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Negative speaks louder than positive: Negative implicit partner evaluations forecast destructive daily interactions and relationship decline

Ezgi Sakman[1,2] **and Vivian Zayas**[1]

Abstract

Romantic relationships are affectively complex. Any given interaction consists of both rewarding and aversive features. Recent work has shown that implicit partner evaluations (IPEs)—evaluations spontaneously triggered when one thinks about one's partner—are also affectively complex. Does such complexity in IPEs help individuals navigate rewarding and aversive aspects inherent in interactions? The present work examined the proposition that negative IPEs uniquely forecast aversive daily relationship behaviors, whereas positive IPEs uniquely forecast rewarding daily relationship behaviors. Individuals self-identified as in a heterosexual romantic relationship completed measures to assess their implicit and explicit partner evaluations at two time points, spanning a three-month period, as well as a daily diary component. Time-1 negative IPEs forecasted perceiving and enacting negative behaviors during a 14-day daily diary, which, in turn, predicted deterioration in explicit partner and relationship evaluations 3-months later. The predictive ability of negative IPEs remained even after statistically controlling for positive IPEs and explicit evaluations. Positive IPEs were weak and inconsistent predictors of outcomes. The findings shine a spotlight on the differential functions of positive and negative IPEs, the importance of assessing negative IPEs independently from positive IPEs, and the role of negative IPEs in predicting destructive relationship experiences.

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Automatic processes, implicit evaluations, negative relationship behaviors, partner evaluations, romantic relationships

Introduction

Romantic relationships are affectively complex—they are a source of rewarding experiences; yet, even highly satisfying relationships can be a source of aversive events. Indeed, any interaction with a romantic partner is unlikely to be entirely positive or entirely negative; instead, a given interaction consists of a dynamic stream of rewarding and aversive cues encountered simultaneously (FeldmanHall & Nassar, 2021). Consider, for example, that after a long day, a person can experience comfort cuddling with one's partner while also experience annoyance if the partner makes an insensitive comment.

A longstanding aim in psychological science is to delineate the cognitive and affective architecture that enables individuals to quickly make sense of such affectively complex experiences (e.g., Gable & Reis, 2001; Gere et al., 2013; Happé et al., 2017; Lieberman, 2013; Murray et al., 2006). Here, we focus on Implicit Partner Evaluations (IPEs)—evaluations of goodness and badness that come to mind automatically, effortlessly, unintentionally, and at times nonconsciously, when one thinks of one's partner (see Zayas & Shoda, 2005; see also LeBel & Campbell, 2009). Implicit partner evaluations are expected to serve as a filter through which people perceive and respond to their relational world (Fazio & Olson, 2003), with implications for the long-term health of the relationship (see Hicks & McNulty, 2019; Zayas et al., 2017 for reviews).

Underscoring the affective complexity of romantic relationships, recent work shows that partners trigger *bivalent IPEs*—i.e., thinking of one's partner spontaneously brings to mind positive *and* negative evaluations simultaneously (Zayas & Shoda, 2015). Still, the consequences of bivalent IPEs are unclear. One proposition is that the presence of both positive and negative IPEs helps individuals navigate the rewarding and aversive aspects in interactions (Zayas et al., 2017). We examine this proposition using a longitudinal design with a daily diary component. Specifically, we examine how positive and negative IPEs at time 1 uniquely predict perceptions and behaviors in day-to-day interactions within romantic relationships and explore their predictive ability for relationship outcomes assessed at time 2 (three-months later).

Implicit partner evaluations

Implicit partner evaluations are memory structures reflecting the residue of past experiences with and information about the particular partner, as well as other past and present relationships, experienced directly or indirectly (Conrey & Smith, 2007; Fazio, 2001; Gawronski et al., 2016). Like other memory structures, IPEs are assumed to help individuals predict future events by affecting how situations are encoded, guiding attention and interpretation of events, and consequently, affecting how people behave.

Implicit partner evaluations are expected to play a central role in romantic relationships. When assessing feelings about one's partner, individuals may intentionally or unintentionally misrepresent or distort their feelings. Because IPEs are assessed indirectly (e.g., through speeded reaction time tasks), they are assumed to be less sensitive to such distortions (Greenwald et al., 2009; Lee et al., 2010). Moreover, because interactions with partners are affectively laden (Clark & Taraban, 1991; Fehr et al., 1999) and often take place during leisure ("down") time (Amato et al., 2003), people's behaviors may rely more heavily on implicit processes. Indeed, implicit processes are most influential when stimuli are affective (Metcalfe & Mischel, 1999) and when individuals are unable or unmotivated to override them (Fazio, 2001; Hicks et al., 2021; van Kleef, 2010).

Not surprisingly, in correlational work, individuals with stronger positive (vs negative) IPEs reported greater emotional commitment and attachment security with their partner (Zayas & Shoda, 2005), as well as relationship satisfaction (e.g., LeBel & Campbell, 2013; Zayas & Shoda, 2005). In longitudinal work, IPEs predicted likelihood of breaking-up 12-months later among dating couples (Lee et al., 2010), and less relationship satisfaction decline four years later among newlyweds (McNulty et al., 2013); in both longitudinal studies, explicit measures of relationship functioning did not significantly predict relationship outcomes, attesting to the unique forecasting ability of IPEs.

Partner representation triggers bivalent IPEs

Commonly, measures assess IPEs in terms of *net implicit positivity*—i.e., the extent to which a partner spontaneously activates positive *relative* to negative evaluations (Banse, 1999; Faure et al., 2018; Hicks et al., 2016; LeBel & Campbell, 2013; McNulty et al., 2013, 2017; Murray et al., 2010, 2019; Scinta & Gable, 2007; Zayas & Shoda, 2005). But, a defining characteristic of partner representations is their affective complexity (Andersen & Chen, 2002; Andersen & Cole, 1990). To the extent that interactions with and information about romantic partners consist of rewarding *and* aversive features, over time and space, partner representations should come to possess both positive and negative evaluations in memory (Kaplan, 1972; Newby-Clark et al., 2002; Priester & Petty, 1996; Thompson et al., 1995).

One implication of this is that net implicit positivity does not capture the complete picture (O'Shea & Wiers, 2020). Imagine two people whose IPEs are assessed on positive and negative separately, with 10 reflecting a strong association and 0 reflecting a weak association. Person A shows extremely positive IPEs (scoring 10) and moderately negative IPEs (scoring 5), whereas Person B shows moderately positive IPEs (scoring 5) and almost no negative IPEs (scoring 0). The net implicit positivity—i.e., difference between their positive and negative IPEs of 5—for these two people is the same, but clearly, the structure of their absolute positive and negative IPEs differs. Both intuition and theory might expect that such structural differences would affect relationship functioning.

Inspired by these ideas, Zayas and Shoda (2015) demonstrated that priming with the name of a significant other (e.g., romantic partner) triggered positive *and* negative evaluations (*bivalent implicit evaluations*). In longitudinal work, Lee and colleagues (2010) found that weaker positive IPEs and stronger negative IPEs both predicted

future break-up. Recently, Faure and colleagues (2021) found that holding stronger positive *and* negative IPEs—i.e., greater implicit ambivalence computed with the Thompson formula—predicted stronger motivation to solve marital problems, which predicted decreased problem severity and increased relationship satisfaction.

Might positive and negative IPEs be differentially attuned to rewards and aversive features of situations?

Diverse perspectives posit that the human mind is simultaneously attuned to rewards and threats (Carver & White, 1994; Gray, 1987; Larsen & McGraw, 2011; Metcalfe & Mischel, 1999). According to the evaluative space model (ESM; Cacioppo & Berntson, 1994), people scan their environment in terms of both its rewarding and aversive features. Evaluations of positivity and negativity reflect the workings of distinct separable neural systems, operate independently and simultaneously early in the processing stream, and are eventually integrated into a mutually exclusive behavioral response that is confined to either approach or withdrawal (Grabenhorst et al., 2007).

Applying ESM to relationships, we reason that positive and negative IPEs are memory structures that reflect the workings of the positivity and negativity systems. As such, positive IPEs should be relatively more attuned to rewarding features of relationship interactions and negative IPEs should be relatively more attuned to aversive ones. We illustrate these ideas in Figure 1. The left panel illustrates that each member of an interaction is the other partner's "situation," actual or imagined (Zayas et al., 2002). At a granular level, interactions with one's partner can be conceptualized in terms of "features" of situation (Mischel & Shoda, 1995; Zayas et al., 2008), allowing any given interaction to consist of rewarding *and* aversive features. In Figure 1, features *a*, *b*, c, and *h* are rewarding aspects (denoted by +), and features *d*, *e*, and *i* are aversive aspects (denoted by −). Revisiting the hypothetical example presented in the introduction, after a long day, cuddling with one's partner consists of several rewarding features, such as seeing their face (*a*+), smelling their scent (*b*+), touching their hand (*c*+), and hearing their voice (*h*+). But the interaction also simultaneously consist of aversive features, such as the partner's insensitive remarks (*d*−).

The right-hand panel of Figure 1 illustrates a person's "mind," conceptualized as a social cognitive network (Mischel & Shoda, 1995, 1998) that helps encode and make sense of situations. The network consists of cognitions and beliefs, such as encodings, affects, expectancies, and strategies. A key structure within the network are representations of partners, especially aspects that operate automatically and are affective or "hot." In the network, we assume that the typical structure of partner representations is bivalent. The partner representation is characterized by two available links: an excitatory *partner→positive* link, reflecting that activating the partner representation automatically activates positive, *and* an excitatory *partner→negative* link, reflecting that activating the partner representation also automatically activates negative.

The bivalent nature of partner representations is expected to have implications for what people attend to in a situation and remember. According to social cognitive perspectives (Payne et al., 2017), IPEs are understood within the language of concept

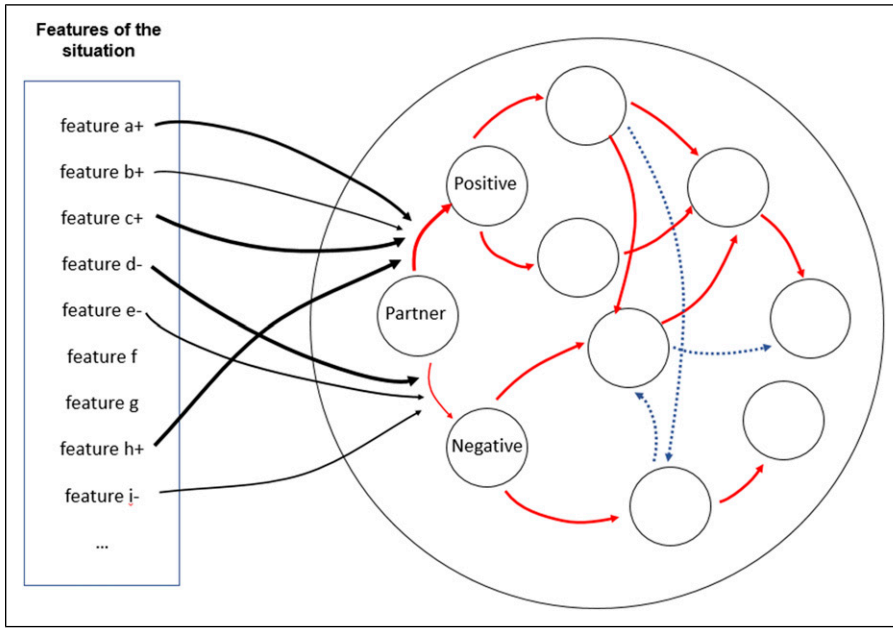

Figure 1. Rewards and aversive features of situations as encoded by positive and negative IPEs within a Person's mind. Note. In romantic relationships, each partner serves as the "situation" for the other partner (left side of figure). Situations can further be represented in terms of situational features some of which are rewarding (denoted with a +) and some of which are aversive (denoted with a −). Features of situations are encoded and processed by a person's mind (central part of figure), which is conceptualized as a cognitive-affective processing system (CAPS). The schematic of a person's processing system consists of key cognitions and affects (represented as circles) interconnected with one another (connections are represented as lines). Connections among cognitions vary in association strength (e.g., thick lines represent stronger associations between two cognitions) and types (excitatory vs. inhibitory). Activation of cognitions and affects within a person's system is determined by the patterning of connections. Ultimately, a person's cognitive-affective processing system mediates the effects of situations on a person's behavior.

activation (Higgins & King, 1981). As such, *partner→positive* and *partner→negative* are *available links* in people's minds. Furthermore, the likelihood that the evaluation is retrieved upon activation of the partner representation also reflects *link accessibility.* Links that are more accessible, either chronically or temporarily, are expected to more strongly affect what a person attends to and remembers (Andersen et al., 1995; Bargh & Pratto, 1986).

Thus, we reason that positive and negative IPEs have implications for the ease with which individuals perceive rewarding and aversive features of relationship interactions, respectively. To the extent that a person has stronger positive IPEs, the *partner→positive* link is more accessible, increasing the ease with which they attend to and remember rewarding features of partner interactions.[1] Likewise, to the extent that a person has

stronger negative IPEs, the *partner→negative* link is more accessible, increasing the ease with which they attend to and remember the aversive features of partner interactions.

The present research

Using a longitudinal design, at time 1, we assessed positive and negative IPEs (along with explicit partner evaluations and relationship problems). Participants then completed a 14-day daily diary wherein they reported the positive and negative behaviors enacted by their partners (partner behaviors) and themselves (own behaviors). Finally, at time 2, three months after time 1, we once again assessed positive and negative IPEs separately (along with the same explicit measures). Our primary preregistered hypothesis[2] involved examining how time-1 positive and negative IPEs forecast positive and negative daily relationship experiences, such that negative IPEs would track relatively more strongly with negative aspects of relationship experiences, and positive IPEs would track relatively more strongly with positive aspects. We further explored if the link between time-1 IPEs and time-2 relationship outcomes unfolds through daily relationship experiences, building on work showing that IPEs may exert their influence based on perception of problems in the relationship (McNulty et al., 2013) and enactment of one's own behaviors (Faure et al., 2018), and motivation to improvement the relationship (Faure et al., 2021).

Method

Transparency and openness

The present study is part of a larger project on romantic relationships. Here, we summarize information relevant to the current study. Our study was preregistered (https://osf.io/rph4q?view_only=9e44cdd7c21d44c8ad4ffb4d7f94a631) and all data and syntax are accessible at https://osf.io/8vqda/?view_only=e8aad360ccc44c0db9bebb3b9fb6824a. The study protocol was approved by the Institutional Review Board (IRB) of a northeast university in Ithaca, NY, where the study was conducted.

Participants

Following our preregistration plan, we aimed to recruit at least 100 participants who were in an exclusive heterosexual romantic relationship but tried to recruit more as we expected some attrition at time 2. We recruited undergraduate students of the university where the study was conducted and we did not exclude the data of any participants. One hundred and forty-three participants (M_{age} = 21.19 (18–34), SD_{age} = 2.76; 108 women, 34 men, one non-binary; 138 heterosexual, two bisexual, one self-identified as other; 80 White or Caucasian, 48 Asian or Asian American, six Black or African American, three Indian American or Alaska Native, two Native Hawaiian or other Pacific Islander; $M_{relationship\ length}$ = 21.25 months) took part in the online session at time 1. Of this initial sample, 131 individuals completed the lab session and the daily diary. Three months later, at time 2, 106 participants, who were still in a romantic relationship with their

partners, completed a second online and lab sessions. These participants displayed similar demographic characteristics to the initial sample.

A power analysis indicated that our sample size achieved 84% statistical power to detect our primary directional hypothesis, assuming a small-to-medium sized effect (r = .21) (one-tailed, α = .05, see Lakens, 2016), which is the average effect observed in social psychological studies (Bakker et al., 2016; Richard et al., 2003). As for our exploratory mediational hypothesis, a Monte Carlo power analysis simulation (Schoemann et al., 2017) showed that we had 82% statistical power to detect a medium indirect effect (r = .30) (two-tailed, α = .05) (see Supplemental Materials).

Materials and procedure

The Supplemental Materials contain an illustration of study procedures (Figure S1) and all study materials.

Implicit partner evaluations. At both time-1 and time-2 lab sessions, participants completed the Partner-Focused Go/No Go Association Task (P-GNAT; Lee et al., 2010), an indirect measure designed to tap into positive and negative IPEs separately. To obtain idiosyncratic partner-relevant stimuli for the P-GNAT, participants first typed in the name they most associate with their partner, then they completed the test (see Appendix for specific instructions). In the partner + good block, participants made a "go" decision (by pressing the space bar) if a target belonged to either the "partner" or the "good" category (represented with the words *understanding, sharing, accepting*) and made a "no go" decision (by not pressing the space bar) if a target belonged to the "bad" category (*attacking, nagging, criticizing*). In the partner + bad block, participants performed a similar task but this time "partner" and "bad" categories were presented together. Each block consisted of 70 trials, following best practices for the GNAT (Williams & Kaufmann, 2012).

We computed d' scores for the partner + good block to measure positive IPEs and the d' scores for the partner + bad block to measure of negative IPEs. Higher d' scores reflect ease of associating partner with good, and partner with bad, respectively. To estimate the reliability of P-GNAT, we used the split-half test (Williams & Kaufmann, 2012). Odd and even numbered trials of the P-GNAT significantly correlated with each other ($r_{\text{Time-1 Positive IPEs}} = .49, p < .001$; $r_{\text{Time-1 Negative IPEs}} = .67, p < .001$; $r_{\text{Time-2 Positive IPEs}} = .47, p < .001$; $r_{\text{Time-2 Negative IPEs}} = .57, p < .001$), indicating moderately good reliability.

Explicit evaluations. Prior to both time-1 and time-2 lab sessions, participants completed online questionnaires, including a single item to assess relationship problems and multiple items to assess explicit partner evaluations, both positive and negative (see Appendix for specific items). The positive and negative items were separately averaged to create two indices reflecting positive ($\alpha_{T1} = .38$, $\alpha_{T2} = .63$) and negative explicit partner evaluations ($\alpha_{T1} = .62$, $\alpha_{T2} = .59$).

Daily relationship behaviors. On the day following the time-1 lab session, participants began an online 14-day daily diary. In each daily survey, participants reported the

frequency with which their partner as well as themselves engaged in four positive behaviors and four negative behaviors (see Appendix for specific items). Responses to the daily measures were averaged to capture the frequency of partner and own daily positive ($\alpha_{Partner}$ = .81, α_{Own} = .82) and negative ($\alpha_{Partner}$ = .49, α_{Own} = .43) behaviors.

Results

Preliminary analyses

Table 1 reports the descriptive statistics (*M*, *SD*) as well as zero-order correlations for our key measures. At both time points, participants held stronger positive IPEs than negative (*d*s > 4.10, *p*s < .001). Consistent with past work (e.g., Hicks et al., 2021), IPEs did not significantly correlate with explicit measures at either time point (*r*s < .17, *p*s > .148), with the exception of time-2 negative IPEs correlating with time-2 negative explicit partner evaluations (*r* = .20, *p* = .043). Still, given that some measures showed lower Cronbach's alpha than desired, perhaps the relatively weak or absent correlations between implicit and explicit measures reflect issues with measures' reliability. Although ideally alpha would be greater (discussed in detail in the Discussion), the overall pattern of results provides important evidence of our measures' reliability (i.e., producing consistent results over time) and validity (i.e., correlating with other theoretically related measures). For example, both positive and negative IPEs and positive and negative explicit measures showed temporal reliability (e.g., time-1 positive IPEs predicted time-2 positive IPEs and time-1 explicit evaluations predicted time-2 explicit evaluations). Further, the measures correlated with one another in theoretically expected ways. Importantly given the primary aim of the present work, time-1 and time-2 negative IPEs correlated with a higher frequency of perceiving daily negative partner behaviors and time-2 negative IPEs correlated with a higher frequency of perceiving and enacting daily negative behaviors. Also, time-1 explicit evaluations correlated with relationship problems, consistent with previous work on explicit evaluations (Chesterman et al., 2021; McNulty & Russell, 2010).

Do time-1 IPEs predict daily behaviors?

Because daily diary responses were nested within each participant, we ran Multilevel Linear Models (MLMs) for each of our four outcomes (i.e., partner/own daily negative/positive behaviors). In all MLMs, we simultaneously entered time-1 positive and negative IPEs as the level-2 (participant-level) predictors. To assess the predictive ability of IPEs above and beyond explicit measures, we also entered time-1 positive and negative explicit partner evaluations and relationship problems as covariates. Finally, participants' intercepts and daily diary entry (e.g., 1st, 2nd) were entered as random factors.[3]

As predicted, time-1 negative IPEs uniquely forecasted a higher frequency of perceiving partner daily negative behaviors (*B* = .21, *SE* = .08, *p* = .008),[4] and a higher frequency of reporting one's own enactment of daily negative behaviors (*B* = .16, *SE* = .07, *p* = .031) (Table 2).

Table 1. Descriptive statistics (means, standard deviations) and bivariate correlations.

			Time-1 Measures					Daily Diary Measures				Time-2 Measures			
	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
Time-1 measures															
1. Relationship problems T1	2.60	1.08													
2. Negative explicit partner evaluations T1	2.97	1.21	.50***												
3. Positive explicit partner evaluations T1	6.77	.50	−.16	−.17											
4. Negative IPEs T1	2.29	.83	.10	−.02	.03										
5. Positive IPEs T1	2.53	.65	.11	.14	−.12	.35***									
Daily diary measures															
6. Partner daily negative behaviors	2.36	.64	.09	.03	−.12	.22*	−.04								
7. Partner daily positive behaviors	4.51	1.23	−.12	−.24*	.18	−.02	−.11	−.11							
8. Own daily negative behaviors	2.28	.62	−.10	−.02	−.10	.14	−.03	.76***	−.09						
9. Own daily positive behaviors	4.46	1.22	−.15	−.24*	.19*	−.03	−.10	−.10	.96***	−.08					
Time-2 measures															
10. Relationship problems T2	2.86	1.39	.58***	.49***	−.33***	.12	.09	.27**	−.13	.18	−.11				
11. Negative explicit partner evaluations T2	2.99	1.11	.37***	.72***	−.35***	−.01	.10	.21*	−.29**	.21*	−.26**	.56***			
12. Positive explicit partner evaluations T2	6.68	.59	−.31**	−.27**	.62***	−.14	−.05	−.25**	.19*	−.21*	.17	−.43***	−.42***		
13. Negative IPEs T2	2.59	.75	.02	.08	−.10	.35***	.34***	.24*	−.14	.24*	−.11	.12	.20*	−.17	
14. Positive IPEs T2	2.75	.69	.02	−.02	.00	.22*	.40***	.06	−.05	−.05	.00	.06	−.01	−.02	.64***

$N = 106$, $< .05$, $^{**}p < .01$, $^{***}p < .001$.

Note. To allow for comparisons across measures, the results are based on participants ($N = 106$) who completed all measures at both time points; T1 = Time 1; T2 = Time 2; IPE = Implicit Partner Evaluations, measured as the *d′* score, the difference between the hit rate and the false alarm rate, wherein higher scores indicate stronger IPEs; Relationship Problems were measured on 7-point Likert scale (1 = *none*, 7 = *a lot*); Positive and Negative Explicit Partner Evaluations were measured on 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*); Daily Behaviors were measured on 7-point Likert scale (1 = *not at all*, 7 = *a lot*); Daily Behaviors were aggregated across the daily diary responses.

Table 2. Estimates from multilevel linear models predicting partner and own daily behaviors from implicit partner evaluations and explicit relationship and partner evaluations at time 1.

	Partner Behaviors									
	Daily Negative Behaviors					Daily Positive Behaviors				
Variables	Estimate	*SE*	*t*	*p*	95% CI	Estimate	*SE*	*t*	*p*	95% CI
Intercept	2.75	.73	3.79	<.001	[1.32, 4.19]	2.92	1.30	2.25	.026	[.35, 5.48]
Negative IPEs T1	.21	.08	2.69	.008	[.06, .36]	.05	.14	.38	.704	[−.22, .32]
Positive IPEs T1	−.19	.09	−2.10	.038	[−.38, −.01]	−.01	.17	−.08	.939	[−.34, .32]
Relationship problems T1	.08	.05	1.51	.135	[−.03, .19]	−.13	.10	−1.34	.181	[−.32, .06]
Negative explicit partner evaluations T1	.02	.06	.27	.786	[−.10, .13]	−.20	.10	−1.96	.053	[−.40, .00]
Positive explicit partner evaluations T1	−.08	.10	−.85	.397	[−.28, .11]	.35	.18	1.94	.055	[−.01, .70]
	Own behaviors									
	Daily Negative Behaviors					Daily Positive Behaviors				
Variables	Estimate	*SE*	*t*	*p*	95% CI	Estimate	*SE*	*t*	*p*	95% CI
Intercept	3.09	.69	4.46	<.001	[1.72, 4.46]	2.83	1.29	2.19	.030	[.27, 5.39]
Negative IPEs T1	.16	.07	2.18	.031	[.02, .31]	.02	.14	.17	.868	[−.25, .29]
Positive IPEs T1	−.10	.09	−1.15	.253	[−28, .07]	−.01	.17	−.03	.977	[−.33, .32]
Relationship problems T1	−.01	.05	−.21	.834	[−.11, .09]	−.16	.10	−1.61	.111	[−.35, .04]
Negative explicit partner evaluations T1	.03	.05	.59	.556	[−.07, .14]	−.17	.10	−1.74	.085	[−.37, .02]
Positive explicit partner evaluations T1	−.14	.10	−1.44	.151	[−.33, .05]	.36	.18	2.02	.046	[.01, .71]

Note. The results are based on participants ($N = 131$) who completed the explicit measures at T1 and the daily diary measures; CI = Confidence Interval; T1 = Time 1; IPE = Implicit partner evaluations; Relationship problems were measured on 7-point Likert scale (1 = *none*, 7 = *a lot*); positive and negative explicit partner evaluations were measured on 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*), partner and Own negative and positive behaviors were measured on a 7-point Likert scale (1 = *not at all*, 7 = *a lot*).

Contrary to predictions, time-1 positive IPEs did not significantly predict daily positive behaviors, either partner's or one's own (*p*s > .704).[5] But, interestingly, time-1 positive IPEs predicted lower frequency of perceiving partner daily negative behaviors ($B = -.19$, $SE = .09$, $p = .038$).

Are daily negative behaviors a pathway between time-1 IPEs and change in explicit relationship and partner evaluations?

Next, we investigated whether the frequency of daily negative behaviors (partner's and own) serves as a pathway by which time-1 IPEs exert their effect on explicit relationship and partner evaluations over time. Accordingly, we ran mediation models using PROCESS (Model 4; Hayes, 2017) to derive confidence intervals for the indirect effects using 5,000 bootstrap samples. Following recommendations for mediational analyses, we tested for the statistical significance of indirect effects in the absence of statistically significant total effects (see Hayes, 2009; Shrout & Bolger, 2002). To operationalize *change* in explicit evaluations over the 3-month period, we calculated the difference between time-2 and time-1 scores for relationship problems, as well as for positive and negative explicit partner evaluations.[6] To operationalize daily behaviors, we computed the average score, for each participant, across the 14-day daily diary.[7]

Stronger time-1 negative IPEs predicted increases in relationship problems over the three months via higher frequency in perceiving *partner* daily negative behaviors ($b = .07$, 95%CI [.01, .17], Figure 2; Panel A). Similarly, stronger time-1 negative IPEs predicted increases in negative explicit partner evaluations over the three months via higher frequency in perceiving partner daily negative behaviors ($b = .05$, 95%CI [.01, .13]), Figure 2; Panel B).[8] *Own* daily negative behaviors did not show evidence of mediating the relationship between time-1 negative IPEs and increases in relationship problems or explicit partner evaluations over three months (Figure S2). Mediation models predicting change in positive explicit partner evaluations or with time-1 positive IPEs as the predictor were not statistically significant (see Supplemental Materials).

Discussion

The present study finds that negative IPEs forecast negative daily interactions and subsequent deterioration of relationship evaluations. Specifically, individuals who at time 1 had stronger negative IPEs reported perceiving more negative partner behaviors, and enacting more negative behaviors in daily interactions. Moreover, perceiving more negative partner behaviors further forecasted deteriorations in the overall health of the relationship three months later. Speaking to the differential functioning of negative and positive IPEs, time-1 positive IPEs was a weaker and inconsistent predictor of daily interactions and the future health of the relationship.

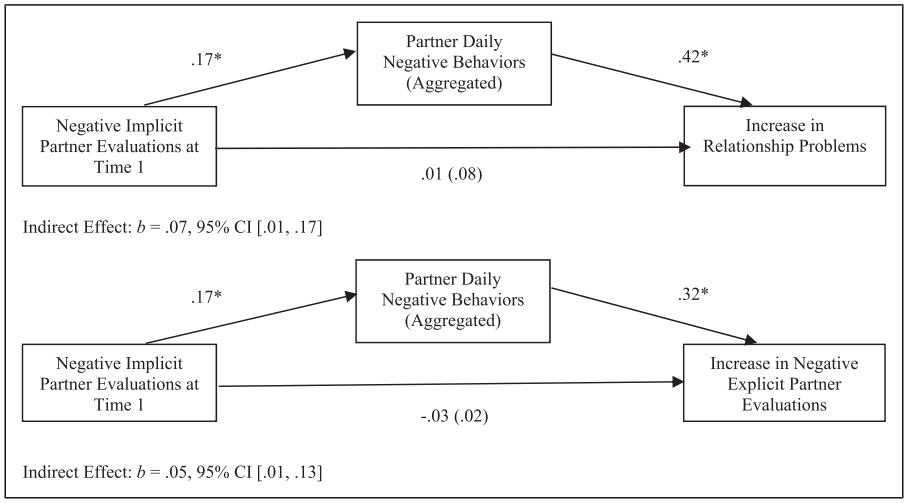

Figure 2. Partner daily behaviors mediating the link between initial implicit partner evaluations and change in explicit relationship and partner evaluations. Panel A. Partner Daily Negative Behaviors Mediating the Effect of Negative IPEs at Time 1 on Increase in Relationship Problems. Panel B. Partner Daily Negative Behaviors Mediating the Effect of Negative IPEs at Time 1 on Increase in Negative Explicit Partner Evaluations. $N = 106$, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$. *Note.* Results are based on participants ($N = 106$) who completed all measures at both time points; values represent unstandardized regression coefficients.

The value of assessing positive and negative IPEs

The present work adds to the literature by disentangling the effects of positive IPEs from negative ones. Specifically, the majority of prior work has found that stronger *net* positive (vs negative) IPEs predict more positive outcomes (e.g., being more constructive during a conflict discussion (Faure et al., 2018), expressing more interest in partner's day (LeBel & Campbell, 2013). However, because this work assesses net positivity, it is not known whether these better relationship outcomes are associated with stronger positive IPEs, weaker negative IPEs, or both. In the present work, we find that stronger negative IPEs are particularly predictive of negative daily partner perceptions and subsequent deterioration in relationship evaluations. Moreover, positive IPEs had relatively weaker and more inconsistent effects.

Many questions remain about how positive and negative IPEs may function. Nonetheless, by beginning to disentangle positive and negative IPEs, the present work provides insights about the differential functioning of IPEs, as logically derived from assumptions of ESM. One, the results show that negative IPEs are not simply the inverse of positive IPEs. Based on univalent conceptualizations of IPEs, where good is on one end and bad is on the other, positive IPEs would be inversely related with negative IPEs. But, in the present work, positive and negative IPEs were positively correlated at both time points. Although such correlations could reflect shared method, critically, positive and

negative IPEs showed different predictive abilities. In particular, as reflected in the zero-order correlations (Table 1), time-1 negative IPEs predicted higher frequency of perceiving partner negative behaviors, but time-1 positive IPEs did not. Moreover, in the MLM, negative IPEs more consistently and strongly forecasted daily relational threats, above and beyond the effects of positive IPEs and explicit evaluations. Overall, the results suggest that negative and positive IPEs are not simply the inverse of one another, but that they are unique predictors of perceptions of daily relationship behaviors.

A second insight gained by assessing positive and negative IPEs separately is that negative IPEs more strongly forecasted daily relational threats than (weaker) daily relational rewards. Indeed, negative IPEs predicted partner negative behaviors more so than partner positive behaviors ($t(106) = 1.661$, $p = .04$; Supplemental Materials). Such findings are consistent with ESM assumptions that perceivers assess threats via the negativity system, and rewards via the positivity system.

To illustrate the knowledge gained by the present findings, let's return to our hypothetical two people: Person A who has extremely positive IPEs (10) and moderately negative IPEs (5) and Person B who has moderately positive IPEs (5) and almost no negative IPEs (0). The results of the present work suggest that, even though the two people have the same net implicit positivity, the different absolute positive and negative IPEs meaningfully forecast different relationship outcomes. Specifically, Person A would be expected to have worse relationship outcomes, than Person B, because they have stronger negative IPEs that forecast higher frequency of perceiving negative partner behaviors.

Revisiting ESM's assumptions

Why were negative IPEs, more so than positive IPEs, particularly diagnostic of relationship outcomes? Although research highlights that positive affective responses can have strong effects (Selcuk et al., 2010; 2012; Zayas et al., 2015, under review), other work has shown that positive and negative affect have different consequences (Hardy & Segerstrom, 2017; Luginbuehl & Schoebi, 2020; Urganci et al., 2022). Thus, our work is consistent with research showing that positive and negative processes have differential effects on outcomes.

From an ESM perspective, our findings that negative IPEs more strongly forecasted relationship outcomes may reflect a *negativity bias*—less negative input is required to trigger negative processing, compared to the amount of positive input required to trigger positive processing (Baumeister et al., 2001; Fazio et al., 2004; Kahneman & Tversky, 1984; Pratto & John, 1991). The negativity bias is thought to stem from the fact that positive events are more frequent and more similar to each other, and thus less diagnostic (Koch et al., 2016; Shin & Niv, 2021). Indeed, in nondistressed romantic relationships, positive behaviors occur more frequently than negative ones (Finkenauer et al., 2010; Gottman & Levenson, 1999). This was the case in our study, where in the daily diary, participants were more likely to report positive than negative behaviors, both for themselves and their partners.[9] Due to their uniqueness and diagnosticity, negative events are better retained in memory (Alves et al., 2015). Indeed, people attend to and remember

relational threats (vs. rewards) across diverse social contexts (Chernyak & Zayas, 2010; Eisenberger et al., 2003; Williams & Zadro, 2006; Zayas et al., 2009). Thus, whether because of structural differences in the likelihood of encountering positive and negative events or inherent predispositions to attend to or remember negative events, or both, the present findings are consistent with the idea that negative partner behaviors may be particularly salient (see Norris et al., 2010 for a review). In Figure 1, the negativity bias is illustrated with thicker lines connecting aversive situational features with *partner→-negative* links.

If people have a negativity bias, then shouldn't IPEs be more negative than positive overall? We find that people have (much) stronger positive than negative IPEs, consistent with previous research (Lee et al., 2010; Zayas & Shoda, 2015). Although at first blush this seems to contradict a negativity bias account, it can again be understood through ESM's assumption of a *positivity offset*. At very low levels of affective input, the output of positivity is higher than the output of negativity. Stated differently, in the absence of a clear aversive feature, the positivity system is dominant. An evolutionary argument for the positivity offset is that it promotes exploration of the environment, including affiliation and bond formation, even when encountering potential or actual social threats.

Demystifying how *IPEs shape relationship outcomes*

Theoretically, IPEs are assumed to shape relationship outcomes. Our exploratory hypothesis suggests one possible route: Stronger negative IPEs predict increased likelihood of perceiving more negative partner behaviors in daily interactions, which in turn ultimately undermines evaluations of one's relationship and partner over a three-month period. The findings corroborate past work showing that negative relationship behaviors (Birditt et al., 2010; Gottman & Levenson, 2000; Huston et al., 2001) and marital problems (McNulty et al., 2013) predict relationship decline.

Interestingly, we did not find that one's *own* negative daily behavior predicted future deteriorations, which is seemingly inconsistent with findings wherein positive IPEs predicted constructive nonverbal behavior during conflict, which in turn predicted higher relationship satisfaction in a daily diary (Faure et al., 2018). One possible explanation is that, because of self-presentational or self-deception processes, people may be more willing to acknowledge or report on their partner's negative behaviors, rather than their own, resulting in negative IPEs more strongly predicting perceptions of partner's (rather than own) negative behaviors.

Constraints on generality—what next?

Contributions of the present study notwithstanding, we consider limitations of the present findings and constraints on generality (Simons et al., 2017), and offer directions for future work.

Theoretically, although the present work is informed by ESM which suggests that positive IPEs may be relatively more sensitive to positive cues, and vice versa, it is possible that positive IPEs could affect how negative cues are interpreted, and vice versa.

In some situations, perceiving a negative event, like partner's anger, may lead to negative relationship outcomes, and in other situations, it may lead to positive relationship outcomes (Baker et al., 2014). Indeed, in the present work, positive IPEs did predict negative relationship behaviors, but this effect was less reliable and robust. Future work might further examine how positive and negative IPEs function independently and possibly interact over time and across different contexts.

Methodologically, although the present work utilized a multi-method approach, including implicit, daily diary, and longitudinal methods, there are areas for improvement. Although daily diary methodology offers an ecologically valid way of measuring daily relationship behaviors, participants' and their partners' *behaviors* were not directly measured. It would be informative to assess the extent to which IPEs track *actual* behaviors in addition to *perceptions*, akin to work on partner responsiveness (Jolink et al., 2021). This could inform crucial unanswered questions, such as whether people with stronger negative IPEs are more likely to perceive negativity when negativity in fact does not exist. Additionally, to the extent that IPEs exert their influence via disambiguating partner's behavior—much like schemas affect encoding, storage, and recollection of social stimuli—future research may aim to ensure that the specificity (vs. abstractness) of positive and negative behaviors assessed via daily diary are equated. This will allow for stronger tests of the differential predictive ability of negative (vs. positive) IPEs.

Naturally, the passive nature of our longitudinal and mediation designs does not allow for cause-effect conclusions about the role of IPEs in relationship outcomes. Unmeasured third variables, such as dispositional characteristics of participants or their partners, or both, could have shaped time-1 negative IPEs as well as perception and enactment of daily negative behaviors. Noteworthy, our longitudinal design allowed us to show that negative IPEs forecasted daily negative behaviors, but daily negative behaviors did not significantly forecast change in negative IPEs.[10] Such results are consistent with the notion that partner IPEs, once formed, are relatively stable over time (Zayas & Shoda, 2005). Nonetheless, future studies employing experimental designs could more directly examine IPEs' causal role in coloring relationship experiences and outcomes.

Moreover, given that the research design assessed implicit and explicit evaluations at two time points, spanning a three-month period, as well as intervening daily experiences over two-weeks, some measures consisted of only a few items—a decision made to avoid taxing participants. As measures with few items lead to lower Cronbach's alphas (Eisinga et al., 2013), our alphas were lower than desired. This naturally raises questions about the measures' reliability and validity, and predictive power. Certainly, future work should aim to include more items to increase alpha. Still, there are other pieces of information that speaks to the measures' reliability and validity (John & Benet-Martínez, 2000), which gives us confidence that are measures are reliable and valid, even if imperfectly so. Namely, the fact that the explicit and implicit measures correlated with themselves over time speaks to their temporal reliability and that they were correlated with each other and with other theoretically related measures in expected ways provides evidence of their convergent and discriminant validity. Given that one consequence of relatively low alphas is the

attenuation of correlation coefficients (Trafimow, 2016); that is, measurement error leads to underestimating the true correlation, in the Supplemental Materials (Table S1), we report the correlations adjusting for the measurement error, which logically are higher than those reported in Table 1. That being said, considering the limitations stemming from low alphas, future work could certainly benefit from refining assessments of explicit evaluations for example by increasing the number of items.

Lastly, our sample focused on college-aged, heterosexual, young adults in dating relationships, with an average mean relationship length of 21.25 months. Although a substantial number (34%) self-identified as Asian American, the results need to be replicated with more diverse populations and with people who report more varied relationship quality and who are in more established long-term partnerships. Additionally, even though our sample size afforded statistical power to detect effect sizes typically observed in psychological science, it is important to acknowledge that the present study is not well suited for detecting smaller effect sizes ($r < .25$). Follow-up work with larger samples would afford more sensitive tests of potentially smaller effects, and nuanced hypotheses.

In conclusion

Scholars have long noted that key aspects of mental representations of others are affectively complex. The present work highlights how the bivalent nature of implicit partner evaluations relates to daily relationship experiences, and ultimately relationship outcomes.

Author's note

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Open research statement

As part of IARR's encouragement of open research practices, the author(s) have provided the following information: This research was pre-registered. The registration was submitted to: https://osf.io/rph4q. The data and the materials used in the research can be obtained at: https://osf.io/8vqda/?view_only=.

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Supplemental Material

Supplemental material for this article is available online.

Notes

1. We use the term 'perceived' to broadly refer to what individuals are attending to, but also encoding and elaborating mentally.
2. See Item 7 under "Implicit partner evaluation measures questions" of our preregistration plan available at https://osf.io/rph4q?view_only=9e44cdd7c21d44c8ad4ffb4d7f94a631.
3. The results were highly consistent when we ran the models without the explicit measures as covariates.
4. We report unadjusted *p*-values (two-tailed), but *p*-values should be interpreted in light of having performed multiple (four) directional tests. When we adjust our critical alpha-level to take into account the multiple tests (by dividing it by the number of tests) and the use of one-tailed tests for our primary, directional hypotheses (Lakens, 2016; by multiplying it by 2), our Bonferroni-adjusted critical alpha-level is .025.
5. We did not find statistically significant interactions between positive and negative IPEs in any models (*p*s>.47), although tests of interactions among continuous variables are difficult to power (McClelland & Judd, 1993).
6. The results of the mediation analyses remained the same when we used the residual score (T2 controlling for T1) as the outcome variable (the indirect effect for the first model was b = .08, 95% CI [.01, .18] and it was b = .06, 95% CI [.01, 13] for the second model).
7. MLM could not be used to test for mediation, because level-2 (participant-level) dependent variables are not permitted when the mediator is a level-1 (daily diary) variable (see Preacher et al., 2010).
8. When we reran the models including time-1 positive IPEs and positive explicit partner evaluations as covariates, the results showed that the indirect effect for the first model was b = .08, 95% CI [.00, .18] and it was b = .06, 95% CI [-.01, 14] for the second model.
9. M_{Own} Daily Positive Behaviors = 4.46, M_{Own} Daily Negative Behaviors = 2.28, $t(105) = 15.87$, $p < .001$, 95% CI [1.91, 2.45], $d = 2.25$; $M_{Partner}$ Daily Positive Behaviors = 4.51, $M_{Partner}$ Daily Negative Behaviors = 2.36, $t(105) = 15.34$, $p < .001$, 95% CI [1.87, 2.42], $d = 2.19$.
10. Theoretically, daily experiences might shape time-2 IPEs. Although daily experiences correlated with time-2 negative IPEs, this correlation was no longer statistically significant when controlling for time-1 IPEs (partner daily negative behaviors: $B = .07$, $p = .668$, 95% CI [−.26, .40]), own daily negative behaviors: $B = .18$, $p = .285$, 95% CI [−.16, .52]).

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