphasis on how to promote partners' everyday adjustments to stress and emotional intensity regulation.

Keywords: romantic relationships, stress, feelings of romantic affect, deterrence, emotional intensity theory (EIT), paradoxical affect, applied social psychology, motivation, emotion

Interpersona, 2018, Vol. 12(2), 215–231, doi:10.5964/ijpr.v12i2.310

Received: 2018-05-16. Accepted: 2018-10-25. Published (VoR): 2018-12-21.

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Maintaining a satisfactory couple relationship represents a major challenge for many couples (Lavner & Bradbury, 2012). Theoretical accounts of how partners maintain feelings of satisfaction within the relationship point to three main factors that are likely to steer changes in romantic feelings: the individual qualities and personal experiences that partners bring to the relationship; the quality of couple interactions; and also the stressors that they encounter in their everyday lives (e.g., VSA: vulnerability-stress-adaptation model, Karney & Bradbury, 1995). Moments of stress are common within the relationship, as partners typically face troubles and difficulties of different sorts, that may be both internal and external to the relationship (Randall & Bodenmann, 2009, 2017). Research in relationship maintenance has typically focused on the role of individual factors within the dyad (e.g., partners' personality traits, modalities of conflict resolution, communication styles and strategies, or dyadic coping), as well as—though to a lesser extent—on several contextual factors, such as on the role of a variety of stressful experiences, for predicting partners' romantic feelings and reciprocal adjustments (e.g.,

Buck & Neff, 2012). Research findings on the effects of stress in romantic relationships, however, are somewhat inconsistent, and often controversial.

The Detrimental and Beneficial Effects of Stress in Romantic Relationships

Stress has generally been considered *detrimental* for the relationship, especially in models of relationship adjustment (e.g., Bodenmann, 2008; Karney & Bradbury, 1995). In particular, previous studies mainly reported negative associations between partners' stress and feelings of satisfaction with the relationship. For example, during the first years of marriage, couples experiencing relatively high levels of stress also experienced deeper declines in relationship satisfaction, as compared to couples exposed to less severe stress (Bodenmann, 1997; Karney, Story, & Bradbury, 2005). Further studies documented that partners' relationship satisfaction tended to be lower after periods of greater stress than after periods of less intense stress (Karney et al., 2005; Neff & Karney, 2004, 2007). Analogously, experimental research also showed that the quality of couple communication dramatically declined after stress induction (Bodenmann & Shantinath, 2004).

Evidence from other studies, however, did not always show the same negative effects of stress on relationship outcomes. For instance, in a study on couples' dealing with one partner's external stressor (i.e., *the Bar exam*), Thompson and Bolger (1999) documented that, as the exam approached and the examinees' stress increased, the examinees' distress did not have the expected negative effect on their partners' romantic feelings. Most importantly, other research has found unexpected positive—i.e., *beneficial*—effects of stress on romantic feelings. Neff and Broady (2011), for instance, showed that among partners with good initial relationship resources, those who initially experienced moderate levels of stress tended to report greater marital adjustment following the transition to parenthood, if compared with partners who experienced lower levels of early stress. Moreover, a well-known and highly-debated study by Driscoll, Davis, and Lipetz (1972) showed that parental disapproval (i.e., a potential source of *stress* for the couple) actually strengthened, rather than reducing, partners' reciprocal feelings of positive romantic affect (see Sinclair & Ellithorpe, 2014; and Sinclair, Hood, & Wright, 2014, for a contrarian view; see also Driscoll, 2014, for a rejoinder). Similarly, Sprecher (2011) found that social network's disapproval made the relationship stronger, as 14% of her participants reported that their disapproval of a friend's romantic relationship actually contributed to fortify, rather than weakening, the relationship.

Taken together, the findings from the above literature all suggest that the effects of stress can be both detrimental *and* beneficial for the intensity of romantic feelings, depending—most likely—on the *magnitude* of stress experienced within the relationship. Tesser and Beach (1998) neared such a possibility. In a study on marital satisfaction, they found that as negative life events increased over time, partners' marital satisfaction first declined, then jumped back toward positivity, and eventually declined again. The researchers, however, justified their non-linear pattern of results in terms of an awareness/correction explanation, which assumes that partners were differentially aware of stress over time, and then 'corrected' their judgments only when becoming especially aware of it (see Miron, Knepfel, & Parkinson, 2009, footnote 1, p. 272). This explanation, however, confounds the sheer effect of increasing levels of stress with differential awareness of stressful events.

By contrast, such non-linear seemingly contradictory effects are easy to understand, if one assumes the perspective of emotional intensity theory (EIT: Brehm, 1999; Brehm & Miron, 2006). As stress may represent a good reason for *not* feeling positive affect towards the partner, it should act as a *barrier* to romantic feelings. Since EIT posits that any barrier to the experiencing of feelings (and to any other emotional, affective, or moti-

vational states, cf. [Sciara & Pantaleo, 2018](#)) will systematically alter the strength of such feelings according to a *cubic* function, one has a clear and straightforward conceptual guide for predicting and explaining the non-linear (*cubic*) effects of stress on strength of romantic feelings.

Emotional Intensity Theory

According to Brehm's emotional intensity theory (EIT: [Brehm, 1999](#); [Brehm & Miron, 2006](#)), the intensity of feelings, once instigated, is determined by the magnitude of obstacles to those feelings, or by any other reason *not* to feel the associated emotion or affective state. Such obstacles are termed *deterrents* ([Brehm, 1999](#); [Brehm, Brummett, & Harvey, 1999](#); [Fuegen & Brehm, 2004](#)). For example, deterrence to sadness (i.e., the instigated feeling) could be represented by receiving a gift (the deterrent); deterrence to happiness by learning some bad news, and so on (see [Brehm et al., 1999](#), and [Miron et al., 2007](#), for more detailed practical instances). The greater the deterrent (i.e., the obstacle) the stronger must become the feeling in order to counteract the force of the deterrent. Emotional intensity, however, will only rise up to the point where strength of deterrence outweighs the importance of the event that originally instigated the feeling—this causing the feeling to drop to a minimum level of intensity. Further, when deterrents are absent, unknown, or unspecified, the intensity of the emotional state will tend to correspond to the importance of the instigating event ([Brehm, 1999](#); [Silvia & Brehm, 2001](#)). Thus, if the instigating event is perceived as relatively important when obstacles are not present or known, the feeling will tend to be correspondingly intense. In other words, deterrents systematically produce non-linear (*cubic*) effects on feelings, because the strength of feelings will dynamically adapt to the *minimum* force required in order to overcome the obstacle (e.g., [Sciara & Pantaleo, 2018](#)) if the feeling has to be maintained alive by the emotional system (see [Brehm, 1999](#); and [Silvia & Brehm, 2001](#), for the complete rationale and a graphic illustration of the mathematical function linking deterrents to emotional intensity). Thus, as compared to (1) a control condition in which strong feelings have been, initially, successfully instigated, the intensity of those feelings should be (2) reduced by weak deterrents, (3) maintained intense by moderate deterrents, and (4) reduced, again, by too strong deterrents. Thus, the effects of deterrence on feelings obey a *cubic* function.

To date, several studies have documented the predicted cubic effects of deterrence on the intensity of a variety of basic emotional and affective states such as happiness (e.g., [Miron, Parkinson, & Brehm, 2007](#)), sadness (e.g., [Brehm et al., 1999](#); [Silvia & Brehm, 2001](#)), anger (e.g., [Miron, Brummett, Ruggles, & Brehm, 2008](#)), and positive and negative basic sensory affect ([Brehm, Miron, & Miller, 2009](#)). On a more explicit socio-relational level, the same deterrence effects have been documented for prejudiced and attitude-related affect ([Miron, Ferguson, & Peterson, 2011](#)), as well as for affective social identification ([Pantaleo, Miron, Ferguson, & Frankowski, 2014](#)). In addition, still other cubic effects of deterrence have been demonstrated even on the intensity of collective guilt ([Schmitt, Miller, Branscombe, & Brehm, 2008](#)), and vicarious empathy ([Pantaleo, 2011](#)).

In the domain of romantic relationships, some studies have already started to show how obstacles (*deterrents*) can produce cubic effects on the intensity of feelings of attraction, affect, and commitment towards the romantic partner. In particular, [Miron et al. \(2009\)](#) showed that, when compared to the intense positive affect instigated in the control condition, such affect towards the partner was reduced by a minor partner flaw (the *deterrent*), maintained intense by a moderately important flaw, and reduced, again, by a very important flaw. Similarly, [Reysen and Katarzaska-Miller \(2013\)](#) predicted and found that participants highly attracted to a potential romantic partner (i.e., participants in the control condition), felt *less* attracted when their interest was highly reciprocated (low

deterrence), moderately attracted when moderately reciprocated (moderate deterrence), and again less attracted when poorly reciprocated (high deterrence). In addition, [Sciara and Pantaleo \(2018\)](#) showed that the intensity of romantic affect and commitment towards the partner varied as a cubic function of increasing levels of risk of relationship breakup (the *deterrent*). Again, when compared to a control condition of intense positive feelings towards the partner, such feelings were significantly reduced by a low risk of relationship breakup, maintained intense by a moderate risk, and reduced, again, by a too-high risk of ending the relationship.

Stress is commonly regarded as one of the major obstacles to relationship well-being ([Karney & Bradbury, 1995](#); [Randall & Bodenmann, 2009](#)). Moderate levels of stress, on the other hand, have occasionally been found to benefit rather than harming the couple (e.g., [Neff & Broady, 2011](#)). Yet, it is not entirely clear when and *how* stress can actually shape the intensity of feelings of affect between partners. Drawing on emotional intensity theory (EIT: [Brehm, 1999](#); [Brehm & Miron, 2006](#)), this article tries to fill the gap. More specifically, the present research shows how gradually increasing levels of stress can systematically control—i.e., either intensify or diminish—positive feelings of romantic affect within the couple.

No study has yet directly tested, however, the idea that relationship *stress* should produce *cubic* effects on the intensity of positive romantic feelings towards the partner, as implied by emotional intensity theory (EIT: [Brehm, 1999](#); [Brehm & Miron, 2006](#)). To the extent that relationship stress may actually represent a good reason for *not* feeling positive romantic affect towards the partner (e.g., [Rusbult, Yovetich, & Verette, 1996](#)), then it should act as a *barrier* to those feelings and, thus, systematically *deter* them according to the predicted *cubic* function. Testing such a hypothesis in the domain of romantic relationships is quite important for understanding why and when stress is able to produce both detrimental and beneficial effects within the couple.

Further, such a study is most needed for at least two additional reasons. First, both [Miron et al. \(2009\)](#) and [Reysen and Katzarska-Miller \(2013\)](#) focused only on *potential* sources of relationship stress (i.e., partner flaws, and being not reciprocated by the partner, respectively), rather than on actual sources of stress within the relationship. Also, these studies assessed the intensity of romantic feelings towards *potential* partners ([Reysen & Katzarska-Miller, 2013](#)), or even just towards both real and *imaginary* partners ([Miron et al., 2009](#)). Second, [Sciara and Pantaleo \(2018\)](#) limited their investigation to only *potential* consequences of stress (i.e., the risk of relationship breakup), without specifically focusing on stress *per se*. From the above considerations, it becomes apparent, then, that an explicit focus on actual levels of stress within the couple should be pivotal both for understanding its barrier-like properties, and for overcoming the limitations of the previous studies.

On the basis of emotional intensity theory (EIT: [Brehm, 1999](#); [Brehm & Miron, 2006](#)), the present experiment tests the effects of gradually increasing levels of actual relationship stress on strength of feelings of positive romantic affect towards the partner. To the extent that relationship stress may actually act as a *barrier* to romantic feelings, it should *deter* those feelings according to a *cubic* function. To test this hypothesis, relatively intense feelings of romantic affect were first induced in participants at the outset of the experiment, and then systematically deterred by manipulating stress intensity through a recall procedure. More specifically, feelings of positive affect were deterred across four distinct and progressively increasing levels of couple's relationship stress (control vs. low vs. moderate vs. high stress conditions).

Feelings of romantic positive affect were expected to be strong in the *control condition*, reduced in the low stress condition (*low deterrence*), maintained intense in the moderate stress condition (*moderate deterrence*), and reduced, again, in the high stress condition (*high deterrence*). Further, given the specific cubic nature of the

predicted pattern of results, no substantial differences between the control vs. moderate deterrence conditions, nor between the low vs. high deterrence conditions, were expected.

Method

Participants

Required sample size was estimated on the basis of a recent meta-analytical integration of effects of deterrence on feelings of positive romantic affect (Sciara & Pantaleo, 2018), which documented an average effect size (*ES*) of $d = .85$ in pairwise comparisons (i.e., a *large effect* according to Cohen, e.g. 1988). Accordingly, with the aid of the computer program *G*Power* 3.1 (Faul, Erdfelder, Lang, & Buchner, 2007), a required sample size of *no less* than 18 participants *per cell* in the experimental design was estimated, to be able to detect effects at least of that magnitude (*statistical power* 80%; $\alpha = .05$; one-tailed tests; non-centrality parameter $\delta = 2.55$). Then, this number was augmented by recruiting 20 participants per cell, to be able to detect even somewhat smaller effects ($d_s \geq .80$) of deterrence on feelings of romantic affect. As a result, the research design was appropriately powered—i.e., neither under- nor over-powered—to detect the very kind of effects of deterrence on feelings of romantic affect thus far reported in the scientific literature.

Eighty undergraduates—20 participants for each of the four conditions in the experimental design (see below)—from one major university in Northern Italy (88.8% females; mean age = 22.95 yrs., $SD = 2.17$) volunteered to participate in the study. Participants were contacted by a female experimenter at various sites at the university campus, this amounting to a convenience sampling procedure. At the time of the study, participants had been in a romantic relationship for an average of 40.66 months ($SD = 27.95$), and 6.30% of them lived with their partner. It should be noted that, according to EIT, there is no reason to expect gender differences in deterrence experiments, because both males and females should obey the same basic motivational and emotional laws regarding energy mobilization and effort expenditure (Brehm, 1999; Brehm & Miron, 2006; see also Richter, Gendolla, & Wright, 2016). Further, in line with EIT, gender differences have never been found or otherwise documented in studies of deterrence of romantic feelings (Miron et al., 2009; Miron, Rauscher, Reyes, Gavel, & Lechner, 2012; Reysen & Katzarska-Miller, 2013; Sciara & Pantaleo, 2018). In this study, therefore, the larger proportion of females should not be of concern, as it should not conceal or otherwise alter the predicted effects of manipulated stress (*deterrence*) on feelings of romantic affect.

Instruments

Participants were handed a Questionnaire composed of four sections. The first section requested basic demographics, then asked participants to specify the duration of their relationship and, also, whether they lived with their partner (no/yes). The second section instructed participants to focus on some positive aspects of their first romantic date with the partner. This was done in order to rise feelings of positive romantic affect (*induction of romantic affect*). Note that, as posited by emotional intensity theory (EIT: Brehm 1999), in order to deter the intensity of (any) feelings of affect, those feelings must first be evoked (i.e., instigated) and psychologically present, within the person, with a certain degree of intensity. Thus, also in the present study, a successful *induction* (instigation) of romantic affect represents a prerequisite for effective deterrence manipulation (cf. Brehm, Miron, & Miller, 2009; Miron, Parkinson, & Brehm, 2007; Miron et al., 2008; Sciara & Pantaleo, 2018). Next, this section asked participants three questions on the intensity of those feelings (*pre-manipulation meas-*

ures of romantic affect). The third section entailed the experimental manipulation of stress (*deterrence to romantic affect*), that randomly assigned participants to one of four deterrence conditions (control vs. low vs. moderate vs. high stress in the couple). This section ended with a *manipulation check*. The fourth and final section asked, again, the same three questions on strength of feelings of romantic affect (*post-manipulation measures of romantic affect*).

Procedures

The research design amounted to a randomized full factorial four-cells between-participants design, specifically conceived to test the predicted *cubic* effects of deterrence magnitude (control vs. low vs. moderate vs. high stress conditions) on strength of feelings of positive romantic affect. After participants signed the consent form, they individually and anonymously filled out the questionnaire. Upon completion, participants were carefully and extensively debriefed, and thanked for their participation.

Deterrence Manipulation

Stress was manipulated by having participants recall and list, in order of importance, three reasons that brought them to feel stress in their couple relationship. This task was akin to the original listing-procedure created and used by Miron et al. (2009). More specifically, participants read the following instructions: “In couple relationships, people may experience stressful episodes that put the relationship to test and make partners feel pressured, tense, or weary. We kindly ask you to name THREE issues/episodes that in your current romantic relationship generate very *high* stress, *moderate* stress, and only a *little* stress, respectively.” Then, participants answered the following three questions: “What generates very high stress in your relationship?”, “What generates moderate stress in your relationship?”, “What generates just a little stress in your relationship?” Next, with the exception of participants assigned to the *control* group (who simply listed the three reasons for feeling stress in the relationship, without further elaborating on any of them), participants randomly assigned to the other conditions were instructed to pick only one of the three issues/episodes, and to describe it in more detail. More specifically, in the *low deterrent* condition participants were requested to refer to the issue/episode that generated the lowest levels of stress; in the *moderate deterrent* condition to the issue/episode that generated medium levels of stress; and in the *high deterrent* condition to the issue/episode that generated the highest levels of stress. For example, in the high stress condition participants were given the following instructions: “Please, think about the issue that generates very high levels of stress in your relationship (i.e., to the first one in the previous list). How exactly does it generate stress? Please, illustrate this issue/episode in more detail, describing also how do you *feel* about it”.

Manipulation Check

To check for the effectiveness of the stress manipulation (i.e., *deterrence* to feelings of positive romantic affect), the extent to which participants perceived the situation they considered as (only a little vs. moderately vs. highly) stressful was also assessed, by asking the following additional written question, “How much does this situation makes you feel stressed?”. Answers were provided on a single unipolar visual-analogue scale (VAS), ranging from 0 cm = “*Not at all*” to 10 cm = “*Extremely*”.

Dependent Measures

Feelings of romantic affect were measured twice—*before* and *after* the experimental manipulation of stress—by asking participants to what extent they agreed with the following statements: “There is something almost ‘magi-

cal' and appealing in our relationship", "I wish my partner embraces me", and "My romantic partner attracts me very much." These items were borrowed and adapted from the revised and improved version of Sternberg's Triangular Love Scale (*passion* component, Sternberg, 1997), an instrument whose usefulness and reliability has been proven in various settings, both with adults (e.g., Chojnacki & Walsh, 1990; Sternberg, 1997; Whitley, 1993) and adolescents (Overbeek, Ha, Scholte, de Kemp, & Engels, 2007). Given that each statement was created to tap into slightly different yet overlapping aspects of romantic affect, scale reliability was calculated through Guttman's λ -5 reliability coefficient. Overall, reliability estimates for the three items were acceptable, ranging from .68 to .71 for measurements made *after* and *before* the experimental manipulation of deterrence, respectively. Answers to the three questions were provided on unipolar visual-analogue scales (VAS), ranging from 0 cm = "Not at all" to 10 cm = "Extremely". The three items are very similar in content to items that have been regularly used in research on romantic relationships over the last 50 years (e.g., Lehmler & Agnew, 2006; Rubin, 1970; Rusbult, Martz, & Agnew 1998), and also to items recently employed to systematically assess and compare strength of romantic feelings of affect and relationship commitment in more controlled experimental settings (e.g., Miron et al., 2009; Sciara & Pantaleo, 2018). Finally, following the lead of Mlynski, Wright, Ahtarap, and Rojas (2017), in choosing the items special care was devoted in selecting (and adapting), on purpose, only three statements from Sternberg's (1997) *passion* subscale, to obtain a handy and, as much as possible, easy-to-administer dependent variable—which, of course, should have overall favorable implications for the quality of the data to be collected in the present as well as in future studies (Mlynski et al., 2017).

Analysis Strategies

After testing for the effectiveness of the deterrence manipulation, the predicted *cubic* effect of the increasing levels of deterrence on romantic affect was examined through an analysis of covariance (ANCOVA); then *focused a-priori* polynomial contrasts (e.g., Rosenthal & Rosnow, 1985) with a pooled error term (cf. Pantaleo et al., 2014; Sciara & Pantaleo, 2018; Silvia & Brehm, 2001) were run to test for the significance of each single adjacent leg of the cubic pattern. Contrast weights were specified *a priori* for each analysis, such that the (hypothesis-driven) analytic strategy did not require any adjunctive post-hoc multiple comparisons tests. Further, as romantic affect was measured twice—*before* and *after* the deterrence manipulation—, first an ANCOVA was performed to assess the significance of the overall cubic trend while statistically controlling for participants' individual variability in their initial ratings of romantic affect. To this end, the ratings of affect that participants provided *before* the manipulation of deterrence were used as a covariate, while the ratings they provided *after* the manipulation represented the dependent variable. Following the same rationale, focused polynomial contrasts on the *difference scores*, obtained by subtracting the ratings of affect that participants provided before the manipulation of deterrence from those they provided after the manipulation, were then run. In so doing, the analysis focused on polynomial contrasts based on difference scores rather than on separate covariance analyses, one for each leg of the cubic pattern, to avoid the unnecessary loss of statistical power which would have instead resulted from including the covariate(s) in the statistical model. Finally, given the directional, theory-driven nature of pairwise planned comparisons, only one-tailed focused contrast tests were employed in hypotheses testing (Rosenthal & Rosnow, 1985), as advised by Wilkinson and the Task Force on Statistical Inference—APA Board of Scientific Affairs (1999), and, more recently, also by Gendolla and Wright (2016) (see also Miron et al., 2008; Sciara & Pantaleo, 2018; and Silvia & Brehm, 2001, for practical instances on the appropriate use of such *a priori* testing strategies in the field of emotion/motivation intensity). All other significance tests were two-tailed.

Results

Preliminary Analyses

Categories of Stressful Events Recalled by Participants

Stressful events recalled by participants were classified into several categories. Category assignments were made by two independent raters with professional expertise in family and relationship dynamics. Bootstrap-generated *Krippendorff's alpha* reliability estimates for inter-rater agreement, obtained by running the SPSS *Kalpha* code (Hayes & Krippendorff, 2007), revealed a very high reliability coefficient, $\alpha = .97$, 95% CI [.94, .99] (5,000 resamples), indicating almost perfect agreement between the two raters in assigning stressful events to categories (conflicts between raters were resolved by discussion and common resolution).

Overall, the following eight categories of stressful events emerged from the analysis: problems and issues with the relationship (e.g., communication problems, jealousy, sexual difficulties) (13.1%); problems and issues with own family and friends (27.5%); not enough time to spend together, or difficulties to reconcile own and partners' schedules (6.6%); individual differences in opinions, interests, personality, and expectancies (19.2%); problems at work/study place, economic difficulties, and related uncertainties in planning the future (12.7%); physical distance and separation (6.1%); decisions about how to spend the leisure time together (6.1%); and 'other events' (8.7%). The categories of stressful events on which participants focused in the *low*, *moderate*, and *high* deterrence conditions were uniformly distributed among experimental conditions, $\chi^2(14) = 18.21$, $p = .20$. Thus, the emerged categories of stressful events could not be expected to differentially influence the results of the main analyses.

Mean Duration of the Relationship

A one-way ANOVA showed no differences in the mean duration of the relationship across the four deterrence conditions, $F(3, 79) = 1.01$, $p = .393$. Also, independent post-hoc multiple comparisons tests (Tukey HSD; Scheffé; and Bonferroni) all revealed no differences between conditions in pairwise comparisons ($p_s > .442$). The overall mean duration of the relationship was 40.66 months ($SD = 27.95$).

Instigation of Positive Romantic Feelings

A preliminary one-sample t-test revealed that, as expected, the mean ratings of positive romantic affect provided by participants in the control condition with respect to the *first* measurement of romantic affect ($M = 7.83$, $SD = 1.67$; scale range: 0 - 10.00 cm) were, on the average, significantly higher than the scale midpoint (= 5.00), $t(19) = 7.59$, $p < .001$, as were the ratings provided by participants in the control condition with respect to the *second* measurement of romantic affect ($M = 8.05$, $SD = 1.64$), $t(19) = 4.89$, $p < .001$. Further, a paired samples t-test performed on intensity ratings showed that, always as expected, within the control condition the intensity of feelings of romantic affect remained constant between the first and the second measurement, $t(19) = 1.47$, $p < .16$. The stability over time of such affective ratings in the control condition was indicated also by a significant paired sample correlation between the *first* vs. *second* measurement of romantic affect, $r(20) = .92$, $p < .001$. Taken together, these preliminary results suggest that, at the outset of the experiment (i.e., right *before* the experimental manipulation), a relatively high and stable degree of romantic affect was successfully induced and actually reported by participants. As spelled out above, this represents a fundamental prerequisite for successful deterrence manipulation.

Manipulation Check

Perceived relationship stress increased linearly—and reliably—with strength of deterrence manipulation, $F(1, 57) = 28.53$, $p < .001$, $MSE = 3.97$, $\eta^2 = .33$. Reported relationship stress increased from the *low* ($M = 4.14$, $SD = 2.02$, bootstrap 95% CI [3.25, 5.04]) through the *moderate* ($M = 6.29$, $SD = 2.36$, bootstrap 95% CI [2.24, 7.30]), $t(38) = 3.11$, $p = .002$, $d = .98$ to the *high* deterrence condition ($M = 7.50$, $SD = 1.51$, bootstrap 95% CI [6.83, 8.17]), $t(38) = 1.93$, $p = .031$, $d = .61$. In this pattern of results, each group's mean fell outside the other group's 95% CI, this adding to the reliability of the effectiveness of the manipulation. Further, the effect size associated with the increase in perceived relationship stress from the *low* to the *high* deterrence conditions was considerable, $t(38) = 5.97$, $p < .001$, $d = 1.88$ (e.g., Cohen, 1988), as a value greater than .80 is commonly interpreted, in the literature, as a *large* effect—i.e., an effect more than “visible to the naked eye” (Fox & Mathers, 1997). The manipulation check thus documented that the stress-inducing procedure was quite effective in bringing participants to sense and report, respectively, low vs. moderate vs. high levels of stress in their couple relationship.

Effects of Manipulated Relationship Stress on Feelings of Romantic Affect

To test for the predicted effects of relationship stress (*deterrence*) on feelings of positive romantic affect an ANCOVA controlling for participants' individual variability associated with their initial ratings of romantic affect was performed. To this end, the model used as the covariate the ratings of affect that participants provided *before* the manipulation of deterrence, and as the dependent variable the ratings they provided *after* the manipulation. The analysis revealed the predicted *cubic* pattern, brought about by the manipulation of stress on romantic affect, $F(1, 75) = 5.52$, $p = .02$, $MSE = .4321$, $\eta^2 = .08$.

Further, planned *a-priori* polynomial contrasts also revealed, as depicted in Figure 1, that romantic affect significantly decreased from the *control* ($M = 8.29$, $SD = .66$, bootstrap 95% CI [7.91, 8.71]) to the *low* deterrence condition ($M = 7.97$, $SD = .66$, bootstrap 95% CI [7.54, 8.38]), $t(76) = 1.91$, $p = .029$, $d = .44$ (contrast weights +1 -1 0 0), increased from the *low* to the *moderate* deterrence condition ($M = 8.41$, $SD = .65$, bootstrap 95% CI [8.05, 8.77]), $t(76) = 2.14$, $p = .018$, $d = .67$ (contrast weights 0 -1 +1 0), and marginally decreased from the *moderate* to the *high* deterrence condition ($M = 8.04$, $SD = .65$, bootstrap 95% CI [7.70, 8.39]), $t(76) = 1.56$, $p = .061$, $d = .57$ (contrast weights 0 0 +1 -1). Closer inspection of the ratings of romantic affect provided by participants both *before* and *after* the deterrence manipulation revealed that one single participant in the high deterrence condition obtained a difference rating of affect which was about two standard deviations (1.89) above the group mean. Thus, polynomial contrasts were re-run without considering the outlier-score of this participant. The predicted drop from the *moderate* ($M = 8.41$, $SD = .65$, bootstrap 95% CI [8.05, 8.77]) to the *high* ($M = 8.00$, $SD = .66$, bootstrap 95% CI [7.66, 8.36]) deterrence condition, this time, clearly proved to be significant, $t(75) = 1.92$, $p = .029$, $d = .63$ (contrast weights 0 0 +1 -1). Again, also within this latter comparison, each group's mean fell outside the other group's 95% CI_s—this further testifying to the reliability of the observed result.

Finally, according to emotional intensity theory (EIT: Brehm, 1999), the *control* and *moderate* deterrence conditions should *not* differ from each other, and should both show relatively high levels of positive romantic affect. Likewise, according to EIT, also the *low* and *high* deterrence conditions should *not* differ from each other—i.e., always within the general cubic trend, both conditions should show relatively low levels of positive romantic af-

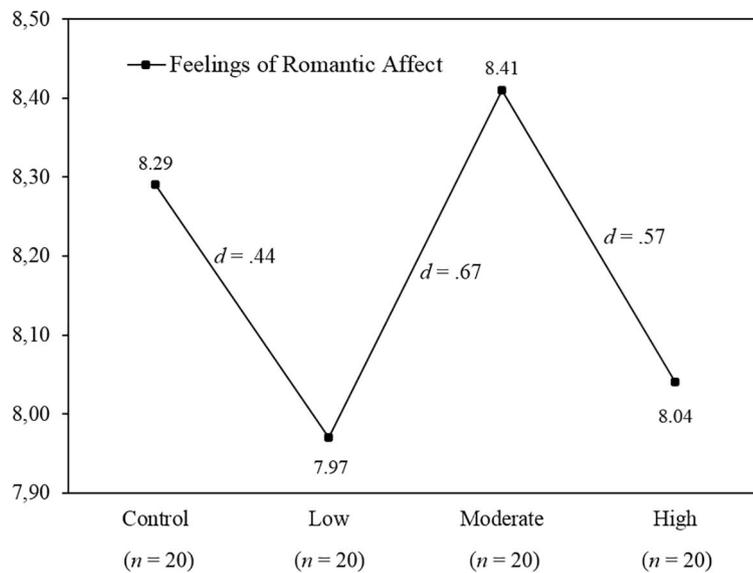


Figure 1. Strength of feelings of positive romantic affect as a function of deterrence magnitude (control vs. low vs. moderate vs. high stress conditions). Cohen's d s are displayed for each adjacent leg of the cubic trend.

fect. In line with these hypotheses, two additional a-priori polynomial contrasts revealed that, exactly as predicted, neither the control vs. moderate deterrence conditions, nor the low vs. high deterrence conditions significantly differed from each other, $t_s < .59$, $p_s > .56$ —this further adding to the usefulness of EIT for understanding the effects of varying degrees of stress intensity on the intensity of romantic feelings. Table 1 summarizes the predicted cubic pattern of results on the systematic influence of deterrence (control vs. low vs. moderate vs. high manipulated stress conditions) on the intensity of feelings of positive romantic affect.

Table 1

Strength of Feelings of Positive Romantic Affect as a Function of Deterrence Magnitude (Control vs. Low vs. Moderate vs. High Stress Conditions)

Statistic	Deterrence			
	Control	Low	Moderate	High
Estimated Marginal Mean (SD)	8.29 _a (.66)	7.97 _b (.66)	8.41 _a (.65)	8.04 _b (.65)
SE	.15	.15	.14	.14
Bootstrap 95% CI	[7.91, 8.71]	[7.54, 8.38]	[8.05, 8.77]	[7.70, 8.39]
N	20	20	20	20

Note. Scales ranged from 0 "Not at all" to 10 "Extremely". ANCOVA's row estimated marginal means with different subscripts differ significantly from each other at $p \leq .03$, with the exception of the moderate vs. high deterrence comparison, where the means differed only marginally from each other ($p = .06$). SDs are displayed in parenthesis. Bootstrap estimates for 95% CIs for the means were obtained with 5,000 resamples. SEs denote the standard errors of the means; Ns the cell sizes.

Discussion

Drawing on emotional intensity theory (EIT: Brehm, 1999; Brehm & Miron, 2006), the main goal of this study was to show how relationship stress (i.e., the deterrent) would systematically reduce or enhance the intensity of romantic feelings, depending on its magnitude. As predicted, the intensity of romantic feelings varied as a cubic

function of increasing levels of manipulated stress (control vs. low vs. moderate vs. high stress conditions). More specifically, feelings of romantic positive affect were strong in the control condition, reduced in the low stress condition (low deterrence), maintained intense in the moderate stress condition (moderate deterrence), and reduced, again, in the high stress condition (high deterrence). Always as predicted, no significant difference appeared between the control and the moderate deterrence conditions, nor between the low and the high deterrence conditions—this further substantiating the evidence in favor of the non-linear (*cubic*) effects of stress on romantic feelings. Thus, all the study hypotheses were empirically supported.

Notably, increasing levels of stress actually produced—within the specified theoretical limits—a corresponding increase in strength of positive feelings towards the partner. This substantiates the literature on the beneficial effects of *moderate* levels of stress in the relationship (e.g., [Neff & Broady, 2011](#)). Further, despite the strong increase observed in the intensity of stress between the low and the high deterrence conditions (Cohen's $d = 1.88$, a very large effect—see the manipulation check), the two experimental conditions did *not* significantly differ from each other in strength of feelings of romantic affect. The expected manifest *dissociation* between the perceived level of stress and the intensity of romantic feelings in the high deterrence condition, thus, strongly suggests that *intense* stress can actually *cause* a visible drop in the intensity of feelings of romantic affect in couples. This result confirms previous evidences coming from correlative research. Even more noteworthy, perhaps, is the finding documenting the drop in strength of romantic feelings from the control to the low deterrence condition—a finding always in line with the theoretical predictions. At first glance, such a drop may seem counterintuitive. It documents, however, how emotional intensity *dynamically* adapts to low deterrence strength (i.e., low levels of stress). When stress is low, feelings of romantic affect should decrease, because in such a situation continuing to feel positive about the partner should be relatively easy, and would not require much unnecessary effort from the energy mobilization system ([Brehm, 1999](#); see also [Miron & Brehm, 2012](#), [Miron & Pantaleo, 2010](#), and [Silvia & Brehm, 2001](#), for the thorough rationale).

Most importantly, the results of the present study also suggest that conflicting previous findings on the detrimental and beneficial effects of stress in romantic relationships can be interpreted within the same theoretical process. As predicted by EIT ([Brehm, 1999](#)), the study showed that stress can either lessen *or* strengthen feelings of positive romantic affect, depending on the intensity of the stressor. Feelings of romantic affect adapt, in strength, to obstacle magnitude. A given and known obstacle, thus, motivates the partners positively towards each other, but only until they feel it is still worth to continue investing energies in order to overcome the obstacle. From such a unifying motivational/emotional theoretical perspective, it becomes then suddenly and obviously clear why *moderate* levels of stress do actually provide the couple with opportunities for growth, by mobilizing previously available yet unused resources (e.g., [Meichenbaum, 1985](#); [Updegraff & Taylor, 2000](#)).

Moreover, the present findings also add to those by [Miron et al. \(2009\)](#), [Reysen and Katzarska-Miller \(2013\)](#), and [Sciara and Pantaleo \(2018\)](#), by focusing on *real* rather than potential sources and consequences of stress. Such a direct focus on *stress* seems to capture better—i.e., from a different empirical angle—the effects of any actual stressful situations within the couple in partners' everyday life. Further, this study investigated the effects of stress on feelings of romantic affect in real and stable relationships. In so doing, this research offered more concrete, valid and informative evidence with respect to that offered by each of the above-mentioned deterrence studies, with the only exception of the study by [Sciara and Pantaleo \(2018\)](#), which also focused on actual and stable relationships. It should be finally noted that, substantiating the validity of the procedure developed by [Miron et al. \(2009\)](#), the relative importance of the stressors participants referred to in this study was *subjectively*

evaluated by the participants themselves, rather than by the experimenter. For all the above reasons, therefore, the present research seems to possess a relatively high degree of ecological validity, that points straight to the generalizability of these and previous findings investigating the effects of deterrence (e.g., partners' flaws, degree of non-reciprocation between partners, risk of relationship breakup, etc.) on romantic feelings of positive affect in partners' life.

Implications for Relationships Professionals and Future Research

Both professionals and future research on couple's stress and coping might benefit from the present findings, as they provide an articulated and systematic picture of the causal link between stress and relationship outcomes. Partners' coping resources can buffer the effects of stress on the relationship. Experiencing stress early in marriage, in fact, was found to predict higher relationship satisfaction for those partners equipped with better problem-solving skills (Cohan & Bradbury, 1997), as compared with partners with poorer skills. Future research should therefore explore the role of coping skills in moderating the causal link between stress and partners' romantic affect, by focusing on how those skills should affect the perception of deterrence magnitude (see Gendolla & Wright, 2005, and Richter et al., 2016, for reviews and a systematic description of the role of analogous moderators of the relationship between obstacles and motivational/affective strength; see also Wright & Pantaleo, 2013).

In addition, there are also reasons to expect that similar patterns of effects should be found for different types of stressors (cf. Randall & Bodenmann, 2009), as *any* obstacle to positive feelings of romantic affect should theoretically deter—and, thus, systematically alter—the strength of those feelings. Such stressors may comprehend, for instance, stressors that are external (e.g., work-related problems; finance) vs. internal to the relationship (e.g., conflicts, sexual problems); major (e.g., unemployment, severe illness) vs. minor events (e.g., everyday family demands, neighborhood hassles); or that imply chronic (e.g., a partner's handicap, low economic status) vs. acute stress (e.g., an examination, the death of a relative). Future studies should test these possibilities.

Further, an improved understanding of how stress both enhances *and* reduces partners' feelings of romantic affect has also clear practical implications, because it may provide practitioners and professionals with a powerful *theoretical tool* to regulate the intensity of partners' reciprocal feelings (see also Sciara & Pantaleo, 2018). Preventive interventions for couples could, for instance, render partners especially aware of the regulatory power of stress on romantic feelings, so that partners could consequently better adjust the intensity of those feelings. Feelings of romantic affect could be regulated—i.e., either reduced or enhanced—by integrating such strategies with dedicated training programs focused on positive relationship processes and outcomes (e.g., dyadic coping, Donato & Parise, 2012; Gasbarrini et al., 2015; capitalizing on partners' good news, Pagani et al., 2015; furthering social exchange and reciprocity, Pantaleo & Wicklund, 2000; contrasting automatic prejudice in interpersonal relations, Pica et al., 2017).

A clear limitation of the reported study is that participants were fairly young; consequently, they were involved in relationships of a relatively short duration (3 years on average). Future research should therefore systematically test whether the present results would also hold (a) for comparatively older partners; and (b) for partners at different stages of their relationship—though, according to EIT (Brehm, 1999; Brehm & Miron, 2006), there is no

firm theoretical reason for anticipating radically different patterns of results depending on the age of the partners, and/or their relationship duration.

Finally, strength of feelings of romantic affect towards the partner could also depend on whether the main sources of stress within the relationship are primarily attributed to oneself or to the other. In the first case, this would reduce the burden assigned to the partner; in the second, this would correspond to a more severe judgment. Such an evaluation would determine, in turn, the intensity of (positive) romantic feelings towards the partner. Future research should investigate these possibilities.

Conclusions

The present research has shown how stress can actually shape the intensity of feelings of positive affect between relationship partners in non-obvious, paradoxical ways (cf. Brehm et al., 1999). In line with the predictions of emotional intensity theory (EIT: Brehm, 1999; Brehm & Miron, 2006), increasing levels of stress systematically controlled—i.e., either intensified *or* diminished—feelings of romantic affect within the couple. Most importantly, this article offers a unitary, single-process theoretical explanation that reconciles past conflicting findings on the *detrimental* vs. *beneficial* role of stress on couple's well-being. In so doing, it also bears clear and straightforward implications for both researchers and professionals in the domain of (romantic) interpersonal relationships, with special emphasis on how to promote partners' everyday adjustments to stress.

Funding

The authors have no funding to report.

Competing Interests

The authors have declared that no competing interests exist.

Acknowledgments

The authors have no support to report.

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