

**In Defense of Commitment:
The Curative Power of Violated Expectations**

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Abstract

A new model of commitment defense in romantic relationships is proposed. It assumes that relationships afford a central resource for affirming meaning and purpose in the world. Consequently, violating expectations about the world outside the relationship can precipitate commitment defense inside the relationship. A meta-analysis of five experiments, two follow-up correlational studies, and a longitudinal study of the transition to first parenthood supported the model. Experimentally violating conventional expectations about the world (e.g., “hard work pays off”) motivated less satisfied people to defensively affirm their commitment. Similarly, when becoming a parent naturalistically violated culturally conditioned gendered expectations about the division of household labor, less satisfied new mothers and fathers defensively affirmed their commitment from pre-to-post baby. The findings suggest that violating expected associations in the world outside the relationship motivates vulnerable people to set relationship their relationship right, thereby affirming expected associations in the relationship in the face of an unexpected world.

KEY WORDS: Commitment, trust, expectancy violation, meaning threat, parenthood.

Love is the delightful interval between meeting a beautiful girl and discovering that she looks like a haddock. *J. Barrymore (1882-1942)*

Life does not always unfold as expected. A beloved HBO drama can end with a cryptic fade to black, the stock market can rise when it should fall, the diligent can fail while the profligate prosper, the innocent can suffer tragedy, and the incompetent and corrupt can ascend to political power. When events in the world run amok, can people restore a sense of expected meaning and order through romantic relationships? Barrymore might not think so. As he intuited, partners often violate one's expectations, usually to unhappy effect (Eastwick & Neff, 2015; McNulty, 2010; McNulty & Karney, 2004; Murray, Griffin, Derrick, Harris, Aloni, & Leder, 2011). Nevertheless, the very power partners have to violate expectations may also turn relationships into a ripe canvas for setting violated expectations about how the world works right. This paper presents a new model of commitment-defense that reveals that violating worldly expectations can motivate people in disappointing relationships to embrace commitment.

Motivating Action: In Defense of Meaning

The world needs to make sense for people to act purposefully within it. The world has meaning when people perceive the associations in the world that their past experiences condition them to expect, as happens when ice is cold, puppies are playful, fruits are inanimate, new mothers are harried, perpetrators are punished, and relationships are fulfilling and committed (Heine, Proulx, & Vohs, 2006). Because goal-directed behavior depends on the perception of meaning, and meaning depends on the perception of expected associations, *unexpected* associations induce uncertainty and inhibit action (Brickman, 1987; Festinger, 1957; Harmon-Jones & Harmon-Jones, 2012; Jonas, McGregor, Klackl, Agroskin, Fritsche, Holbrook, Nash,

Proulx, & Quirin, 2011; Harmon-Jones, Amodio, & Harmon-Jones, 2009; Harmon-Jones, Schmeichel, Inzlicht, & Harmon-Jones, 2011; McGregor, Nash, Mann, & Phills, 2010; Proulx, Inzlicht, & Harmon-Jones, 2012; Proulx & Inzlicht, 2012; Randles, Inzlicht, Proulx, Tullett, & Heine, 2015; Schneider, Eerland, van Harreveld, Rotteveel, Pligt, Stoep, & Zwaan, 2013; Tritt, Inzlicht, & Harmon-Jones, 2012; van Harreveld, Rutjens, Rotteveel, Nordgren, & van der Pligt, 2009; van Harreveld, van der Pligt, & de Liver, 2009).

The action-based model of cognitive dissonance (Harmon-Jones et al., 2015), the anxiety-to-approach model of threat and defense (Jonas et al., 2014), and the meaning-maintenance model (Heine et al., 2006; Proulx & Heine, 2010; Proulx & Inzlicht, 2012) describe how people alleviate uncertainty when experience violates the meaningful associations they expect to see in the world. In these models, expectancy-inconsistent perceptions elicit aversive arousal (akin to anxiety) as a means of motivating people to impose the associations they expect to see on the world. Affirming the expected then restores meaning, thereby alleviating anxiety and removing the psychological brake that the expectancy-inconsistent associations put on behavior (Jonas et al., 2014; Nash, McGregor, & Prentice, 2011; Randles, Heine, & Santos, 2013).

The motivation to restore expected associations in the face of expectancy-violating experiences is so deeply rooted that it happens fluidly (Van Tongeren & Green, 2010). Fluid compensation means that affirmed consistencies do not need to correct the expectancy violation itself to restore meaning and alleviate anxiety (Proulx, Heine, & Vohs, 2010; Randles et al., 2015). For instance, people subliminally primed with inconsistent word pairings (e.g., quickly blueberry, juicy running) punish hypothetical prostitutes more severely for violating social convention, restoring meaning by countering the unexpected in one domain with the expected in another (Randles, Proulx, & Heine, 2011). Similarly, people told a tale of hard work resulting in

subject failure restore meaning by affirming the expected value of national allegiance (Proulx et al., 2010). Moreover, people confronted with expectancy-inconsistent beliefs about abortion restore perceptual order by perceiving meaningful pictures in random dots (van Harreveld, Rutjens, Schneider, Nohlen, & Keskinis, 2014). Restoring physical order by returning a messy lab room to a pristine state even affords sufficient symbolic meaning to inoculate people against anxieties about the unexpectedly inconsistent in their personal lives (van Harreveld et al., 2014).

In Defense of Relationship Commitment

Figure 1 integrates assumptions of interdependence (Murray, Holmes & Collins, 2006) and uncertainty reduction models (Harmon-Jones et al., 2011; Heine et al., 2006; Jonas et al., 2014) into a new model of commitment defense in romantic relationships. It assumes that people see satisfying romantic relationships as an intrinsic part of a sensible and meaningful life (Baumeister & Leary, 1995; Finkel, Cheong, Emery, Carswell, & Larson, 2015; Heine et al., 2006). Consequently, the world makes more sense and life is in better order when people can believe that their own romantic relationship is indeed committed and fulfilling.

Existing research suggests that people are naturally inclined to defuse relationship doubts. For instance, people automatically deflect attention from their partner's unexpected interference with their goals by valuing their partner more (Murray, Holmes, Aloni, Pinkus, Derrick, & Leder, 2009). They also preempt threats to commitment by automatically sacrificing on their partner's behalf (Righetti, Finkenauer, & Finkel, 2013) and excusing their partner's transgressions (Karremans & Aarts, 2007; Lemay & Melville, 2014; Slotter, Finkel, DeWall, Lambert, Pond, Bodenhausen, & Fincham, 2012). Newlyweds even compensate for the unwanted experience of doubting their commitment over time. Those periods when their commitment is most in doubt automatically motivate newlyweds to think and behave in ways in daily life that justify costs and

inhibit destructive behavior (Murray, Holmes, Griffin, & Derrick, 2015).

Interdependence theorists typically conceptualize the preservation of relationship commitment as an end unto itself (Rusbult & VanLange, 2003; Murray & Holmes, 2011). The commitment-defense model assumes its preservation is further rooted in the general motivation to protect expected associations in the world. Expected associations refer to experientially conditioned expectations – such as puppies are playful, hard work is rewarded, and marriages are committed. Such conditioned expectations impart meaning to events by specifying how the world works (Heine et al., 2006). Expectancy violations refer to *unexpected* associations or experiences that threaten meaning by *challenging* such conditioned expectations.

In the commitment-defense model, expectancy violations that *challenge* the meaningful associations people expect to see in the world elicit anxiety and motivate people to restore meaning by affirming the expected within the relationship. This basic tenet of the model captures three interrelated assumptions. The first: Expectancy violations only threaten meaning when they simultaneously challenge expectations about how the world works. For instance, neither the diligent Arya, nor the goldbricking Aaron, might expect to lose a job. But, such a loss only challenges expected associations between hard work and reward for the diligent, motivating Arya to impose orderly and expected associations within her relationship.

The second: Approach-oriented relationship sentiments that instill meaning and drive to behavior are more natural candidates for restoring compensatory meaning and order to the relationship than avoidance-oriented sentiments that inhibit it. In romantic relationships, commitment and trust fulfill such respective motivational roles (Murray & Holmes, 2009; 2011). Commitment captures the perceiver's *own* intentions to maintain the relationship, whereas trust captures the perceiver's perceptions of the *partner's* intentions to maintain the relationship

(Murray & Holmes, 2009; Wieselquist et al., 1999). Because people can be more certain of the contents of their own mind than the contents of their partner's mind (Griffin & Ross, 1991), commitment functions as a more approach-motivated, purpose-driven relationship sentiment than trust (Brickman, 1987; Murray & Holmes, 2009; Murray, Holmes, & Collins, 2006). Indeed, commitment imbues action with such a resolute sense of meaning and purpose that strong commitments automatically motivate people to put caring for their partner ahead of pursuing self-interested temptations (Rusbult & Van Lange, 2003). However, trust tracks reasons to be vigilant, cautious, and avoidant in relationships (Murray & Holmes, 2009). It is such a sensitive barometer of anxiety that even being physically shaky can cause people to question their trust in their partner's caring (Forest, Kille, Wood, & Stehouwer, 2015). Consequently, when expectancy violations impose disorder on the world, trust is functionally poised to *mirror* anxiety about the unexpected within the relationship, while commitment is functionally poised to restore order and *deflect* anxiety about the world through the relationship.

Third: Violating the associations that people expect to see in the world should push commitment psychologically apart from trust because people need to find greater relative meaning and value in their commitment to deflect and neutralize heightened anxiety about uncertainty in the relationship. Path A in Figure 1 captures the commitment-defense model's assumption that people restore expected associations to their relationship, and thus the world, by affirming their own feelings of commitment in the face of comparative anxiety about their partner's commitment. This prediction may seem paradoxical. In the normal course of events, people are usually hesitant to commit when they question their partner's commitment to them (Derrick, Leonard & Homish, 2012; Murray et al., 2006; Overall & Sibley, 2008). But, when trust *mirrors* the anxiety provoked by the unexpected in the world, it may need to lose its hold

over commitment for people to impose the compensatory meaning and order they now need to see in their relationship to *deflect* anxiety about the unexpected in the world.

The Moderating Role of Actual-Attitude Desired-Attitude Consistency

When expectancies are violated, threatened perceivers impose associations they expect on targets that need to be restored to meaningful order (Heine et al., 2006). For instance, meaning threats motivate people to restore order to the world by punishing people who reject social convention. Not all relationships can function as the palliative equivalent of social deviants, though. Some deviate more from consensual expectations that relationships should be fulfilling and provide a sense of meaning in life. When expectancy violations impose disorder on the world at large, such disordered relationships should afford more pressing targets for imposing the associations and meaning people expect in the relationship.

Path B in Figure 1 captures this moderation hypothesis. It assumes that the power expectancy violations in the world have to compel commitment-defense in the relationship depends on the consistency between actual and desired attitudes toward the relationship, as captured by satisfaction. People who are highly satisfied in their relationship live in a relatively orderly and meaningful state. They inhabit a relationship that meets expectations for a good and meaningful life in most respects (Kelley & Thibaut, 1978; Thibaut & Kelley, 1959). Consequently, when expectancy violations threaten established associations in the world, people who are highly satisfied have relatively little to set right in their relationship. The simple fact of being in a meaningful, rewarding, and committed relationship should be all it takes to defuse anxiety and remind them that the world really is full of its expected meaning and purpose. Therefore, more satisfied perceivers should not need to further fortify commitment to deflect anxiety and affirm meaning; their relationships are already meaningful.

However, less satisfied people live in a comparatively disordered, dissonant, and meaningless state. They live in a relationship that is not necessarily one they expected or wanted to inhabit (Kelley & Thibaut, 1978; Thibaut & Kelley, 1959). In the commitment-defense model, the dissonance that comes from living in such a disordered state intensifies the motivation to impose expected associations on the relationship. Consequently, when expectancy violations threaten established associations in the world outside the relationship, less satisfied perceivers should grasp upon an obvious opportunity to set their relationship right. Namely, they should impose the associations they expect to see within their relationship by convincing themselves that the relationship they already inhabit is indeed the one they want despite their doubts. In other words, less satisfied perceivers can restore the meaning they expect to see in the world at large by reactively affirming the expected strength of their commitment. The motivational pressure to fortify relationship commitment in the face of uncertainty in the world should also increase proportionate to their level of dissatisfaction (because lower satisfaction signals greater incongruity in the relationship to be set right). Consistent with this motivational logic, people who hold attitudes different than those they expect and desire experience considerable angst and they are highly susceptible to even subtle pressures to change these attitudes (DeMarree, Rios, Randell, Wheeler, Reich, & Petty, 2016; DeMarree, Wheeler, Brinol, & Petty, 2014; Harmon-Jones et al., 2011).

Overview and Hypotheses

The commitment-defense model advances the novel hypothesis that less satisfied people bolster relationship commitments to protect the associations they expect (and need) to see in the world to behave purposefully within it. We present a meta-analysis of five experiments ($N = 1742$), two follow-up surveys, and a longitudinal study of first parenthood as tests of the model.

In the experiments, we violate experientially conditioned expectations about how the world works and then measure commitment and trust. In the surveys, we document that less satisfied people are in fact disquieted by their state and motivated to feel differently. In the transition to parenthood study, we examine how naturally occurring violations of gendered expectations about the division of household labor predict changes in commitment and trust and motivational preparedness to meet the partner's needs after the baby is born.

Across studies, we expected violating expectancies about how the world works to motivate less satisfied people to defensively affirm commitment, pushing it apart from trust. In other words, we expected expectancy violations and satisfaction to interact in predicting compensatory affirmations of commitment. This moderation hypothesis subsumes two interrelated effects. First, less satisfied people should evidence greater compensatory commitment when their expectations about how the world works are violated than when their expectations are confirmed. Second, violating expectations about how the world works should attenuate differences in commitment between more and less satisfied people because less satisfied people need to set their relationships right to compensate for disorder in the world.

The Experiments: Violating Expectations in the “Lab”

Experiments 1 through 4 used established meaning threats to violate expectations about how the world works. Experimental participants read a story about hard work come to naught in Experiments 1 and 2 (Proulx et al., 2010), watched a disjointed movie in Experiment 3 (Randles et al., 2013) and viewed surreal art in Experiment 4 (Proulx et al., 2010). Experiment 5 violated behavioral expectations about how the world works (Chen & Bargh, 1999). Experimental participants used a joystick to physically simulate approaching negative and avoiding positive stimuli (rather than approaching positive and avoiding negative stimuli as expected).

We then measured commitment and trust. In keeping with investment (Rusbult & Van Lange, 2003), risk regulation (Murray et al., 2006), and motivation-management models of interdependence (Murray & Holmes, 2009; 2011), we conceptualized commitment as a sense of psychological attachment to the relationship that motivates intentions to sustain it; we conceptualized trust as a meta-perspective on the strength of the partner's psychological attachment to the relationship and motivation to sustain it. Accordingly, we operationalized commitment through measures of commitment, closeness, and relationship centrality and trust through measures of partners' perceived commitment and perceived closeness.

Because we designed the five experiments as conceptual replications, we depart from the historical norm to present each individually. Following on recommendations to use meta-analysis to evaluate replicability (Braver, Thoemmes, & Rosenthal, 2014; Chan & Arvey, 2012; Goh et al., 2016; Fabrigar & Wegener, 2016; Stroebe, 2016), we present them as a collective. We first describe the participants, methods, and measures. We then discuss the meta-analytic results ($N = 1742$) and table the results for individual experiments. We treat the experiments as a cumulative model test to ensure that we interpret only statistically robust effects.

Method

Participants

Experiments 1 through 4. We recruited participants from Amazon's Mechanical Turk (MTurk). We advertised each experiment to workers who had completed 100 HITS or more, had a HIT approval rate of 95% or greater, and had not completed any other MTurk study conducted by our laboratory. Eligible participants had to be in a romantic relationship at least four months in length, US citizens, and speak English as a first language. Eligible participants were automatically ejected from the experiment prior to completion if they failed one of the attention

check questions ($N = 99$). Participants received \$0.50 upon completing the experiment. Across the experiments, we dropped 15 total completed participants whose pretest relationship satisfaction scores were at the scale minimum of “not at all satisfied” (more than 3 standard deviations below the mean)¹, 30 completed participants who indicated they were actually single on the demographics questions, and 1 participant who was an extreme outlier on age. We retained a total of 1528 participants (892 women) across the four experiments (216 in Experiment 1, 404 in Experiment 2, 407 in Experiment 3, and 501 in Experiment 4).² Participants averaged 35.9 years of age ($SD = 11.01$); relationships averaged 95.8 months in length ($SD = 106.9$). Participants were married (753), cohabiting (397), engaged (114), or exclusively/casually dating (264).

Experiment 5. We recruited participants from the Introductory Psychology subject pool of a large mid-western university. Eligible participants had to be in a romantic relationship at least four months in length and speak English as a first language. We dropped four participants who did not complete the joystick procedure, leaving 214 (110 women). Participants averaged 21.6 years of age ($SD = 22.5$); relationships averaged 19.4 months in length ($SD = 2.2$). Participants received course credit.

Procedure

Experiments 1 through 4. Participants first completed demographic questions and a 1-item measure of relationship satisfaction (i.e., “How satisfied are you in your relationship?” 1 = not at all satisfied, 7 = very satisfied). Next, they completed self-esteem (Rosenberg, 1965) and attachment (Bartholomew & Horowitz, 1991) scales.

In Experiments 1 and 2, participants in the expectancy violation condition read an abridged version of Kafka’s An Imperial Message. The messenger in this story prevails over a

series of obstacles only to fail to deliver his message in the end, thereby violating the conventional expectation that hard work pays off. Control participants read Aesop's fable, the Tortoise and the Hare, in which the hardworking tortoise triumphs over the lazy hare (Proulx et al., 2010, Study 1). In Experiment 3, participants first watched a filler clip from a Donald Duck cartoon. Expectancy violation participants then watched a 4-minute clip from David Lynch's movie Rabbits, which juxtaposes unexpected dialogue, costuming, and sound effects with a familiar sitcom format. Control participants watched a familiar and easy to understand clip from The Wizard of Oz. All participants then watched a second filler clip from a Peanuts and Snoopy cartoon (Randles et al., 2013, Study 2). In Experiment 4, expectancy violation participants viewed Magritte's The Son of Man, a surrealist piece that depicts familiar images in an unexpected arrangement (e.g., an apple floating in front of a face). Control participants viewed Constable's Landscape with a Double Rainbow, a conventional piece that depicts familiar images in an expected arrangement (Proulx et al., 2010, Study 3).

Participants then completed the dependent measures: Inclusion of other in the self (Aron, Aron, & Smollan, 1992), closeness and perceptions of the partner's closeness, commitment and perceptions of the partner's commitment, relationship centrality, and a 3-item manipulation check that asked them to rate how "expected", "easy or difficult to understand" and "surprising" they found the story, movie, or art they experienced.³

Experiment 5. Participants first completed demographic questions and the 1-item measure of relationship satisfaction used in Experiments 1-4. Next, they completed self-esteem (Rosenberg, 1965), need to belong (Leary, Kelly, Cottrell, & Schreindorfer, 2013), and attachment (Bartholomew & Horowitz, 1991) scales.

To violate behavioral expectations, we adapted procedures Kawakami, Phillips, Steele and Dovidio (2007) utilized to condition approach versus avoidance tendencies. On each of 480 trials, one of 24 positive (e.g., giggle, payday, fun, fantastic) and 24 negative (e.g., torture, guillotine, HIV, unhappiness) words appeared on the computer screen. This word remained on the screen until participants responded using a joystick. We varied the nature of the joystick response (i.e., push vs. pull) participants made as a function of the valence of the word across condition. In the expectancy violation condition, participants engaged in the physically unexpected behavior of pulling negative words towards the self using the joystick (i.e., approach negative) and pushing positive words away from the self (i.e., avoiding positive). Control participants instead engaged in the physically expected behavior of using the joystick to pull positive towards toward the self (i.e., approach positive) and push negative words away from the self (i.e., avoid negative). The joystick task began with a block of 8 practice trials, followed by 10 blocks of 48 trials with no delay between trials. Participants were reminded of task instructions at the beginning of each block and incorrect responses received a red “X”.

All participants then completed the dependent measures: Inclusion of other in the self, closeness and perceptions of the partner’s closeness, security in the partner’s regard, perceptions of the partner’s disposition to be trustworthy, relationship centrality, commitment and perceptions of the partner’s commitment, predictions for the partner’s trustworthy behavior, mood, two exploratory measures,⁴ and a 4-item manipulation check that asked them to rate how “uncertain versus certain”, “purposeful versus directionless”, “like I had a clear goal in mind vs. did not have a clear goal in mind” and “sure versus unsure of what I was doing” they felt during the joystick task. (The extra time and control afforded in the lab allowed us to include more dependent measures than with MTurk).

Measures Included in Experiments 1-5

Own closeness. This 5-item measure ($\alpha = .92$, Murray et al., 2002) tapped the participant's feelings of closeness to the partner (e.g., "I am closer to my partner than any other person in my life"; "I would choose to spend time with my partner over anyone else in my life", 1 = *not at all*, 9 = *completely true*).⁵

Perceptions of the partner's closeness. This parallel 5-item measure ($\alpha = .93$) tapped the participant's perceptions of the partner's feelings of closeness (e.g., "My partner is closer to me than any other person in his/her life"; "My partner would choose to spend time with me over anyone else in his/her life").

Own commitment. This 3-item measure ($\alpha = .93$, adapted from Rusbult, Martz & Agnew, 1998), tapped the participant's intentions to sustain the relationship (e.g., "I am committed to maintaining my relationship with my partner"; "I want my relationship to last for a very long time", 1 = *not at all*, 9 = *completely true*).

Perceptions of the partner's commitment. This parallel 2-item measure ($\alpha = .92$) tapped the participant's perceptions of the partner's intentions to sustain the relationship (e.g., "My partner is committed to maintaining our relationship"; "My partner wants our relationship to last for a very long time").

Relationship centrality. This 4-item measure ($\alpha = .84$, adapted from Agnew, Van Lange, Rusbult, & Langston, 1998) tapped the relationship's importance to the participant ("In comparison to other parts of your life, such as work, family, friends, religion, how central is your relationship with your partner?", 1 = *not at all*, 7 = *extremely central*; "How much time do you spend thinking about your relationship with your partner?", 1 = *none at all*, 7 = *a great deal*).

Measures Added in Experiment 5

Trust in the partner's regard. This 15-item measure ($\alpha = .83$, adapted from Murray et al., 2002) tapped the participant's feelings of trust and security in the partner's caring (e.g., "I am confident that my partner will always see the best in me"; "My partner loves and accepts me unconditionally", 1 = *not at all*, 9 = *completely true*).

Perceptions of the partner's disposition to be trustworthy. This 20-item measure ($\alpha = .64$, adapted from Murray, Holmes & Griffin, 1996) tapped the participant's perception of their partner's disposition to be trustworthy and responsive (e.g., My partner is... "tolerant and accepting", "thoughtless", "responsive", "distant", "critical and judgmental" (1 = *not at all characteristic*, 9 = *completely characteristic*).

Predictions for the partner's trustworthy behavior. This 9-item scale, ($\alpha = .73$, adapted from McNulty & Karney, 2004) asked the participant to predict his/her partner's future likelihood of being trustworthy and responsive (e.g., "My partner will always take time for me when I need him/her"; "My partner will sometimes lose his/her temper"; "My partner will always take care of me", 1 = *strongly disagree*, 9 = *strongly agree*).

Results

In the commitment-defense model, expectancy violations provoke stronger compensatory affirmations of commitment (relative to trust) for less satisfied people because they have more in the relationship to set right and make meaningful. Such a moderating effect of satisfaction could take two different forms. With progressively lower satisfaction, expectancy violation participants might evidence more compensatory commitment (relative to the control participants). Figure 2A presents a potential *linear* moderating effect of satisfaction. In this figure, the tendency for expectancy violation participants to defensively affirm commitment relative to

control participants is linearly lower with higher satisfaction. Alternately, once satisfaction reaches a particular threshold, meaning violations might lose all power to provoke compensatory commitment relative to the control condition. Figure 2B presents a potential *quadratic* moderating effect of satisfaction. In this figure, the tendency for expectancy violation participants to defensively affirm commitment relative to control participants disappears once satisfaction is sufficiently high. Both possibilities are consistent with the theoretical model, and so, we tested for both linear and quadratic effects of satisfaction.

The Compensatory Commitment Composite

Table 1 presents descriptive information for the study variables. In each experiment, we first computed indices of commitment and trust. In Experiments 1-5, we computed commitment composites by averaging standardized (z-score) responses to own closeness, own commitment, and relationship centrality scales ($\alpha = .90$). In Experiments 1-4, we computed trust composites by averaging standardized (z-score) responses to the perceptions of the partner's closeness and perceptions of the partner's commitment scales ($\alpha = .93$). In Experiment 5, we computed the trust composite by averaging standardized (z-score) responses to the perceptions of the partner's closeness, perceptions of the partner's commitment, trust in the partner's regard, perceptions of the partner's disposition to be trustworthy, and predictions for the partner's trustworthy behavior scales ($\alpha = .79$). In each experiment, we then computed a difference score measure of compensatory commitment by subtracting the trust composite from the commitment composite. More positive difference scores capture the tendency to report relatively greater feelings of commitment than feelings of trust in the partner might seem to justify.

Regression Analyses for the Individual Experiments

Within each experiment, we then conducted simultaneous regression analyses predicting

the difference score measure of compensatory commitment from the main effects of expectancy violation condition, centered satisfaction, centered satisfaction squared, and the interactions between expectancy violation condition and satisfaction (both linear and squared terms). We also controlled for the main and interactive effects for self-esteem because low and high self-esteem people respond differently to self and relationship threats (see Cavallo, Holmes, & Murray, 2013 for a review). Including self-esteem in the analysis allowed us to establish that any effects of satisfaction emerged independent of its association with self-esteem and examine whether self-esteem moderated the effects of expectancy violation condition and satisfaction.

Using a difference score to measure compensatory commitment is mathematically equivalent to treating commitment and trust as within subjects factors in a multivariate analysis.⁶ The difference score thus has the advantage of revealing whether substantively different effects emerged for commitment and trust (as the commitment-defense model anticipates). However, a positive difference score does confound three distinct ways in which commitment and trust could separate (Griffin, Murray & Gonzalez, 1999). Expectancy violations might (1) increase commitment and decrease trust, (2) increase commitment, but leave trust unchanged or (3) decrease trust, but leave commitment unchanged, all resulting in a more positive difference score. For this reason, we also conducted regression analyses separately predicting commitment and trust so we could isolate which pattern of commitment-trust differentiation emerged. Tables 2 through 6 present the results for the difference score measure of compensatory-commitment and its component indices of commitment and trust for each experiment.⁷

Meta-Analyzing the Five Experiments

We used the Comprehensive Meta-Analysis (CMA) statistical package to evaluate the aggregate support for the model (Borenstein, Hedges, Higgins & Rothstein, CMA Version 3).

We used the t -values and sample sizes from the regression analysis for each individual experiment to estimate 95% confidence intervals around the effect size [r] across experiments. CMA produces both fixed and random effects estimates. The fixed effect estimates assume that the obtained effects estimate a true effect that is homogenous across populations, and thus, fixed effect estimates give greater weight to studies with higher N s. The random effect estimates assume that the obtained effects estimate true effects that vary across populations, and thus, the random effects estimates give equal weight to studies regardless of N . Because we designed the five experiments as conceptual replications estimating a common effect, we report the fixed effect estimates (Borenstein, Hedges & Rothstein, 2007; Hedges & Vevea, 1998). The random effect estimates produced effect sizes, z statistics, and p values for the primary analyses that paralleled the fixed effect estimates (with minor exceptions for trust noted in Footnote 11).

Table 7 presents the results of the meta-analysis, listing the average effect size, r , 95% confidence interval and z -value, for each term in the regression analyses.⁸ The meta-analysis revealed a robust interaction between expectancy violation condition and satisfaction (squared) predicting the difference score measure of compensatory-commitment (see Table 7).⁹ It also revealed opposite and significant interactions between expectancy violation condition and satisfaction (squared) separately predicting the commitment and trust composites.

Figures 3 through 7 plot the association between satisfaction and compensatory-commitment in the expectancy-violation and control conditions in each experiment. Using Aiken and West (1991) procedures, we decomposed each interaction into its two sets of component simple effects. The simple effects of expectancy violation condition reveal whether participants evidence greater compensatory commitment when expectations about how the world works are violated than confirmed. We estimated the strength and direction of this simple effect

for experimental condition for participants 2, 1.5, and 1 standard deviations (SD) below the mean on satisfaction and 1 SD above the mean on satisfaction (to capture the sample range). The simple effects of satisfaction (squared) reveal whether violating expectations about how the world works attenuates pre-existing differences in commitment between more and less satisfied people, as the model anticipates. We estimated the strength and direction of the simple effect curvilinear association between satisfaction and compensatory commitment in both expectancy violation and control conditions. We then conducted a parallel set of conditional regressions for the commitment and trust composites. We used the CMA statistical package to aggregate conditional tests. We discuss the simple effects for the difference score and its components next.

The compensatory-commitment difference score. The simple effects for expectancy violation condition revealed that less satisfied participants defensively affirmed commitment relative to controls. That is, less satisfied participants in the expectancy violation condition evidenced greater compensatory commitment than controls. The meta-analytic simple effect of expectancy condition was significant for participants 2 standard deviations (SD), $r = .108$, 95% CI [.061, .155], $z = 4.52$, $p < .0001$, and 1.5 SD below the mean on satisfaction, $r = .08$, 95% CI [.033, .126], $z = 3.32$, $p = .001$. However, the simple effect of expectancy violation condition was not significant for participants one SD below the mean, $r = .023$, 95% CI [-.024, .070], $z = 0.95$, $p = .34$, at the mean, $r = -.031$, 95% CI [-.078, .016], $z = -1.28$, $p = .20$, or one SD above the mean on satisfaction, $r = .029$, 95% CI [-.018, .076], $z = 1.19$, $p = .23$.

The simple effects for satisfaction (squared) predicting the difference score revealed that violating expectancies attenuated pre-existing commitment differences between more and less satisfied participants. In the control condition, the curvilinear effect of satisfaction predicting compensatory commitment was significant, $r = -.139$, 95% CI [-.184, -.092], $z = -5.80$, $p < .0001$.

Less satisfied control participants were less likely to defensively affirm commitment than more satisfied controls and being lower in satisfaction intensified this difference, as captured by the curve steepening. But, in the expectancy violation condition, this intensification disappeared and the simple effect of satisfaction (squared) was not significant, $r = .006$, 95% CI [-.041, .053], $z = 0.25$, $p = .80$. Thus, violating expectancies motivated less satisfied participants to make affirmations of commitment that more closely resembled more satisfied participants.¹⁰

The commitment and trust components. Decomposing the interactions for the commitment and trust composites generally revealed that expectancy violations pushed commitment apart from trust by increasing commitment while decreasing trust.

The meta-analytic findings for commitment generally mirrored the difference score findings, although the simple effects for satisfaction (squared) yielded stronger effects. Expectancy violation participants tended to report greater commitment than controls when participants were 2.0 SD, $r = .035$, 95% CI [-.012, .082], $z = 1.47$, $p = .14$, and 1.5 SD below the mean on satisfaction, $r = .02$, 95% CI [-.027, .067], $z = 0.85$, $p = .40$, although neither effect was significant. In the control condition, less satisfied participants reported less commitment than more satisfied participants and being lower in satisfaction intensified this difference, $r = -.071$, 95% CI [-.117, -.023], $z = -2.94$, $p = .003$. However, this intensification disappeared in the expectancy violation condition and less satisfied participants reported commitment levels that more closely resembled satisfied participants, $r = -.019$, 95% CI [-.066, .028], $z = -0.78$, $p = .43$.

The meta-analytic findings for trust presented a mirror opposite to the difference score findings. Expectancy violation participants reported less trust than control participants when participants were 2.0 SD, $r = -.070$, 95% CI [-.117, -.023], $z = -2.93$, $p = .003$, and 1.5 SD below the mean on satisfaction, $r = -.060$, 95% CI [-.107, -.013], $z = -2.49$, $p = .013$. In the control

condition, less satisfied participants reported less trust than more satisfied participants, but the slope of this curve flattened at lower satisfaction, $r = .058$, 95% CI [.011, .105], $z = 2.41$, $p = .016$. In the expectancy violation condition, this mitigation disappeared, $r = -.025$, 95% CI[-.072, .022], $z = -1.05$, $p = .29$, and less satisfied participants uniformly reported less trust than more satisfied participants.¹¹

Manipulation Check

The meta-analytic test of the main effect for experimental condition predicting the manipulation check was significant. Expectancy violation participants described their experiences as more unexpected, surprising, and confusing than control participants, $r = .440$, 95% CI [.402, .478], $z = 19.6$, $p < .0001$.¹²

Discussion

The experiments suggest that vulnerable people can affirm the associations they expect to see in the world by defending relationship commitments. When people were less satisfied in their relationships, violating conventional expectations that hard work pays off, stories unfold in an orderly fashion, art resembles something real, and good things are approached and bad things avoided pushed commitment apart from trust. Less satisfied participants in the expectancy violation conditions compensated and affirmed commitment over trust (relative to less satisfied control participants). From the perspective of the model, such compensatory bolstering of commitment over trust represents a palliative defense against the uncertainty the meaning violation provoked. The subtlety of the expectancy violations invoked in the experiments makes these findings all the more impressive. Seemingly trivial things that did not turn out exactly as expected motivated less satisfied participants to profess commitments that were just as strong as those of highly satisfied participants. Nevertheless, the experiments do have limitations.

The first limitation involves our operationalization of commitment and trust. We combined scales tapping commitment, closeness, and centrality in the commitment composite and scales tapping perceptions of the partner's commitment and closeness in the trust composite to broadly capture ways in which people can express (or perceive) a sense of psychological attachment to the relationship. However, violating expectancies might have produced effects on these composites without actually changing less satisfied participants' responses on the commitment and perceived commitment scales (which bear the closest empirical parallel to our conceptual constructs). To see if this was the case, we redid the meta-analysis using only the scales tapping commitment and perceived commitment. The expectancy violation by satisfaction (squared) interactions predicting commitment, $r = .049$, 95% CI [.002, .096], $z = 2.04$, $p = .042$, perceived commitment, $r = -.052$, 95% CI [-.099, -.005], $z = -2.17$, $p = .03$, and most crucial, the difference between commitment and perceived commitment, $r = .107$, 95% CI [.060, .153], $z = 4.45$, $p < .0001$, were significant. Indeed, the experiments revealed more consistent interaction effects for this difference score measure of compensatory commitment than the full measure.¹³

The second limitation involves the differences between the fixed and random effects estimates for the expectancy violation by satisfaction (squared) interaction predicting trust. We designed the experiments as conceptual replications estimating a common effect size, making the fixed effects appropriate (Borenstein, Hedges & Rothstein, 2007; Goh, Hall & Rosenthal, 2016; Hedges & Vevea, 1998). However, the meta-analysis did reveal significant variability across experiments in the size of the interaction effect for trust. This suggests that expectancy violations might not always have an equally robust effect in suppressing trust for less satisfied people. Nevertheless, as expected, the direction and magnitude of the expectancy violation by satisfaction (squared) interactions for the commitment and trust composites differed significantly

from each other across studies for both the fixed and random effects estimates (see Footnote 6). Moreover, the fixed and random effects estimates for the expectancy violation by satisfaction (squared) interaction separately predicting the commitment composite were identical. Thus, the experiments clearly show that expectancy violations push commitment apart from trust for less satisfied people. They are less clear in deciphering when trust will be actively inhibited in response to expectancy violations.

The third limitation involves the rationale for predicting satisfaction moderation. In the commitment-defense model, living in a relatively more disordered and senseless state heightens the motivation to make sense of the world. Consequently, when expectancy violations further threaten meaning, less satisfied people defensively affirm the inherent value of their relationship commitments to deflect anxiety and restore meaning and order to the world. This prediction assumes that less satisfied people are disaffected with the current disorderly state of their relationship and motivated to change it. However, this contention seems inconsistent with longstanding research suggesting that less satisfied people think and behave in ways that maintain distress, not alleviate it (Bradbury & Fincham, 1990; Karney & Bradbury, 1995). Therefore, we conducted two follow-up surveys to check on the validity of our assumption that less satisfied people are highly motivated to change the way they feel about their relationship because they live in such an experientially disordered state.

Dissatisfied and Disordered? First Check on the Validity of Our Assumptions

For the follow-up surveys, we recruited two MTurk samples (Sample A, $N = 295$, Sample B, $N = 296$) using the same inclusion criteria as the experiments (338 Women). Participants averaged 35.3 years in age ($SD = 11.3$); relationships averaged 96.0 months in length ($SD = 107.4$), and participants were married (294), cohabiting (139), engaged (60), or dating (98).

In both surveys, participants completed demographics and the 1-item measure of satisfaction from the experiments. Participants then completed a desire to change relationship attitudes measure modeled after existing measures of desired attitudinal change (DeMarree et al., 2011; DeMarree et al., 2016). For survey A, participants responded to the question, “Is your level of satisfaction the same or different than the level of satisfaction you want to experience.” Those who answered “different” then indicated whether they wanted to feel more or less positively. For survey B, participants indicated whether “high in satisfaction” describes how they (1) actually, (2) want or desire, and (3) ought to feel about their relationship (1 = *not at all*, 7 = *absolutely*). Participants in both surveys also completed 3-items ($\alpha = .81$) capturing dissonant feelings about their level of satisfaction (i.e., “When I think about how satisfied I am in my romantic relationship right now, I feel... “uncomfortable”, “uneasy”, “bothered”, 1 = *not at all*, 7 = *very*, Elliot & Devine, 1994) and the 10-item meaning in life questionnaire (e.g., “My life has a clear sense of purpose”, Steger, Frazier, Oishi, & Kaler, 2006).

Do Less Satisfied People Want to Feel Differently?

We first identified participants who wanted to experience a different level of relationship satisfaction. For Survey A, we labeled participants who expressed preferences for a “different” attitude as the desired attitudinal change group, coded 1 ($N = 95$); the vast majority (90%) desired a more positive attitude. We labeled participants who expressed preferences for the “same” attitude as the desired attitudinal stability group, coded 0. For Survey B, we averaged responses to the “want” and “ought” to feel items to create a measure of desired “high in satisfaction” attitudes. We then labeled participants whose desire to feel “high in satisfaction” exceeded their actual “high in satisfaction” sentiments as the desired positive attitudinal change group, coded 1 ($N = 113$) and the remainder as the desired attitudinal stability group, coded 0.

Table 8 presents the descriptive information and Table 9 presents the zero-order correlations among the measures. Less satisfied people expressed stronger desires to change relationship attitudes than more satisfied people. On Survey A, less satisfied people were significantly more likely to want different attitudes than more satisfied people, $r(293) = -.57, p < .0001$. On Survey B, less satisfied people were significantly more likely to report desires to be “high in satisfaction” that exceeded their actual sentiments, $r(294) = -.44, p < .0001$.

Do Less Satisfied People Want to Change Because They Live in a Disordered State?

To answer this question, we estimated the mediation model presented in Figure 8. In both surveys, we sought to establish that less satisfied people report a diminished sense of meaning in life (Path A), having a diminished sense of meaning in life predicts more dissonant feelings about the relationship (Path B), and that experiencing more dissonant and disquieting feelings about the relationship supplies the desire for change in relationship attitudes (Path C). This model thus specifies an indirect A-B-C mediation effect such that less satisfied people want to change their relationship attitudes because their relationship provides so little meaning that their dissatisfaction becomes a motivating source of dissonance and disquiet.

We used maximum likelihood estimation procedures within the structural equation modeling program AMOS to estimate the mediation model in each study. Table 10 presents the 95% bias-corrected confidence intervals for all paths in the mediation model for each survey sample (sampling 500 iterations in a parametric bootstrap). As expected, less satisfied people perceived significantly less meaning in life (Path A), perceiving less meaning in life predicted significantly more dissonant relationship feelings (Path B), and more dissonant feelings predicted significantly greater desire to change (Path C). Moreover, the experience of meaningless and dissonance mediated the association between satisfaction and the desire to be more satisfied.

That is, the A-B-C indirect mediation path was significant in both Survey A, 95% CI (-.083, -.032), $p = .002$, and Survey B, 95% CI (-.065, -.011), $p = .003$. However, a significant direct effect of satisfaction on desire to change also emerged in Survey A, 95% CI (-.234, -.133), $p = .008$, and Survey B, 95% CI (-.211, -.100), $p = .007$, suggesting partial mediation. Even though these data cannot prove causality and other mediation models could be possible, they nevertheless help explain why less satisfied people would defensively affirm commitment in response to expectancy violations. The *unadulterated* relationship sentiments of less satisfied people are simply not positive enough to affirm the presence of meaning in the relationship, and thus, the presence of meaning and order in the world. But, defensively affirming commitment gives less satisfied people a way to see meaning in both the relationship and the world.¹⁴

The Transition to Parenthood: Violating Expectations in “Life”

There are probably few events in life that can violate established expectations about how the world works more profoundly than the birth of a first baby (Finkel, 2014). New parents not only sleep, shower, and eat less than they expect human beings to sleep, shower, and eat, but they also experience drops in personal happiness (Clark, Diener, Georgellis, & Lucas, 2008) and relationship satisfaction (Doss et al., 2009) that persist as they acclimate to their new normal.

The transition to parenthood thus provides a naturalistic laboratory for conducting a real-life replication of the experiments (Maner, 2015). In this study, expectant couples completed measures of satisfaction, commitment, and trust and they reported expectations for the division of household and childcare responsibility after their baby was born. They returned to the lab four months after birth to report on the actual division of responsibilities and complete follow-up measures of commitment and trust. They also participated in conflict discussions while their cardiovascular responses were monitored and then evaluated one another's responsiveness.

Although using this real-life transition to test the model hypotheses is noisier and more susceptible to alternate explanation than any controlled experiment, it has two counterweighing upsides. In the commitment-defense model, violating the associations that people expect to see in the world motivates compensatory affirmations of commitment as a means of restoring order and meaning to the world. However, the experiments implicitly confounded the violation of a personal expectation with the violation of an expected association in the world. Unlike the experiments, the transition to parenthood provides a way to distinguish the effects of violating personal expectations from the effects of violating expected associations in the world.

Parents-to-be possess expectations for the post-baby division of household labor and childcare that are both concrete and personally important (Hackel & Ruble, 1998). When post-baby realities violate such personal expectations, they can do so in ways that either *affirm* or *challenge* expected associations in the world. Women, and especially new mothers, generally take greater responsibility for household labor than men (Lachance-Grzela & Bouchard, 2010; Freudenthatler & Mikula, 1998). Consequently, when mothers-to-be expect to take *less* responsibility for domestic labor post-baby than they actually end up taking, such an *under-*estimate violates a personal expectation, but it ultimately *affirms* the expected gendered division of labor in the world at large. Similarly, when fathers-to-be expect to take *more* responsibility for domestic labor post-baby than they actually end up taking, such an *over-*estimate violates a personal expectation, but it also *affirms* the expected gendered association in the world. But, when mothers-to-be expect to take *more* responsibility for domestic labor post-baby than they actually end up taking, such an *over-*estimate both violates a personal expectation and *challenges* culturally conditioned, gendered expectations about how the world works, namely the expectation that women do more. Similarly, when fathers-to-be expect to take *less* responsibility

for domestic labor post-baby than they end up taking, such an *under*-estimate violates a personal expectation and also *challenges* gendered expectations about how the world works, namely the expectation that men do less. In the commitment-defense model, new parents should only defensively affirm commitment when expectations violations threaten perceptions of meaning and order because they *challenge* normative gendered expectations for the division of labor.

The experiments posed “one-dose” expectancy violations with small, but detectable, effects on commitment and trust. Unlike the experiments, the transition to parenthood could pose “multi-dose” expectancy violations as allocating the ongoing flood of household and childcare confounds gendered expectations about the division of labor over the initial days and weeks of parenthood. The sustained nature of the expectancy violations some new parents may face affords an even more conservative test of the commitment-defense logic. If violating expectations about how the world works motivates less satisfied people to defensively affirm commitment to restore meaning and order to the world, successively bolstering commitments in the face of such violations should also make their relationships more meaningful and orderly.¹⁵

The parenthood study allowed us to measure such transformations in relationships through (1) self-reported changes in commitment and trust over the transition to parenthood and (2) motivational preparedness to meet the partner’s needs in conflict-of-interest situations (Murray & Holmes, 2009; Rusbult & Van Lange, 2003; Simpson, 2007). In the commitment-defense model, less satisfied people should imbue greater meaning to their commitment when parental domesticity *challenges* gendered associations for how the world works. If relationship commitment has indeed come to have greater meaning to less satisfied people who experience such challenging expectancy violations, changes in commitment should not be ephemeral. They should still be evident months after the baby’s birth. Less satisfied people should also be better

motivationally prepared to meet their partner's needs in a conflict-of-interest situation. Specifically, they should be *physiologically* emboldened, rather than threatened, by the prospect of accommodating to their partner's needs and their partner should also perceive them to be behaving more responsively in conflict-of-interest situations.

According to the biopsychosocial model of challenge/threat, cardiovascular responses can reveal a person's motivational preparedness to succeed in a test of will, such as inhibiting the inclination to be selfish and instead accommodate to a partner's needs (Blascovich, 2008; Blascovich & Tomaka, 1996; Seery, 2011; 2013). In such testing situations, people experience a state of psychological challenge when they evaluate high personal resources and low situational demands. They experience relative threat when they evaluate low resources and high demands. Four cardiovascular measures measure challenge/threat: heart rate (HR); ventricular contractility (VC), a measure of the left ventricle's contractile force; cardiac output (CO), the amount of blood pumped by the heart in liters/min; and total peripheral resistance (TPR), a measure of net constriction/dilation in the arterial system. When people experience greater challenge (reflecting motivational preparedness to succeed), their heart works more efficiently, captured through higher cardiac output (CO) and lower total peripheral resistance (TPR) than threat.¹⁶ Thus, people who are truly more committed to their partner should be physiologically emboldened and exhibit relative cardiovascular challenge rather than threat when conflicts-of-interest put their commitment to the test.

The transition to parenthood study thus afforded hypothesis tests that conceptually replicated and extended the experiments. Namely, less satisfied new mothers should compensate and defensively affirm commitment, pushing commitment psychologically apart from trust, when they *over*-estimate their post-baby responsibilities (because such a violation challenges

expectations that women should do more). However, less satisfied fathers should compensate when they *under*-estimate their post-baby responsibilities (because such a violation challenges expectations that men should do less). The greater meaning less satisfied people who experience such expectancy violations find in their relationships should be evident in increases in self-reported commitment and greater motivational preparedness to meet their partner's needs. But, when mothers *under*-estimate and fathers *over*-estimate post-baby responsibilities, such *affirmations* of expected associations in the world should not motivate commitment defense.

Method

Participants

Two hundred two first-time expectant couples participated in a longitudinal study of the transition to parenthood in upstate New York. One hundred forty-eight couples returned to the laboratory for the post-assessment (1 miscarried, 3 separated, 1 spouse died, and 47 became uninterested or unreachable between pre- and post-birth assessments). The sample was predominantly White (4.70% African American, 1.49% Asian, 3.22% Hispanic 86.39% White, 3.96% other) and couples were either married (72.03%), engaged (8.17%) or cohabiting (19.80%). Participants averaged 28.73 ($SD = 4.66$) years in age and relationships averaged 36.49 ($SD = 31.10$) months in length pre-birth. The median household income ranged from \$20,001-\$35,000 per year. Participants received payment at each time point.

Procedure

We recruited expectant couples through advertisements placed in local newspapers, Craigslist and Facebook and through visits to prenatal classes. To be eligible, expectant couples had to be expecting a first child (for both), residing in the same residence, cohabiting no more than 15 years, and able to access the internet at home. Both couple members completed the

Time 1 assessments 5.80 ($SD = 2.03$) weeks pre-birth and the Time 2 assessments 15.93 ($SD = 3.26$) weeks post-birth.

Prior to the Time 1 and Time 2 laboratory sessions, participants individually completed a questionnaire at home tapping self-perception (i.e., depression, dispositional trustworthiness and responsiveness), personality (i.e., attachment style, BIS/BAS, Big 5 personality traits, self-control, regulatory focus, and need for cognition), perceptions of the ideal partner, perceptions of the partner's disposition to be trustworthy, and a measure of cumulative lifetime adversity.

At the Time 1 laboratory session, participants individually completed a digit span test assessing working memory and Implicit Association and GNAT tests assessing automatic partner attitudes. Next, they completed self-report measures of self-esteem (Rosenberg, 1965) and relationship evaluations that included the measures of own closeness ($\alpha = .86$), perceptions of the partner's closeness ($\alpha = .91$), own commitment ($\alpha = .87$), perceptions of the partner's commitment ($\alpha = .93$), and inclusion of other in the self used in Experiments 1-5 as well as further measures of trust, satisfaction, perceived regard, conflict, and problem severity¹⁷. Participants also completed questions tapping current and expected division of housework post-birth, expected division of childcare post-birth, and expectations for infant temperament, relationship quality, and parenting styles post-birth. Finally, they reported on activity and task preferences and experienced stress. At Time 2, participants completed a reduced set of measures, including a measure of the actual division of childcare responsibilities, before discussing problems in their relationship while their cardiovascular responses were assessed.

To prepare for this interaction, each member of the couple first nominated an area of difficulty in the relationship he/she wanted to resolve (using the inventory of marital problems, McNulty & Russell, 2010). Each partner then entered a separate recording room where a

graduate assistant attached the cardiovascular sensors. Although in separate rooms, partner could see one another via video and communicate via intercom. After a 5-minute resting baseline, couples spent 2-minutes discussing activities for the upcoming weekend (to increase comfort talking over the intercom). Next, they engaged in two 8-minute conflict discussions, one for each partner's nominated area of difficulty. (A coin toss determined whose issue they discussed first). Participants then completed a self-report measure tapping their partner's and their own responsiveness during the conflict interactions. The interaction concluded with a 2-minute discussion of a shared positive memory (to end the interaction on a positive note).¹⁸

Measures

Challenge/threat. Cardiovascular measures were recorded noninvasively, following accepted guidelines (Sherwood et al., 1990). We used equipment manufactured and/or distributed by Biopac Systems, Inc (Goleta, CA): NICO100C impedance cardiography (ICG) noninvasive cardiac output module, ECG100C electrocardiogram (ECG) amplifier, and NIBP100A/B noninvasive blood pressure module. ICG signals were detected with a tetrapolar aluminum/mylar tape electrode system, recording basal transthoracic impedance (Z_0) and the first derivative of impedance change (dZ/dt), sampled at 1kHz. ECG signals were detected using a Standard Lead II electrode configuration (additional spot electrodes on the right arm and left leg, with ground provided by the ICG system), sampled at 1kHz. The blood pressure monitor was wrist-mounted, collecting continual readings—every 10-15 seconds—from the radial artery of participants' nondominant arm. In combination, ICG and ECG recordings allowed computation of HR, VC (for presentational purposes, pre-ejection period reactivity $\times -1$), and CO; the addition of blood pressure monitoring allowed computation of TPR (mean arterial pressure $\times 80 / \text{CO}$; Sherwood et al., 1990). Recorded measurements of cardiovascular function

were analyzed off-line with Biopac Acqknowledge 3.9.2 for Macintosh software, using techniques comparable to those from previously published challenge/threat research with the same equipment configuration (e.g., Lupien, Seery, & Almonte, 2012; Seery, Leo, Lupien, Kondrak, & Almonte, 2013; Shimizu, Seery, Weisbuch, & Lupien, 2011; also see Seery, Kondrak, Streamer, Saltsman & Lamarche, 2016)), including ensemble averaging in 60 s intervals (Kelsey & Guethlein, 1990). This approach is comparable to techniques used in other challenge/threat work (e.g., de Wit, Scheepers, & Jehn, 2012; Jamieson, Nock, & Mendes, 2012; Kassam, Koslov, & Mendes, 2009; Moore, Vine, Wilson, & Freeman, 2012; 2014; Turner, Jones, Sheffield, & Cross, 2012; Turner et al., 2013; Vine, Freeman, Moore, Chandra-Ramanan, & Wilson, 2013). Scoring of cardiovascular data was performed blind to other participant data. Reactivity was calculated by subtracting the value of the last minute of the first baseline from the mean of the minutes for each task (see Llabre, Spitzer, Saab, Ironson, & Schneiderman, 1991, for psychometric justification for the use of change scores in psychophysiology). Extreme values greater than 3.3 *SDs* from the mean ($p = .001$ in a normal distribution; Tabachnick & Fidell, 1996) were winsorized by changing their values to 1% above the next-highest non-extreme value. This maintained rank order in the distribution while decreasing the influence of extreme values.

Partner responsiveness during conflict. This 10-item scale ($\alpha = .94$) asked participants to rate their partner's caring and responsiveness during the conflict interaction (e.g., "How willing was your partner to compromise?"; "How responsive was your partner to your needs?"; "How selfishly did your partner behave?", reversed, 1 = *not at all*, 7 = *very*).

Satisfaction. This 4-item scale ($\alpha = .91$, Murray, Griffin et al., 2011) tapped satisfaction in the relationship (e.g., "I am extremely satisfied with my relationship"; "I have a very strong relationship with my partner", 1 = *not at all true*, 9 = *completely true*).

Trust in the partner's regard. This 18-item scale ($\alpha = .95$, expanded from Murray et al., 2015) tapped the participant's feelings of trust and security in the partner's caring (e.g., "I am confident that my partner will always be able to see the best in me"; "I feel that my partner can be counted on to help me"; "I wonder whether my partner feels as strongly for me as I feel for him/her", 1 = *not at all*, 9 = *completely true*).

Perceptions of the partner's disposition to be trustworthy. The 20-item scale ($\alpha = .87$) used in Experiment 5 tapped perceptions of the partner's disposition to be trustworthy and responsive (1 = *not at all characteristic*, 9 = *completely characteristic*).

Expected responsibility. Administered pre-birth, 12 items ($\alpha = .66$) asked participants to indicate the percent (0%-100%) of responsibility they expected to take for specific household and childcare tasks after the baby was born (i.e., "laundry", "cleaning", "cooking", "shopping", "dishes", "paying bills", "keeping track of social activities and obligations with friends/family", "diapering our baby", "getting up at night with our baby", "feeding our baby", "playing with our baby", "soothing our baby"). (Media lab coded the percentages on a 1-11 point scale).

Actual responsibility. Administered post-birth, 12 identical items ($\alpha = .63$) asked participants to indicate the percent (0-100%) of responsibility they were now actually taking for the same household and childcare tasks.

Results

The commitment-defense model predicts less satisfied parents will defensively affirm commitment when post-baby realities violate gendered expectations about how the world works. In proceeding, we first established that parents-to-be do indeed expect the post-baby division of labor to be gendered and that the actual gendered division of labor typically provided even more confirmation of a gendered post-baby world order than new parents already expected. We

then contrasted the effects of expectancy violations that either *affirm* or *challenge* gendered expectations about how the world works. We first looked at changes in compensatory commitment (and its component measures of commitment and trust) and then turned to motivational preparedness to meet the partner's needs. Table 11 presents descriptive information for the self-report variables.

Measuring Expectancy Violations

The parents-to-be in this sample possessed gendered expectations about how the post-baby world works. Mothers-to-be ($M = 7.56$) expected to take on significantly more domestic responsibility than fathers-to-be ($M = 6.29$), $t(201) = 11.24$, $p < .0001$. New mothers ($M = 7.92$) also took on significantly more domestic responsibility than new fathers ($M = 5.17$), $t(142) = 17.32$, $p < .0001$. In fact, the post-baby division of labor typically ended up even more gendered than these new parents expected. The interaction between gender (women vs. men) and nature of judgment (expected vs. actual) was significant in a 2 X 2 within-person ANOVA, $F(1,142) = 103.6$, $p < .0001$. Typically, women ended up taking on even more responsibility post-baby ($M = 7.92$) than they expected pre-baby ($M = 7.61$), $t(146) = -4.38$, $p < .0001$, and men ended up taking even less responsibility post-baby ($M = 5.16$) than they expected pre-baby ($M = 6.24$), $t(143) = 12.18$, $p < .0001$. Thus, when women *under-estimate* their responsibilities post-baby, doing more than they expected *affirms* gendered expectations about how the world actually does work. Similarly, when men *over-estimate* their responsibilities post-baby, doing less than they expected also *affirms* gendered expectations about how the world actually does work. However, when women *over-estimate* and men *under-estimate* responsibilities post-baby, the expectancy violations they experience *challenge* such gendered expectations about how the world works.

To capture individual differences in the experience of expectancy violations that either affirmed or challenged gendered expectations about how the world works, we calculated residual scores. There are two possible ways to do this: (1) predict pre-baby expectations for the division of labor from the actual division of labor post-baby or (2) predict the actual division of labor post-baby from pre-baby expectations for the division of labor (Hackel & Ruble, 1992). The first approach offers a decided advantage over the second. In the first approach, the residual score is uncorrelated with the actual division of labor, allowing us to separate the effects of expecting to do more versus less from the reality of doing more versus less. In the second approach, the residual score is confounded with the actual division of labor, making it impossible to separate the reality of doing more (vs. less) from the expectancy violation.

Accordingly, to capture expectancy violations for women, we saved the residual from a regression predicting women's pre-baby expectations for the division of labor from women's post-baby reports on the actual allocation of labor. More positive residuals capture expectancy violations involving the *over*-estimation of post-baby responsibilities, a violation of gendered expectations about the world for women, but not men. To capture expectancy violations for men, we saved the residual from a regression predicting men's pre-baby expectations for the division of labor from men's post-baby reports on the actual allocation of labor. More negative residuals capture expectancy violations involving the *under*-estimation of post-baby responsibilities, a violation of cultural expectations for men, but not for women. We examined both linear and quadratic effects of the expectancy violation residual in the analyses because expectancy violations that *affirm* gendered expectations about the world may have a substantively different effect than expectancy violations that *challenge* them, either flattening or steepening any otherwise straightforward relation between expectancy violations and the outcome variable.

Changes in Compensatory Commitment

We computed Time 1 and 2 commitment composites by averaging standardized (z-score) responses for own closeness and own commitment ($\alpha_{T1} = .65$, $\alpha_{T2} = .65$) and Time 1 and Time 2 trust composites by averaging standardized (z-score) responses for perceptions of the partner's closeness, perceptions of the partner's commitment, trust in the partner's regard, and perceptions of the partner's disposition to be trustworthy ($\alpha_{T1} = .88$, $\alpha_{T2} = .89$).¹⁹ We computed a difference score measure of compensatory commitment at each time by subtracting trust from commitment.

We used structural equation modeling (SEM) to test the model hypotheses. SEM accommodates the dyadic structure of data from two partners, allows for tests of gender difference (a 1-*df* χ^2 -square (deviance) test comparing model fit for models with a specific parameter constrained vs. unconstrained across gender), and permits the estimation of pooled effects across gender in the absence of differences (Kenny, 1996).

According to the logic of the commitment-defense model, satisfaction and expectancy violations (i.e., the expectancy residual) should interact to predict changes in compensatory commitment from pre-to-post baby. We predicted perceivers' difference score measure of compensatory commitment post-baby from perceivers' pre-baby compensatory commitment, linear and quadratic effects of perceivers' pre-baby satisfaction, linear and quadratic effects of perceivers' expectancy violation residuals, and all possible interaction terms between the linear and quadratic perceivers' satisfaction and linear and quadratic perceivers' expectancy residual terms. We also included correlations among the exogenous variables, and the covariance between the error terms for men and women's compensatory commitment at Time 2.

Table 12 lists the corresponding variables and coefficients predicting changes in the difference score measure of compensatory commitment. The subscripts M and W attached to

specific coefficients denote occasions where the deviance test revealed a significant difference in the coefficient for men versus women. Table 12 reveals that the interaction between satisfaction (squared) and expectancy violation (squared) predicting changes in compensatory commitment was significant for women, but not men, $\chi^2(1) = 12.4, p = .005$. However, the SEM models predicting the component indices of commitment (Table 13) and trust (Table 14) revealed significant but opposite interactions between the satisfaction (squared) and expectancy violation (squared) interactions predicting changes in commitment and trust for both women and men.²⁰ As we see next, the difference score masked the effects of expectancy violation for men because counter-cultural expectancy violations had the same effect on commitment and trust for men (making the difference score insensitive to change), but a more pronounced effect on commitment than trust for women (making the difference score sensitive to change). We decompose the interactions for commitment and trust before returning to the difference score.

Figures 9 and 10 present changes in commitment and Figures 11 and 12 present changes in trust for men and women, respectively. Each plots the quadratic association between pre-baby satisfaction and changes in the outcome as a function of the pre-baby over- vs. under-estimate of post-baby responsibility, plotted at 1.5 and 2 SD above/below the mean on the expectancy violation residual. In decomposing these interactions, we first examined the simple effect of expectancy violation (squared) predicting changes in each outcome for participants 2.0 and 1.5 SD below the mean on pre-baby satisfaction and 1.0 SD above the mean on pre-baby satisfaction. The simple effects of expectancy violation (squared) revealed whether less satisfied participants evidenced greater commitment when gendered expectations about how the post-baby world works were *challenged* as opposed to *affirmed*, as the model anticipates. Second, we examined the simple quadratic effects of pre-baby satisfaction predicting changes in commitment and

changes in trust for expectancy violations involving more or less severe under-estimates (2 SD/1.5 SD below the mean for the expectancy violation residual) and more or less severe over-estimates of post-baby responsibility (2.0 SD/1.5 SD above the mean for the expectancy violation residual). The simple effects of satisfaction (squared) revealed whether expectancy violations that *challenge* rather than affirm gendered assumptions about how the post-baby world works attenuated Time 1 differences in commitment between more and less satisfied people.

Commitment. Less satisfied fathers (Figure 9) reported relatively greater increases in commitment when they experienced expectancy violations that *challenged* rather than affirmed gendered expectations about how the post-baby world works. That is, less satisfied fathers reported relatively greater increases in commitment when they *under-estimated* than over-estimated post-baby responsibilities. This compensatory tendency intensified as the magnitude of the challenge to gendered post-baby world expectations increased. The simple effect of expectancy violation (squared) predicting changes in commitment was significant and positive (i.e., generally U-shaped) for men 2 SD below, standardized $b = .79$, $z = 3.19$, $p = .001$, and 1.5 SD below the mean on satisfaction, standardized $b = .44$, $z = 2.73$, $p = .006$. The simple effect of expectancy violation (squared) predicting changes in commitment was not significant for men 1 SD above the mean on satisfaction, standardized $b = -.004$, $z = -.05$, $p = .96$.

Expectancy violations that *challenged* gendered expectations about how the world works also advantaged less satisfied over more satisfied men. When men *under-estimated* responsibility, the *challenging* violation, those who were less satisfied initially reported greater relative increases in commitment than those who were more satisfied. Being lower in satisfaction also intensified this effect, captured by the curve steepening. The simple effect of satisfaction (squared) was significant and positive, predicting changes in commitment for men 2

SD below the mean, standardized $b = 1.23$, $z = 2.06$, $p = .039$, and 1.5 SD below the mean on the expectancy violation residual, standardized $b = .73$, $z = 1.99$, $p = .047$. But, when men *over*-estimated responsibility, the *affirming* expectancy violation, the simple effect of satisfaction (squared) was not significant, 2 SD above, standardized $b = .13$, $z = 0.68$, $p = .50$, or 1.5 SD above the mean on the expectancy violation residual, standardized $b = -.10$, $z = -0.60$, $p = .55$.

Less satisfied mothers (Figure 10) reported relatively more stable commitment when they experienced expectancy violations that *challenged* gendered expectations about how the post-baby world works. That is, less satisfied mothers reported relatively greater commitment when they *over*-estimated than *under*-estimated post-baby responsibilities. The simple effect of expectancy violation (squared) predicting commitment was significant and negative (i.e., generally \cap -shaped) for women 2 SD below, standardized $b = -.68$, $z = -5.21$, $p < .0001$, and 1.5 SD below the mean on satisfaction, standardized $b = -.27$, $z = -2.80$, $p = .005$. It was not significant for women 1.0 SD above the mean, standardized $b = -.15$, $z = -1.09$, $p = .28$.

Expectancy violations that *challenged* gendered expectations about how the world works also attenuated Time 1 differences in commitment between more and less satisfied women. When women *under*-estimated responsibility, the *affirming* violation, women who were less satisfied reported sharper declines in commitment than women who were more satisfied. Being lower in satisfaction intensified this difference, captured by the curve steepening. This simple effect of satisfaction (squared) was significant and negative for women 2 SD below, standardized $b = -2.56$, $z = -4.35$, $p < .0001$, and 1.5 SD below the mean on expectancy violation, standardized $b = -1.62$, $z = -3.95$, $p = .0001$. But, when women *over*-estimated responsibility, the *challenging* violation, those who were less satisfied sustained commitment almost as well as more satisfied women. The simple effect of satisfaction (squared) was weaker, though significant for women 2

SD above the mean on expectancy violation, standardized $b = -.42$, $z = -2.08$, $p = .038$, but it was not significant for women 1.5 SD above the mean, standardized $b = -.02$, $z = -0.13$, $p = .90$.

Trust. Although trust seemed to function as a barometer of anxiety in the meta-analysis of the experiments, men, and to a lesser extent women, compensated and affirmed trust over time when parenthood violated gendered expectations about how the world works. However, trust presented a stronger parallel to commitment for new fathers than it did for new mothers.

Less satisfied fathers (Figure 11) reported relatively greater increases in trust when they experienced expectancy violations that *challenged* gendered expectations about how the post-baby world works. That is, less satisfied fathers reported greater relative increases in trust when they *under*-estimated than over-estimated post-baby responsibilities. This tendency intensified as the magnitude of the cultural violation increased. The simple effect of expectancy violation (squared) was significant and positive for men 2 SD below, standardized $b = .76$, $z = 4.23$, $p < .0001$, and 1.5 SD below the mean on satisfaction, standardized $b = .50$, $z = 3.85$, $p = .0001$. The simple effect of expectancy violation (squared) predicting changes in trust was not significant for men 1 SD above the mean on satisfaction, standardized $b = -.06$, $z = -.82$, $p = .41$.

Expectancy violations that *challenged* gendered expectations about how the world works also advantaged less satisfied over more satisfied men. When men *under*-estimated responsibility, the *challenging* violation, less satisfied men reported relatively greater increases in trust than more satisfied men. Being lower in satisfaction also intensified this effect, captured by the curve steepening. This simple effect of satisfaction (squared) was significant and positive for men, 2 SD below, standardized $b = 1.30$, $z = 3.05$, $p = .002$ and 1.5 SD below the mean on expectancy violation, standardized $b = .79$, $z = 3.04$, $p = .002$. But, when men over-estimated responsibility, the *affirming* violation, the simple effect of satisfaction (squared) was not

significant, 2 SD above, standardized $b = -.02$, $z = -0.10$, $p = .92$, and 1.5 SD above the mean on expectancy violation, standardized $b = -.20$, $z = -1.40$, $p = .16$.

Less satisfied mothers reported relatively greater increases in trust when they *over-*estimated, the *challenging* violation, than under-estimated post-baby responsibilities, the *affirming* violation (Figure 12). These effects were attenuated relative to the effects on commitment though. The simple effect of expectancy violation (squared) was only significant for women 2 SD below the mean on satisfaction, standardized $b = -.23$, $z = -2.33$, $p = .02$. It was not significant for women 1.5 SD below, standardized $b = -.044$, $z = -.59$, $p = .56$, or 1 SD above the mean on satisfaction, standardized $b = .03$, $z = 0.27$, $p = .79$.

Expectancy violations that *challenged* gendered expectations about how the world works also attenuated Time 1 differences in trust between more and less satisfied women. When women *under-*estimated responsibility, the *affirming* violation, those who were less satisfied reported sharper declines in trust than those who were more satisfied. Being lower in satisfaction intensified this effect, captured by the curve steepening. The simple effect of satisfaction (squared) was significant and negative for women 2 SD, standardized $b = -1.45$, $z = -3.22$, $p = .001$, and 1.5 SD below the mean on expectancy violation, standardized $b = -.89$, $z = -2.83$, $p = .0047$. But, when women *over-*estimated responsibility, the *challenging* violation, less satisfied women sustained trust almost as well as more satisfied women. The simple effect of satisfaction (squared) was not significant for women 2 SD above, standardized $b = -.06$, $z = -0.37$, $p = .71$, and 1.5 SD above the mean on expectancy violations, standardized $b = .16$, $z = 1.41$, $p = .16$.

The compensatory-commitment difference score. The findings for the component measures of commitment and trust explain the null effect for men on the difference score. Men

evidenced equally strong compensatory effects on commitment and trust, making the difference score insensitive as a measure of compensation (because the comparable effects for commitment and trust cancelled each other out). But, women evidenced stronger compensatory effects on commitment than trust even though they evidenced compensatory effects on both. Consequently, for less satisfied women, expectancy violations that challenged gendered assumptions about how the world works pushed commitment psychologically apart from trust just as in the experiments, making the difference score a sensitive measure of compensation for women.²¹

Motivational Preparedness to Meet the Partner's Needs

The findings for changes in commitment suggest that less satisfied people do find greater meaning in their relationships when their pre-baby expectancies are violated in ways that challenge gendered assumptions about the post-baby world. However, expressions of commitment are relatively cheap. Being motivationally engaged in meeting a partner's needs when it is difficult to do so affords a still more conservative test of the inherent meaning people experience in their relationship commitments (Rusbult & Van Lange, 2003).

We indexed greater motivational preparedness to meet the partner's needs by averaging two indicators that were objective and grounded in-vivo in behavioral responses to a test to commitment: (1) the perceiver's psychophysiological challenge versus threat during discussion of the *partner's* issue and (2) the *partner's* ratings of the participant's responsiveness in the interaction, each transformed to a z-score. (We isolated challenge/threat responses during the discussion of the *partner's* issue because the partner's desire for change in the relationship tests the perceiver's willingness to accommodate). Challenge/threat captures the perceiver's more automatic or uncontrolled response to the situational necessity of meeting the partner's needs (Blascovich, Mendes, & Seery, 2002; Weisbuch-Remington, Mendes, Seery, & Blascovich,

2005; Weisbuch, Seery, Ambadi, & Blascovich, 2009), whereas the *partner's* ratings of the perceiver's behavior captures the perceiver's more deliberate or controlled responses. We combined these measures into a composite to allow people to evidence motivational readiness in idiosyncratic ways. Namely, Arya could evidence readiness through her physiology, Aaron's reports on her behavior, or both. In this composite index, greater motivational preparedness to meet the partner's needs corresponds to the perceiver's greater psychophysiological challenge while discussing the partner's issue (i.e., higher cardiac output and lower total peripheral resistance) and/or the partner's more positive ratings of the perceiver's responsiveness.

The logic behind formative measurement models supports the use of a composite variable to index motivational preparedness to meet the partner's needs even though challenge/threat responses and reports on the perceiver's responsiveness were not strongly correlated. In formative measurement models, the indicators cause the construct and strong correlations among the indicators are not expected. Socioeconomic status provides a good example of a formative index. Any combination of high income, prestigious job, or posh residence could increase SES, without all measures increasing simultaneously (Diamantopoulos, Riefler & Roth, 2008; Diamantopoulos & Winklhofer, 2001; Edwards & Bagozzi, 2000). Motivational readiness to meet the partner's needs operates similarly; any combination of greater psychophysiological challenge and observed responsiveness could increase readiness without both needing to increase simultaneously. The composite index thus allows people to evidence motivational readiness in their own idiosyncratic ways while still being considered psychologically equivalent, affording a more sensitive test of the hypotheses (Murray, Lupien, & Seery, 2012).

We conducted SEM analyses predicting the composite index of motivational preparedness that generally paralleled those for self-reported commitment. Table 15 lists the

variables included in this model and their corresponding coefficients.²² It also reveals the expected opposite expectancy violation (squared) by satisfaction (squared) interactions for men, standardized $b = .40$, $z = 2.08$, $p = .037$, and women, standardized $b = -.41$, $z = -2.06$, $p = .040$. Supporting the conceptual rationale for the validity of the composite index, we also found evidence for these interactions when we analyzed each indicator separately.²³

Figure 13 presents the effects for men's motivational preparedness to meet women's needs. These effects closely paralleled those for men's commitment, although only the simple effects for expectancy violation (squared) were statistically significant. Less satisfied fathers were more motivationally prepared to meet their partner's needs when they experienced expectancy violations that *challenged* gendered expectations about how the post-baby world works. That is, less satisfied fathers evidenced greater motivational preparedness when they *under*-estimated than over-estimated post-baby responsibilities. This tendency also intensified as the magnitude of the challenge to gendered post-baby world expectations increased. The simple effect of expectancy violation (squared) predicting preparedness was significant and positive (i.e., generally U-shaped) for men 2 SD below, standardized $b = 1.10$, $z = 3.78$, $p < .0001$, and 1.5 SD below the mean on satisfaction, standardized $b = .69$, $z = 3.27$, $p = .001$. The simple effect of expectancy violation (squared) predicting preparedness was not significant for men 1 SD above the mean on satisfaction, standardized $b = -.11$, $z = -0.87$, $p = .38$.

Figure 14 presents the effects for women's motivational preparedness to meet men's needs. These effects generally paralleled those for women's commitment, although the \cap -shaped curve was even more pronounced. Only the simple effects for satisfaction (squared) were significant. When women *under*-estimated responsibility, the culturally *affirming* violation, moderately satisfied women evidenced greater motivational preparedness to meet their partner's

needs than less satisfied women and more satisfied women. The simple effect of satisfaction (squared) was negative and significant for women 2 SD, standardized $b = -1.80$, $z = -2.11$, $p = .035$, and 1.5 SD below the mean on expectancy violation, standardized $b = -1.24$, $z = -2.11$, $p = .035$. But, when women *over*-estimated responsibility, the *challenging* violation, they evidenced similar levels of motivational readiness regardless of satisfaction. The simple effect of satisfaction (squared) was not significant for women 2 SD above, standardized $b = -.11$, $z = -0.28$, $p = .78$, and 1.5 SD above the mean on expectancy violations, standardized $b = -.02$, $z = -0.09$, $p = .93$. Thus, expectancy violations that *challenged* gendered expectations about how the world works attenuated satisfaction-related differences in women's motivational preparedness to meet their partner's needs in a conflict-of-interest situation.

Discussion

When the transition to parenthood *challenged* gendered expectations about how the post-baby world works, less satisfied men and women defensively affirmed commitment. Nonetheless, this defensive affirmation of commitment took a different shape for new fathers than it did for new mothers. For less satisfied new fathers, *challenging* expectancy violations predicted actual *increases* in commitment. Less satisfied men evidenced greater actual growth in commitment and greater objective readiness to meet their partner's needs when they *under*- than *over*-estimated their post-baby responsibilities. However, for less satisfied new mothers, *challenging* expectancy violations predicted *inhibited* declines in commitment. Less satisfied women evidenced more stable commitment when they *over*- than *under*-estimated post-baby responsibilities. Over-estimating responsibility also appeared to attenuate differences in motivational readiness to meet the partner's needs between more and less satisfied women.

These findings speak to the power and specificity of the commitment-defense motive. As the model predicts, only expectancy violations that *challenged* gendered associations about how the post-baby world works motivated commitment-defense. In this study, these *challenging* expectancy violations could be either positive (i.e., *over*-estimating responsibility) or negative (i.e., *under*-estimating) responsibility, but they nonetheless still predicted commitment defense. Indeed, less satisfied men who *under*-estimated post-baby responsibilities strengthened their commitments despite living with a more personally onerous violation of expectancy.

There is a salient alternative explanation for these effects though. Less satisfied women who under-estimated responsibility (an *affirming* violation) evidenced declines in commitment. Maybe less satisfied women who *over*-estimated their post-baby responsibilities reported more stable commitment because they were delighted to be carrying a lighter domestic load. If domestic delight is driving the effects, men should have also evidenced greater commitment when they *over*-estimated their responsibilities. However, men actually evidenced greater commitment when they *under*-estimated their responsibilities. Delight over a light domestic burden cannot account for evidenced changes in commitment for both men and women. Enacted domestic responsibilities cannot account for the contrasting effects for new mothers and fathers either because the expectancy violation residual is statistically independent of actual responsibility. Moreover, when we substituted actual responsibility for expectancy violations in the SEM models predicting motivational readiness to meet the partner's needs and changes in commitment and trust, we did not replicate the interactive effects for expectancy violations.

These findings do have limitations. We combined scales tapping commitment and closeness in the commitment composite and scales tapping perceptions of the partner's commitment, perceptions of the partner's closeness, disposition to be trustworthy, and trust in the

partner's regard to broadly capture these constructs. However, violating expectancies might have produced effects on these composites without actually changing less satisfied participants' responses on the commitment and perceived commitment scales (which bear the closest empirical parallel to our conceptual constructs). To see if this was the case, we redid the SEM analyses predicted self-reported changes in commitment and trust using only the scales tapping commitment and perceived commitment. These analyses revealed opposite and significant expectancy violation (squared) by satisfaction (squared) interactions predicting commitment for both men, standardized $b = .372$, $z = 1.97$, $p = .048$, and women, standardized $b = -1.20$, $z = -7.27$, $p < .0001$, and predicting perceptions of the partner's commitment for both men, standardized $b = .80$, $z = 4.63$, $p < .0001$, and women, standardized $b = -.39$, $z = -2.69$, $p = .007$.

Even though the findings for the full and narrow measures of commitment parallel the logic of the commitment-defense model, the findings for trust were more equivocal. For women, over-estimating responsibility, the *challenging* violation, did push commitment apart from trust psychologically. The nature of this separation differed from the experiments though. In the experiments, people who experienced expectancy violations reported decreased trust (relative to controls). But experiencing such a violation with new motherhood did not actively decrease trust. It simply suppressed its affirmation relative to commitment over time (as evidenced by the weaker effects on trust than commitment for new mothers). But for men, under-estimating responsibility did not push commitment apart from trust at all. Men instead compensated and affirmed both trust and commitment. We explore explanations for these differences when we return to trust's role in motivating commitment-defense in the General Discussion.

General Discussion

When events in the world at large confound expectations, relationships provide a

potential resource for restoring meaning. In the commitment-defense model, violating expectations about the world outside the relationship motivates people who most need to set their relationship right to affirm and defend their commitment. The present findings offer promising initial support for the model and elucidate directions for model refinement and future research.

Setting Disorderly Worlds Right Through Relationships

The experiments violated expectations about the world outside the relationship by telling the tale of hard work come to naught, depicting unconventional sitcom plots and surrealist images, and compelling people to avoid positive and approach negative stimuli. For people in less satisfying relationships, experiencing such expectancy violations pushed commitment psychologically apart from trust. Meta-analyzing the experiments revealed robust interactions between expectancy violation condition and satisfaction (squared) predicting the compensatory-commitment difference score and its components. The lower people's satisfaction in their relationships, the greater the power expectancy violations had to provoke stronger compensatory expressions of commitment. Indeed, expectancy violations motivated less satisfied people to risk affirming commitments that were just as strong as those voiced by the most satisfied participants.

Becoming a parent can similarly violate consensual gendered expectations for how the world works. When women expected to do more and men expected to do less than the post-baby world delivered, less satisfied new mothers and fathers seemed to compensate and defensively affirm commitment. However, the nature of this defensive affirmation differed for new mothers and fathers. *Over*-estimating responsibility appeared to inhibit commitment's decline for less satisfied new mothers. That is, less satisfied women who *over*-estimated responsibilities, the *challenging* violation, evidenced more stable commitment than less satisfied women who *under*-estimated responsibilities, the *affirming* violation. They also evidenced as much motivational

readiness to meet their partner's needs in the conflict interaction as more satisfied women, a signature marker of commitment. However, *under*-estimating responsibility appeared to promote growth in commitment for less satisfied new fathers. That is, less satisfied men who *under*-estimated responsibilities, the *challenging* violation, evidenced greater increases in commitment pre-to-post baby than less satisfied men who *over*-estimated responsibilities, the *affirming* violation. Less satisfied men who *under*-estimated their responsibilities also evidenced significantly greater motivational preparedness to meet their partner's needs relative to men who over-estimated responsibilities. Post-baby divisions of labor that violated personal and cultural expectations thus protected the most vulnerable of new parents against the declines in experienced and expressed commitment that can come with new parenthood.

The experimental, survey, and longitudinal studies together elucidate basic tenets of the commitment-defense model. First, people who are less satisfied in their relationships seem to exist in more chronically incongruent psychological states because their attitude toward their relationship contradicts their behavior within it (Thibaut & Kelley, 1959). Living in such a dissonant state makes the relationship a more pressing psychological canvas for imposing expected associations on the world because the relationship itself is in a state of disorder that needs to be remedied. In the follow-up surveys, less satisfied people did indeed express greater desire to change their relationship attitudes, purportedly because questioning the meaning of their lives turned their relationship into a disquieting source of dissonance and disorder. Therefore, when experiences threatened expected orderly associations in the world at large, less satisfied people needed to set their relationship commitments right to restore some sense of order to the world. Expectancy violations instead lost the potential to motivate commitment defense as satisfaction approached its average and the relationship itself was already in an ordered state.

Second, in the commitment-defense model, trust functions as a barometer of uncertainty, whereas commitment functions as a barometer of meaning and purpose. Consequently, expectancy violations should push commitment psychologically apart from trust because trust exists specifically to capture and resonate sources of uncertainty, such as the anxiety caused by expectancy violations. The five experiments yielded solid evidence for this hypothesized separation; the expectancy violation by satisfaction (squared) interactions for commitment and trust were opposite in shape and differed significantly in direction (see Footnote 6). Nonetheless, the effects for trust were more variable than those for commitment across the experiments (even though the meta-analytic fixed effects estimates were significant for both measures).

The transition to parenthood study further suggests that trust may not always function to resonate the anxiety provoked by expectancy violations in exactly same way. In the experiments, less satisfied participants tended to report less trust in the expectancy violation than control conditions, a difference that intensified with lower satisfaction. However, trust did not resonate anxiety as clearly for new parents who encountered divisions of labor that challenged gendered expectations about how the post-baby world works. While over-estimating post-baby responsibilities pushed commitment psychologically apart from trust for women, these new mothers nonetheless evidenced relative stability, not declines in trust. Moreover, men who under-estimated post-baby responsibilities actually evidenced relative increases in trust. The most plausible, though post-hoc, explanation for the variability in the findings for trust might rest in the nature of the expectancy violation itself. For instance, in the transition to parenthood study, the partner was complicit in the expectancy violations. Consequently, this complicity might have activated a competing relationship-specific motivation *not* to question the partner's caring (Murray & Holmes, 2009). If this happened, it would make explicit reports of trust a less

sensitive reflection of the anxiety provoked by expectancy violations in the world outside the relationship. The findings thus raise the possibility that that trust might play a more nuanced role in resonating anxiety than the model anticipated. Namely, trust might resonate anxiety directly through its decline or indirectly through its inhibited affirmation relative to commitment.

In Defense of the Model: Strengths, Limitations, and Future Directions

The present studies contain strengths and limitations. On the upside, we found convergent support for the hypotheses with established experimental procedures for violating expected associations, with a new behavioral violation of expectations, and with naturally-occurring expectancy violations that occurred over the transition to parenthood. We also found convergent support for the hypotheses across MTurk samples, introductory psychology students, and expectant parents. Also on the plus side, we used meta-analysis to limit interpretation to only those effects that proved most robust in the experiments.

On the downside, aspects of the data and theorizing are less than perfect. On the data side, the interaction between expectancy violation condition and satisfaction (squared) predicting the composite difference score measure of compensatory commitment was not significant in every experiment. In Experiment 2, the predicted interaction only emerged for people who completed dissonance questions prior to the dependent measures (see Footnote 7); in Experiment 5, it was only significant for people high in self-esteem; in Experiment 3, it was not significant, period. However, in every experiment, this interaction was in the predicted direction and it served to strengthen the meta-analytic effect. Indeed, findings that fall short of conventional significance can nonetheless testify to the robustness of an effect just as they did here (Fabrigar & Wegner, 2016). Moreover, when we limited our analyses to the actual measures of commitment and perceived commitment most central to our theoretical analysis, the predicted

interaction effects for the individual experiments were even more robust (see Footnote 13).

On the theoretical side, the model posits that less satisfying relationships offer a better canvas for affirming order in the world because there is more for dissatisfied perceivers to set right in their relationships when expectancy violations impose disorder on the world. The findings from the survey studies lend support to this reasoning, but these correlational data cannot prove that less satisfied people are more susceptible to expectancy violations because they actually want their relationship commitments to make more sense. The model is also relatively mute on how highly satisfied perceivers counter expectancy violations in the world outside the relationship. Simply thinking of the relationship should be enough to set the world right for more satisfied perceivers, but the current experiments did not directly test this proposition. Future research might examine whether priming a relationship partner is more likely to function as a ready-made palliative defense against expectancy violations for people who are already highly satisfied in their relationships.

The model also implicitly assumes that trust resonates anxiety to motivate commitment defense. The meta-analytic findings for the compensatory-commitment difference score support this possibility, but the experiments did not test it directly. Future research might employ implicit measures of trust to better understand its role in resonating anxiety and motivating commitment defense. Nonetheless, the experiments provide initial evidence that meaning violations can sometimes provoke measurable relationship anxiety on an explicit measure. Such direct evidence of the activation of anxiety is typically absent in meaning threat experiments (Proulx & Inzlicht, 2012). The model also assumes that affirming commitment to the relationship restores meaning to the world, but the studies did not make this point directly. Instead, consistent with research on meaning maintenance (Heine et al., 2006), we assumed that

meaning is restored through the affirmation of an expected association in the world – being in a fulfilling relationship. Future research should provide more direct evidence for this assumption.

Further theoretical refinement of the model's boundary conditions is also needed. The parenthood study suggests that expectancy violations need to *challenge* expected associations in the world to precipitate commitment defense. But, the present research did not pinpoint exactly how long compensatory bolstering of commitment might last, nor did it distinguish the effects of the expectancy violation itself from the attendant consequences of the expectancy violation on commitment. Although parenthood provides a ripe naturalistic context for violating cultural expectations about how the world works, its attendant stressors, such as sleep deprivation and lost leisure time, likely motivate their own justification. Indeed, parents typically justify the costs of parenting by idealizing the state of parenting itself (Eibach & Mock, 2011). Thus, the pressure to justify one's actions that parenthood creates might help sustain commitment defense over time. However, the stressors attendant to other types of expectancy violations could impose less readily rationalized sources of stress on the relationship. In the current model, becoming ill despite exemplary health habits or losing a job despite excellent performance reviews should elicit immediate inclinations to compensate and bolster commitment as a means of restoring meaning to the world. But, losing a job or suffering ill health imposes uncontrollable attendant stressors and complications on the relationship (e.g., loss of income) that could undo such compensatory bolstering of commitment over time. Future research should try to examine how the experience of such attendant stressors affect people's capacity to restore meaning and order to their lives through their relationships. For instance, it might be the case that expectancy violations that impose high levels of stress elicit an immediate motivation to affirm commitment that becomes more difficult to fulfill over time as attendant stressors erode the self-regulatory

resources needed to act on motivations to strengthen commitment (Neff & Karney, 2009). Expectancy violations that instead elicit moderate levels of stress might be more likely to elicit sustained commitment by strengthening the self-regulatory capacity to act on motivations to defend commitment. Indeed, experience coping with modest levels of stress functions as a kind of inoculation that allows people to better cope with future unexpectedly stressful events, both inside and outside the relationship (Neff & Broady, 2011; Seery, Holman, & Silver, 2010; Seery & Quinton, 2016). Further refinements of the theoretical model might also specify when people are likely to restore order to the world through the relationship as opposed to affirming alternate sources of order, such as the moral turpitude of prostitutes or the value of national allegiance. Perhaps people are more likely to affirm sources of meaning outside the relationship when their personality makes it difficult for them to see relationships as inherently valuable and meaningful. In the current research, we explored the possibility that low self-esteem people might be less likely to affirm meaning through their relationship than highs because lows are cautious and avoidant in relationships, afraid to let their relationships mean too much to them (Murray, Holmes, & Griffin, 2000). The meta-analysis of the experiments yielded tentative support for this exploratory hypothesis. Less satisfied perceivers who were also low in self-esteem evidenced the weakest, though still evident, tendencies to defensively affirm commitment in the face of expectancy violations (relative to controls). Thus, there could be value in exploring personality dispositions that make relationships a more viable resource for restoring meaning.

Despite these weaknesses, the present findings suggest potential interconnections between self and relationship regulatory systems. In the transactive goal system model, people pursue self-regulatory goals within goal systems defined by the partner and relationship (Fitzsimons, Finkel, & van Dellen, 2015). Consequently, the pursuit of relationship goals can

co-opt more basic self-regulatory systems. For instance, pursuing the relationship-specific goal to self-protect against a partner's harsh words activates the more general goal to avoid harm, including risky bets (Cavallo, Fitzsimons, & Holmes, 2010). The present findings suggest that pursuing self-regulatory goals can similarly co-opt basic relationship-regulatory goals. When circumstances threatened the goal to perceive an expected world, the very people who normally self-protectively regulate risk in relationships instead sought to affirm the value and meaning in their commitment to their partner to try to make the world meaningful once again.

Conclusion

Life does not always unfold as people expect, nor do relationships. But when life does not unfold as people expect, they can at least turn to their relationship to make life make sense again. Less satisfied people affirmed the inherent value of their relationship commitments to restore meaning and order to life experiences that violated conventional assumptions.

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Endnotes

¹ We made the a priori decision to exclude this small number of maximally dissatisfied participants for two reasons. First, relative to other participants who were at least somewhat satisfied with their relationship, they seemed unlikely to have the same motivation to maintain their relationship at all, thus placing them in a meaningfully different population than the rest of our participants. Second, extreme outliers can be unduly influential in any analyses, but this is magnified when testing curvilinear relationships as we do here. Unlike less extreme observations, those distant from the mean (> 3 *SDs* below) (a) can distort and/or obscure the curve that would otherwise fit the rest of sample and (b) are sparsely represented ($< 1\%$ of the total *N*), which means there is only a small and thus unreliable amount of data behind their influence. This can yield unstable findings at outlying values (Cohen, Cohen, West, & Aiken, 2003). These conceptual and statistical reasons leave data from maximally dissatisfied participants uninterpretable in terms of our research question.

² We set 200 participants as the minimum sample size for Experiment 1 anticipating that either satisfaction or self-esteem might moderate the main effect of condition, satisfying the recommendations of Simmons, Nelson, and Simonsohn (2011) for a minimum sample size of 20 participants per cell. Because Experiment 1 revealed a significant interaction between expectancy violation condition and satisfaction (squared) predicting compensatory commitment, we based subsequent sample sizes on the effect size for this interaction term (Cohen's $f^2 = .04$). A power analysis conducted in G*Power (Faul, Erdfelder, Buchner, & Lange, 2009) suggested that sample sizes of 189 and 232 would provide 90% and 95% power in detecting an interaction

with this effect size. The sample sizes we obtained in Experiments 2-4 typically exceed these benchmarks.

³ For exploratory purposes, we included a 3-item measure of dissonance (i.e., “uncomfortable”, “uneasy”, “bothered”, Elliot & Devine, 1994) in Experiments 2 and 3. In Experiment 2, we manipulated the order of administration of this dissonance measure; it preceded the dependent measures for half of the participants and followed the dependent measures for the other half of the participants. In Experiment 3, the dissonance measure followed the dependent measures for all participants.

⁴ The two exploratory measures asked participants to make predictions for their own and their partner’s shared sentiments. Participants rated their willingness to engage in 12 specific interdependence-increasing activities (e.g., I would be willing to ask my partner to... “Distract me from my worries when I feel under stress”, “help me solve my personal problems”, “plan our activities together”) and participants also made 12 predictions for future joint behavior (e.g., “My partner or I will be attracted enough to another person to consider leaving the relationship”; “My partner and I always enjoying each other’s company no matter how much time we spend together”). As these measures conflated trusting and committed sentiments, we do not discuss them further. The measure of mood had inexplicably poor reliability and is not discussed further.

⁵ We averaged the coefficient alpha for each experiment to provide a reliability estimate for the scales included across all five experiments.

⁶ In the repeated measures ANCOVA, the meta-analytic expectancy violation condition by satisfaction (squared) by relationship sentiment (i.e., commitment vs. trust composite) interaction was significant, $r = .103$, 95% CI [.056, .149], $z = 4.29$, $p < .0001$.

⁷ In Experiment 2, we obtained a significant order of dissonance questions by expectancy violation condition by satisfaction-squared interaction. Decomposing this interaction revealed that the interaction between the satisfaction (squared) and expectancy violation condition was significant when the dissonance questions preceded the dependent measures, $\beta = .31$, $t(380) = 2.24$, $p = .026$. Thus, making feelings of uncertainty more salient appeared to potentiate the predicted effects. To be conservative, we included the results for the unconditional expectancy violation condition by satisfaction (squared) interaction in the meta-analysis.

⁸ The “Inclusion of Other in the Self” scale conflates the participant’s feelings of closeness to the partner with the partner’s feelings of closeness to the participant because the overlapping self and partner circles capture dyadic cohesiveness (Aron et al., 2002). Because this scale requires simultaneous expressions of commitment and trust, we could not include this measure in either the commitment or the trust composite (or the difference score index of compensatory commitment). Meta-analyzing this measure across experiments yielded a non-significant expectancy violation condition by satisfaction squared interaction, $r = -.009$, 95% CI [-0.057, .038], $z = -0.39$, $p = .70$, and a non-significant expectancy violation condition by satisfaction squared by self-esteem interaction, $r = -.016$, 95% CI [-0.063, .032], $z = -0.65$, $p = .52$.

⁹ When we omitted self-esteem and its interactive effects from the regression analyses, the meta-analytic expectancy violation by satisfaction (squared) interaction predicting compensatory commitment was still significant, $r = .052$, 95% CI [.005, .099], $z = 2.16$, $p = .031$.

¹⁰ For the difference score index of compensatory-commitment, self-esteem further moderated the effects of satisfaction. The meta-analytic interaction between expectancy violation condition, satisfaction (squared), and self-esteem was significant. In order to explore this interaction meta-

analytically, we estimated the expectancy violation by satisfaction-squared interaction predicting compensatory commitment affirmation within each experiment for participants one standard deviation below and above the mean on self-esteem. Meta-analyzing the conditional interactions revealed that expectancy violations tended to provoke commitment affirmation for less satisfied people who were low on self-esteem, $r = .038$, 95% CI [-.009, .085], $z = 1.57$, $p = .12$, but more strongly provoked commitment affirmation for less satisfied people at the midpoint on self-esteem, $r = .103$, 95% CI [.056, .149], $z = 4.29$, $p < .0001$, and less satisfied people who were high on self-esteem, $r = .102$, 95% CI [.055, .149], $z = 4.26$, $p < .0001$.

¹¹ Unlike the fixed effects estimates for trust, the random effects estimate for the interaction between satisfaction (squared) and expectancy violation condition only approached significance, $r = -.057$, 95% CI [-.130, .016], $z = -1.53$, $p = .13$. The simple effects of expectancy violation condition at 2 SD, $r = -.101$, 95% CI [-.220, .020], $z = -1.64$, $p = .10$ and 1.5 SD below the mean on satisfaction, $r = -.089$, 95% CI [-.202, .027], $z = -1.50$, $p = .13$, were also slightly weaker.

¹² The main effect of expectancy violation condition predicting the manipulation check was significant in Experiment 1, $\beta = .78$, $t(196) = 12.15$, $p < .0001$, Experiment 2, $\beta = .87$, $t(380) = 24.24$, $p < .0001$, Experiment 3, $\beta = .36$, $t(395) = 5.84$, $p < .0001$, Experiment 4, $\beta = .32$, $t(489) = 6.03$, $p < .0001$, and moderated by satisfaction (squared) in Experiment 5, $\beta = .25$, $t(202) = 1.91$, $p = .058$. In Experiment 5, the predicted main effect of expectancy violation condition predicting the manipulation check only tended to be evident for participants one standard deviation above the mean on satisfaction, $\beta = .20$, $t(202) = 1.62$, $p = .11$. Despite the null main effect for condition in Experiment 5, it is still reasonable to believe that approaching negative and avoiding positive stimuli posed an expectancy violation conceptually akin to those posed in Experiments 1

through 4. Dependent measures provide better evidence for the intended effect of experimental manipulations than manipulation checks especially in situations where people might not be able to articulate the exact psychological state they are experiencing (Sigall & Mills, 1998). Finding consistent effects on the dependent measures across studies thus suggests we induced conceptually similar expectancy violations. Nonetheless, the condition by satisfaction (squared) interaction predicting the difference score index of compensatory commitment was still significant when we omitted Experiment 5 from the meta-analysis, $r = .085$, 95% CI[.035, .135], $z = 3.33$, $p = .001$.

¹³ The expectancy violation by satisfaction (squared) interaction predicting the difference between commitment and perceived commitment was significant and positive in Study 1, $b = .41$, $t = 2.90$, $p = .004$, moderated by the order of the dissonance questions in Study 2, $b = -0.16$, $t = -1.87$, $p = .06$, significant and positive in Study 3, $b = .17$, $t = 2.26$, $p = .024$, significant and positive in Study 4, $b = .17$, $t = 2.65$, $p = .008$, and marginally significant and positive in Study 5, $b = .22$, $t = 1.76$, $p = .079$.

¹⁴ We also included a further set of SEM models that included the quadratic effect of satisfaction (i.e., satisfaction squared) as a simultaneous predictor. The indirect effect of satisfaction (linear) continued to be significant in both samples, but the indirect effect of satisfaction (squared) was not significant in either sample. Thus, the observed indirect effect of satisfaction on desired change in relationship attitudes was equally pronounced across levels of satisfaction.

¹⁵ This prediction assumes that couples possess the minimal level of psychological resources needed to enact heightened motivations to strengthen commitment. In some circumstances, the stressors that can attend an expectancy violation, such as financial difficulties in the event of a

job loss, may compromise such resources over time and undercut couple's capacity to strengthen their commitment. We return to this point in the General Discussion.

¹⁶ Increases in HR and VC reflect engagement in the situation and they are common across the challenge/threat continuum. These four cardiovascular markers have been validated and applied in dozens of studies (for reviews, see Blascovich, 2008; Seery, 2013).

¹⁷ The 3-item perceptions of the partner's commitment measure included 1 further item not administered in the 2-item measure used in the experiments.

¹⁸ Participants also completed a 14-day on-line diary assessment after the Time 1 and Time 2 laboratory sessions. We designed the transition to parenthood study to answer a myriad of questions, the majority of which are not relevant to the current project. Because we utilized only those scales described in the measures section in testing the study hypotheses, we do not discuss the other measures or procedures in depth.

¹⁹ We could not include relationship centrality in the commitment composite (as in Experiments 1-5) or perceptions of the partner's responsive behavior in the trust composite (as in Experiment 5) because we did not have the foresight to include these measures. We had not designed any of the expectancy-violation experiments at the time we started data collection for the parenthood study. Nevertheless, the measures we had put in place in the parenthood study ended up affording an excellent opportunity to conduct a naturalistic replication of the experiments.

²⁰ Fitting the model predicting changes in trust necessitated adding two partner effects: (1) the effects of the partner's Time 1 satisfaction predicting the perceiver's Time 2 trust and (2) the effects of the partner's Time 1 trust on the perceiver's Time 2 trust. The model was a very poor fit to the data without these paths, $\chi^2(22) = 59.37, p = .000028, RMSEA = .092$. Nonetheless,

the expectancy (squared) by satisfaction (squared) interaction predicting trust was still significant for women, standardized $b = -.39$, $z = -2.87$, $p = .004$ and marginally significant for men, standardized $b = .23$, $z = 1.68$, $p = .092$, when we omitted these partner effects from the model. Thus, including the partner effects did not produce the interactions; it only improved the fit of the model, helping to ensure that the interaction effects were indeed properly evaluated in the context of the overall model.

²¹ Given the added complexity to the analytic model introduced with dyadic data, we did not include self-esteem in the primary analyses. However, we did utilize the mixed model procedure within SPSS to test whether self-esteem moderated the obtained interactions. That is, we examined whether self-esteem further moderated the interaction between gender and the effects of satisfaction (squared) and expectancy violation (squared) in predicting changes in the difference score index of compensatory commitment and its components. No significant interactions between self-esteem and the gender by satisfaction (squared) by expectancy violation (squared) emerged, regardless of whether we examined the compensatory-commitment difference score, $F(1, 227.31) = 1.63$, $p = .20$, commitment, $F(1, 235.64) = .092$, $p = .76$, or trust, $F(1, 236.41) = 2.87$, $p = .09$. (We could not use AMOS to estimate this model because it proved impossible to draw all of the necessary co-variances among exogenous variables in the graphics interface.)

²² We included paths capturing the association between the partner's satisfaction and the perceiver's motivational readiness because the model was a poor fit to the data without these paths, $\chi^2(22) = 38.8$, $p = .015$, RMSEA = .06. Nonetheless, the expectancy (squared) by satisfaction (squared) interaction predicting trust was still significant for men, standardized b

= .48, $z = 2.41$, $p = .016$ and marginally significant for women, standardized $b = -.38$, $z = -1.79$, $p = .07$, when we omitted these partner effects from the model. Thus, including the partner effects did not produce the interactions; it only improved the fit of the model, helping to ensure that the interaction effects were indeed properly evaluated in the context of the overall model.

²³ The SEM model predicting the perceiver's challenge/threat responses paralleled the model predicting self-reported changes in commitment. In this model, the expectancy violation (squared) by satisfaction (squared) interaction was significant and negative for women, standardized $b = -.61$, $z = -2.47$, $p = .014$, and approaching significance and positive for men, standardized $b = .32$, $z = 1.51$, $p = .13$. The SEM model predicting the partner's perception of the perceiver's responsiveness included all possible actor and partner effects (as the hypothesized effect involves a partner effect). In this model, the expectancy violation (squared) by satisfaction (squared) interaction was significant and positive for men, standardized $b = .42$, $z = 2.27$, $p = .023$, and negative, but not significant, for women, $b = -.20$, $z = -0.95$, $p = .34$. Decomposing the interactions for the individual measures revealed patterns of simple effects generally similar to those for the composite, although simple effects that were statistically significant for the composite reached significance only for the perceiver's challenge/threat responses.

Authors' Note

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Table 1. Aggregate Descriptive Information for the Experiments

	Mean	SD	Min	Max
Self-Esteem	5.52	1.12	1.84	7
Satisfaction	6.00	1.07	2	7
Own Closeness	7.34	1.66	1.52	9
Perceptions of Partner Closeness	7.41	1.66	1.4	9
Own Commitment	8.09	1.48	1.67	9
Perceptions of Partner Commitment	8.17	1.36	2	9
Relationship Centrality	5.7	0.97	1.85	7
Trust in Partner's Regard*	6.02	0.89	2.53	7
Dispositional Trustworthiness*	6.91	1.08	3.21	8.89
Predictions of Partner's Trustworthy Behavior*	5.27	0.86	2.44	7

* Study 5 only

Table 2. Summary of Regression Analyses for Experiment 1.

Predictor	Compensatory-					
	Commitment Difference Score ^a		Commitment Composite ^a		Trust Composite ^a	
	β	t	β	t	β	t
Self-esteem	-.41	-4.82***	-.20	-3.04**	.15	2.26*
Satisfaction	.05	0.54	.59	8.30***	.50	6.96***
Condition	.03	0.39	.13	2.04*	.10	1.45
Satisfaction squared	-.07	-0.54	.03	0.28	.08	0.82
Self-esteem X condition	.12	1.42	.09	1.35	-.02	-0.25
Self-esteem X satisfaction	.58	4.14***	.32	2.97**	-.18	-1.61
Satisfaction X condition	-.20	-2.19*	.02	.22	.18	2.47*
Esteem X satisfaction squared	0.84	4.27***	.67	4.42***	-.07	-0.44
Condition X satisfaction squared	.43	2.97**	-.06	-0.50	-.40	-3.54***
Esteem X satisfaction X condition	-.38	-2.54*	-.32	-2.78**	.01	0.12
Esteem X condition X satisfaction squared	.29	1.47	-.22	-1.41	-.44	-2.81**

^a df error (204)

⁺ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3. Summary of Regression Analyses for Experiment 2.

Predictor	Compensatory- Commitment Difference Score ^a		Commitment Composite ^a		Trust Composite ^a	
	β	t	β	t	β	t
	Self-esteem	-.17	-0.93	-.01	-0.10	.10
Satisfaction	.02	0.25	.60	12.57***	.58	12.17***
Condition	-.04	-0.64	-.02	-0.38	.01	0.16
Order	-.04	-0.56	-.01	-0.13	.02	0.33
Satisfaction squared	-.08	-1.12	-.17	-3.17**	-.12	-2.20*
Condition X order	.11	1.70 ⁺	-.03	-0.61	-.11	-2.00*
Self-esteem X condition	.06	0.29	.07	0.42	.03	0.18
Self-esteem X order	.03	.38	.02	0.34	.00	0.02
Self-esteem X satisfaction	-.04	-0.66	.10	1.95 ⁺	.12	2.46*
Satisfaction X condition	.05	0.88	.01	0.29	-.02	-0.43
Satisfied X order	.03	0.43	.00	0.01	-.02	-0.34
Esteem X satisfaction squared	.13	1.44	-.04	-0.59	-.13	-1.76 ⁺
Condition X satisfaction squared	.11	1.32	.06	0.85	-.02	-0.25
Esteem X satisfaction X condition	.01	0.20	.07	1.26	.06	1.08

Esteem X satisfaction X order	-.11	-1.73 ⁺	-.01	-0.19	.06	1.23
Esteem X threat X order	-.04	-0.50	-.06	-1.03	-.03	-0.61
Satisfied X threat X order	-.04	-0.69	.01	0.20	.04	0.77
Order X satisfaction squared	.19	2.29*	.14	2.12*	.01	0.21
Esteem X condition X satisfaction squared	.03	0.29	-.03	-0.39	-.04	-0.62
Esteem X satisfied X condition X order	.13	1.96 ⁺	.07	1.42	-.01	-0.22
Condition X order X satisfaction squared	-.20	-2.37*	.04	0.60	.17	2.54*
Esteem X order X satisfaction squared	-.13	-1.39	-.08	-1.14	.00	0.03
Esteem X condition X order X satisfaction squared	-.07	-0.72	.05	0.76	.10	1.34

^a df error (380)

⁺ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 4. Summary of Regression Analyses for Experiment 3.

Predictor	Compensatory- Commitment Difference Score ^a		Commitment Composite ^a		Trust Composite ^a	
	β	t	β	t	β	t
	Self-esteem	-.14	-2.12*	.07	1.58	.15
Satisfaction	-.02	-0.24	.66	14.02***	.66	13.88***
Condition	-.00	-0.54	-.02	-0.52	-.02	-0.47
Satisfaction squared	-.21	-3.10**	-.08	-1.67 ⁺	.05	1.03
Self-esteem X condition	-.00	-0.03	-.10	-2.20*	-.10	-2.12*
Self-esteem X satisfaction	.15	2.36*	.00	0.04	-.09	-1.98*
Satisfaction X condition	-.03	-0.37	.04	0.86	.06	1.15
Esteem X satisfaction squared	-.01	-0.17	.03	0.59	.04	0.72
Condition X satisfaction squared	.09	1.13	.05	0.91	-.01	-0.09
Esteem X satisfaction X condition	.04	0.52	.04	0.75	.01	0.29
Esteem X condition X satisfaction squared	-.01	-0.15	.04	0.75	.05	0.86

^a df error (395)

⁺ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 5. Summary of Regression Analyses for Experiment 4.

Predictor	Compensatory- Commitment Difference Score ^a		Commitment Composite ^a		Trust Composite ^a	
	β	t	β	t	β	t
	Self-esteem	-.26	-4.99***	-.01	-0.22	.19
Satisfaction	.06	1.05	.64	14.95***	.58	12.8***
Condition	-.08	-1.52	-.03	-0.66	.03	0.72
Satisfaction squared	-.18	-3.16**	-.09	-1.88	.05	1.03
Self-esteem X condition	-.10	-1.90 ⁺	-.10	-2.35*	-.02	-0.50
Self-esteem X satisfaction	.23	3.80***	.11	2.29*	-.06	-1.21
Satisfaction X condition	.01	0.17	-.05	-1.10	-.05	-1.16
Esteem X satisfaction squared	.00	0.04	-.08	-1.42	-.08	-1.34
Condition X satisfaction squared	.12	1.87 ⁺	.06	1.05	-.04	-0.67
Esteem X satisfaction X condition	.01	0.13	.08	1.68 ⁺	.07	1.43
Esteem X condition X satisfaction squared	.23	3.20**	.19	3.32**	.02	0.26

^a df error (489)

⁺ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 6. Summary of Regression Analyses for Experiment 5.

Predictor	Compensatory-					
	Commitment Difference Score ^a		Commitment Composite ^a		Trust Composite ^a	
	β	t	β	t	β	t
Self-esteem	-.01	-0.10	.07	0.70	.09	0.86
Satisfaction	-.17	-1.21	.63	5.95***	.79	7.66***
Condition	-.06	-0.75	-.12	-1.90 ⁺	-.08	-1.29
Satisfaction squared	-.44	-3.25**	-.06	-0.57	.26	2.67**
Self-esteem X condition	-.23	-1.55	-.24	-2.15*	-.08	-0.77
Self-esteem X satisfaction	-.11	-0.66	-.06	-0.52	.01	0.11
Satisfaction X condition	.08	0.61	.11	1.14	.06	0.61
Esteem X satisfaction squared	.09	0.51	.02	0.16	-.04	-0.34
Condition X satisfaction squared	.39	3.10**	.21	2.26*	-.06	-0.69
Esteem X satisfaction X condition	.06	0.37	.13	1.15	.10	0.86
Esteem X condition X satisfaction squared	.16	0.94	.23	1.83 ⁺	.13	1.04

^a df error (202)

⁺ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 7. The Meta-Analytic Estimates for the Experiments

Predictor	Compensatory- Commitment Difference Score			Commitment Composite			Trust Composite		
	<i>r</i>	95% CI	<i>z</i>	<i>r</i>	95% CI	<i>z</i>	<i>r</i>	95% CI	<i>z</i>
Self-esteem	-.139	-.185, -.093	-5.82***	-.005	-.052, .042	-0.22	.125	.079, .172	5.24***
Satisfaction	.008	-.039, .055	0.33	.527	.492, .560	24.33***	.508	.472, .542	23.26***
Condition	-.031	-.078, .016	-1.28	-.018	-.065, .030	-0.73	.007	-.040, .054	0.29
Satisfaction squared	-.12	-.167, -.074	-5.03***	-.082	-.129, -.035	-3.43***	.029	-.018, .076	1.20
Self-esteem X condition	-.023	-.070, .025	-0.94	-.057	-.104, -.010	-2.39*	-.037	-.084, .010	-1.56
Self-esteem X satisfaction	.097	.050, .144	4.05***	.073	.026, .120	3.03**	-.023	-.070, .024	-0.95
Satisfaction X condition	-.005	-.052, .042	-0.21	.010	-.037, .058	0.44	.019	-.028, .066	0.80
Esteem X satisfaction squared	.055	.008, .102	2.29*	.020	-.027, .067	0.82	-.036	-.083, .011	-1.49

Table 7 continued.

Predictor	Compensatory- Commitment Difference Score			Commitment Composite			Trust Composite		
	<i>r</i>	95% CI	<i>z</i>	<i>r</i>	95% CI	<i>z</i>	<i>r</i>	95% CI	<i>z</i>
Condition X satisfaction squared	.103	.056, .149	4.29***	.049	.001, .095	2.02*	-.048	-.095, -.001	-1.99*
Esteem X satisfaction X condition	-.008	-.055, .039	-0.33	.031	-.016, .078	1.30	.042	-.005, .089	1.76 ⁺
Esteem X condition X satisfaction squared	.063	.016, .110	2.62**	.050	.003, .097	2.10*	-.009	-.056, .039	-0.36

⁺ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 8. Descriptive Information for the Surveys

	Survey A				Survey B			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Satisfaction	5.99	1.08	2	7	5.95	1.07	2	7
Desired Attitude Change	.32	.47	0	1	.38	.49	0	1
Meaning in Life	4.17	1.05	1	7	4.05	1.10	1	7
Dissonance about Satisfaction	2.59	1.68	1	7	2.57	1.56	1	7

Table 9. Zero-order correlations among the survey measures.

	1	2	3	4
1. Satisfaction	1.00	-.57	.22	-.52
2. Desired Attitude Change	-.44	1.00	-.20	.46
3. Meaning in Life	.24	-.25	1.00	-.24
4. Dissonance about Satisfaction	-.42	.28	-.20	1.00

NB: The correlations for Survey A are above the diagonal and the correlations for Survey B are below the diagonal. All correlations significant $p < .01$.

Table 10: Predicting desired attitudinal change from satisfaction, meaning, and dissonance.

Predictor	Survey A			Survey B		
	b (SE)	z	95% CI	b (SE)	z	95% CI
A: Satisfaction to meaning in life	.218 (.056)	3.93***	.108, .328	.243 (.059)	4.16***	.127, .359
B: Meaning in life to dissonance	-.21 (.081)	-2.66**	-.373, -.055	-.144 (.076)	-1.89 ⁺	-.293, .005
C: Dissonance to desired attitude change	.062 (.015)	4.05***	.033, .091	.032 (.018)	1.81 ⁺	-.003, .067
D: Satisfaction to dissonance	-.760 (.079)	-9.64***	-.915, -.605	-.584 (.079)	-7.40***	-.737, -.431
E: Satisfaction to desired attitude change	-.191 (.024)	-8.01***	-.238, -.144	-.163 (.026)	-6.20***	-.214, -.112
F: Meaning in life to desired attitude change	-.022 (.022)	-1.01	-.065, .021	-.066 (.023)	-2.83**	-.111, -.021

⁺ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 11. Descriptive information for the transition to parenthood study

	Men				Women			
	Mean	<i>SD</i>	Min	Max	Mean	<i>SD</i>	Min	Max
Self-Esteem	5.52	0.93	2.5	7	5.4	0.97	2.3	7
Satisfaction	7.86	1.42	2	9	7.93	1.48	2	9
Own Closeness	7.83	1.40	1	9	8.16	1.00	3.6	9
Perceptions of Partner Closeness	7.73	1.39	2	9	7.7	1.51	1.8	9
Own Commitment	8.6	1.10	1	9	8.93	0.355	5.33	9
Perceptions of Partner Commitment	8.68	0.84	2	9	8.61	1.09	1.33	9
Trust in Partner's Regard	7.2	1.26	3.39	9	7.08	1.47	1.72	9
Dispositional Trustworthiness	6.51	0.98	3.65	8.75	6.79	0.93	3.95	8.75
Expected Responsibility	6.29	1.07	2.92	10.17	7.56	0.87	5.58	10.75
Actual Responsibility	5.16	1.03	1.42	8.25	7.92	1.04	5.17	10.42

Table 12: Predicting changes in compensatory commitment (difference score) from the linear and quadratic effects of expectancy violations and pre-birth satisfaction.

Predictor	b (SE)	z	95% CI
Perceivers' pre-birth compensatory commitment	.358 _W (.055) .744 _M (.050)	6.52*** 14.93***	.250, .466 .646, .842
Perceivers' expectancy violation	-.059 (.035)	-1.71 ⁺	-.128, .010
Perceivers' expectancy violation squared	.008 (.021)	0.372	-.033, .049
Perceivers' pre-birth satisfaction	-.084 (.031)	-2.67**	-.145, -.023
Perceivers' pre-birth satisfaction squared	-.007 (.010)	-0.69	-.027, .013
Perceivers' satisfaction X expectancy violation	.023 (.029)	0.81	-.034, .080
Perceivers' satisfaction X expectancy violation squared	.009 (.017)	0.55	-.024, .042
Perceivers' satisfaction squared X expectancy violation	.020 (.014)	1.40	-.007, .047
Perceivers' satisfaction squared X expectancy violation squared	-.029 _W (.009) -.007 _M (.009)	-3.21** -0.83	-.047, -.011 -.025, .011

* $p < .05$, ** $p < .01$, *** $p < .001$.

CFI = .996, RMSEA = .047, $\chi^2(25) = 35.9$, $p = .07$.

Table 13: Predicting changes in commitment from the linear and quadratic effects of expectancy violations and pre-birth satisfaction.

Predictor	b (SE)	z	95% CI
Perceivers' pre-birth commitment	.394 _W (.077)	5.10***	.243, .545
	.761 _M (.089)	8.59***	.587, .935
Perceivers' expectancy violation	-.219 _W (.068)	-3.21***	-.352, -.086
	-.019 _M (.066)	-0.29	-.148, .110
Perceivers' expectancy violation squared	.087 _W (.045)	1.93 ⁺	-.001, .175
	-.028 _M (.039)	-0.73	-.102, .046
Perceivers' pre-birth satisfaction	.103 (.056)	1.83 ⁺	.007, .213
Perceivers' pre-birth satisfaction squared	-.019 (.017)	-1.13	-.052, .014
Perceivers' satisfaction X expectancy violation	.071 (.041)	1.74 ⁺	-.009, .151
Perceivers' satisfaction X expectancy violation squared	-.031 (.026)	-1.18	-.082, .020
Perceivers' satisfaction squared X expectancy violation	.104 _W (.029)	3.54***	.047, .161
	-.043 _M (.029)	-1.48	-.100, .014
Perceivers' satisfaction squared X expectancy violation squared	-.075 _W (.014)	-5.29***	-.102, -.048
	.036 _M (.018)	1.99*	.001, .071

* $p < .05$, ** $p < .01$, *** $p < .001$.

CFI = .998, RMSEA = .033, $\chi^2(22) = 26.9$, $p = .22$.

Table 14: Predicting changes in trust from the linear and quadratic effects of expectancy violations and pre-birth satisfaction.

Predictor	b (SE)	z	95% CI
Perceivers' pre-birth trust	.636 _W (.087)	7.32***	.465, .807
	.854 _M (.081)	10.56***	.695, 1.013
Perceivers' expectancy violation	-.176 _W (.051)	-3.46***	-.276, -.076
	.010 _M (.049)	0.21	-.086, .106
Perceivers' expectancy violation squared	.101 _W (.033)	3.07**	.036, .166
	-.016 _M (.030)	-0.55	-.075, .043
Perceivers' pre-birth satisfaction	.058 (.048)	1.21	-.036, .152
Perceivers' pre-birth satisfaction squared	-.007 (.013)	-0.54	-.032, .018
Perceivers' satisfaction X expectancy violation	.045 (.030)	1.50	-.014, .104
Perceivers' satisfaction X expectancy violation squared	-.043 (.021)	-2.06*	-.084, -.002
Perceivers' satisfaction squared X expectancy violation	.080 _W (.022)	3.61***	.037, .123
	-.043 _M (.02)	-2.11*	-.082, -.004
Perceivers' satisfaction squared X expectancy violation squared	-.041 _W (.011)	-3.76***	-.063, -.019
	.029 _M (.012)	2.39*	.005, .053
Partners' pre-birth satisfaction	-.112 (.037)	-3.01**	-.185, -.039
Partners' pre-birth trust	.273 _W (.080)	3.43***	.116, .430
	.495 _M (.083)	5.99***	.332, .658

* $p < .05$, ** $p < .01$, *** $p < .001$.

CFI = 1.00, RMSEA = .000, $\chi^2(19) = 18.5$, $p = .49$.

Table 15: Predicting motivational preparedness to meet the partner's needs from the linear and quadratic effects of expectancy violations and pre-birth satisfaction.

Predictor	b (SE)	z	95% CI
Perceivers' expectancy violation	-.136 (.050)	-2.73**	-.234, -.038
Perceivers' expectancy violation squared	-.000 (.033)	-.010	-.065, .065
Perceivers' pre-birth satisfaction	.108 (.054)	2.02*	.002, .214
Perceivers' pre-birth satisfaction squared	-.014 (.018)	-0.77	-.049, .021
Perceivers' satisfaction X expectancy violation	.113 (.042)	2.67*	.031, .195
Perceivers' satisfaction X expectancy violation squared	-.065 (.029)	-2.27*	-.122, -.008
Perceivers' satisfaction squared X expectancy violation	.069 _W (.029) -.033 _M (.025)	2.39* -1.32	-.126, -.012 -.082, .016
Perceivers' satisfaction squared X expectancy violation squared	-.031 (.015)	-2.06*	-.060, -.002
Partners' pre-birth satisfaction	.031 (.105)	2.08*	.002, .060
	.150 (.032)	4.68***	.087, .213

* $p < .05$, ** $p < .01$, *** $p < .001$.

CFI = 1.00, RMSEA = .000, $\chi^2(21) = 20.27$, $p = .50$.