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An Actor-Partner Interdependence Model of Irritations in Romantic Relationships

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This study examined actor and partner effects of relationship characteristics on people's appraisals of irritations. Dating partners ($N = 135$ dyads) reported on characteristics of their relationship once per week for 6 weeks. Results of the longitudinal study indicated that the severity of irritations was positively associated with one's own perceptions of relational uncertainty and interference from partners. In addition, a partner's relational uncertainty, severity of irritations, and directness of communication about irritations were positively associated with the severity of an actor's irritations after controlling for the actor's own perceptions of relationship characteristics. Our findings highlight the complex interdependence that exists between partners involved in courtship.

Keywords: *conflict; irritations; relational turbulence model; relational uncertainty; interdependence*

Managing interpersonal conflict is a substantial challenge that partners face in negotiating romantic relationships. The experience of interpersonal conflict is fundamentally defined and shaped by partners' appraisals of the severity of the problem (Fincham, Bradbury, & Grych, 1990). Although trivial problems that do not threaten the stability of a romantic relationship are unlikely to receive much thought or attention (Cloven & Roloff, 1991), situations that are perceived as particularly severe and threatening to a relationship warrant more significant attention and call for a response (Fincham et al., 1990; Newell & Stutman, 1991). Research indicates that frequent, repetitious, and extreme irritating behaviors in romantic relationships correspond with negative emotional reactions, relational dissatisfaction, and divorce (e.g., Amato & Rogers, 1997; Cunningham, Shamblen, Barbee, & Ault, 2005). Studies also show that increased negativity in partners' behaviors is associated with relational dissolution (Gottman & Levenson, 1992; Huston, Caughlin, Houts, Smith, & George, 2001). Thus, our goal is to identify relationship qualities that are associated with appraisals of irritating circumstances as more severe and threatening to the relationship.

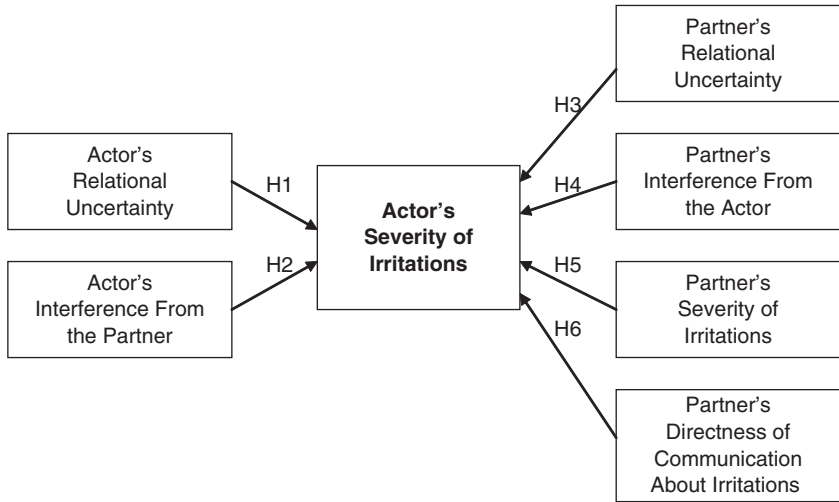
Research has highlighted a variety of personal and relational factors that influence partners' appraisals of and reactions to irritations (e.g., Cloven & Roloff, 1991; Fincham et al., 1990; Newell & Stutman, 1991). Studies on the experience of conflict within dating relationships focus on qualities tied to the development of intimacy as factors that shape people's perceptions of irritations and conflicts (e.g., Siegert & Stamp, 1994; Solomon & Knobloch, 2004; Theiss & Solomon, 2006b); however, these studies consider only one partner's perception of the problem. Research on conflict within marriage has examined the dyadic processes underlying conflict more specifically, but these studies tend to privilege relational satisfaction as the primary mechanism contributing to patterns of conflict interaction (e.g., Huston & Vangelisti, 1991; Sillars, Roberts, Leonard, & Dun, 2000). Our study juxtaposes these two research traditions by examining how the characteristics inherent in the development of intimacy shape one's own and one's partner's perceptions of irritations in the relationship.

We are guided by the logic of the relational turbulence model (Solomon & Knobloch, 2004) when identifying relationship characteristics that influence the perceived severity of irritations. The relational turbulence model suggests that increased relational uncertainty and interference from partners are two mechanisms inherent in the development of close relationships that give rise to intensified emotional, cognitive, and communicative reactions to relationship circumstances. This heightened reactivity to relationship events becomes manifest in people's appraisals of irritations in their relationship. We begin by explicating the assumptions of the relational turbulence model that link relational uncertainty and interference from partners to appraisals of the severity of irritations. We also expand beyond the relational turbulence model to examine the dyadic influence that partners may have in shaping one another's perceptions of irritations. Then, we report a longitudinal, dyadic study of dating partners that we conducted to test our assumptions. Finally, we describe the implications of our findings for understanding how partners influence one another as relationships develop.

Relationship Characteristics That Predict Appraisals of Irritations

The relational turbulence model seeks to explain heightened reactivity to relationship events during transitional periods in romantic relationships (Solomon & Knobloch, 2004). The model positions relational uncertainty and interference from partners as two variables that peak during periods of transition and contribute to intensified reactions to relationship events. Tests of the relational turbulence model have shown that relational uncertainty and interference from partners correspond with an array of tumultuous experiences, including topic avoidance (Knobloch & Carpenter-Theune, 2004), cognitive and emotional jealousy (Theiss & Solomon,

Figure 1
Hypothesized Actor and Partner Effects
on Appraisals of the Severity of Irritations



2006a), relationship turmoil (Knobloch, 2007), and perceptions of irritations as more severe and relationally threatening (Solomon & Knobloch, 2004; Theiss & Solomon, 2006b). Thus, we consider relational uncertainty and interference from partners as two variables that give rise to more severe appraisals of irritations in romantic relationships (see Figure 1).

Relational Uncertainty as a Predictor of the Severity of Irritations

Evolving romantic relationships create an interpersonal context that is especially ripe for the experience of uncertainty (e.g., Afifi & Burgoon, 1998; Knobloch & Solomon, 2002b). Knobloch and Solomon (1999, 2002a) asserted that ambiguity about dyadic involvement becomes particularly salient within romantic relationships, contributing to what they call *relational uncertainty*, or the degree of confidence people have in their perceptions of involvement within interpersonal associations. Relational uncertainty stems from three interrelated sources of ambiguity (Knobloch & Solomon, 1999): (a) *self uncertainty* refers to doubts that people have about their own involvement in a relationship; (b) *partner uncertainty* refers to doubts that people have about their partner's involvement in the relationship; and (c) *relationship uncertainty* refers to doubts about the viability of the relationship as

a whole. Thus, relational uncertainty encompasses self-focused, partner-focused, and relationship-focused questions about an intimate association.

The relational turbulence model suggests that relational uncertainty sparks more extreme emotions, cognitions, and communication behaviors (Solomon & Knobloch, 2004). Empirical evidence corroborates this theoretical assumption. In terms of emotional reactivity, relational uncertainty corresponds with increased negative emotion (Planalp & Honeycutt, 1985), increased jealousy (Afifi & Reichert, 1996; Knobloch, Solomon, & Cruz, 2001; Theiss & Solomon, 2006a), and more negative emotional reactions to sexual intimacy (Theiss, 2005). With regard to cognitive reactivity, relational uncertainty is associated with perceptions of increased turmoil (Knobloch, 2007) and appraisals that social network members are unsupportive of the relationship (Knobloch & Donovan-Kicken, 2006). Finally, research suggests that relational uncertainty polarizes communication behaviors, such that individuals experiencing relational uncertainty engage in more topic avoidance (Knobloch & Carpenter-Theune, 2004) and communicate less directly about irritations and jealousy (Theiss & Solomon, 2006a, 2006b). Taken together, this evidence suggests that relational uncertainty makes people more reactive to relationship circumstances.

With regard to the perceived severity of irritations, in particular, findings imply that harboring doubts about a relationship corresponds with more negative appraisals of irritating relationship circumstances. For example, Afifi and Metts (1998) found that individuals perceived expectancy violations as more damaging to the relationship under conditions of relational uncertainty. In addition, studies by Knobloch and Solomon (2002b, 2003) showed that people perceive surprising events more negatively and feel more negative emotion when they are grappling with relational uncertainty. Moreover, cross-sectional tests of the relational turbulence model revealed that relational uncertainty corresponds with appraisals of irritations as more severe and relationally threatening (Solomon & Knobloch, 2004; Theiss & Solomon, 2006b). Consistent with this reasoning, we advance the following hypothesis:

Hypothesis 1 (H1): Relational uncertainty is positively associated with appraisals of the severity of irritations.

Interference From Partners as a Predictor of the Severity of Irritations

A second mechanism in the relational turbulence model that gives rise to turmoil is a partner's interference in goal achievement (Solomon & Knobloch, 2004). Opportunities for interference arise as partners become more interdependent. The process of establishing interdependence commences when individuals begin to allow their partner to influence everyday activities; in other words, relationship development occurs as people's ability to complete their daily routines depends upon their partner's actions (Kelley et al., 1983). Initial attempts at coordinating action sequences

inevitably involve errors and interruptions to goal-directed behavior, but as partners develop interdependence, they learn to resolve disruptions and facilitate cooperative actions.

The relational turbulence model proposes that *interference from partners* occurs when an individual's disruptions in a partner's routine inhibit goal achievement (Solomon & Knobloch, 2001, 2004; see also Berscheid, 1983). Furthermore, the model contends that a partner's interference heightens reactivity to relationship circumstances. Consistent with this view, research has linked a partner's interference in everyday activities to a variety of negative emotional, cognitive, and communicative relationship experiences. Individuals who perceive heightened interference from a partner tend to experience more negative emotion (Knobloch, Miller, & Carpenter, 2007) and feel more jealousy (Theiss & Solomon, 2006a). A partner's interference also corresponds with perceptions of relational turmoil (Knobloch, 2007) and perceptions that social network members hinder the relationship (Knobloch & Donovan-Kicken, 2006). Interference from partners coincides with less fluent and effective communication (Knobloch, 2008), as well as more indirect communication about relationship events (Theiss & Solomon, 2006a, 2006b). These findings imply that a partner's interference in daily routines makes people more emotionally, cognitively, and communicatively reactive to relationship circumstances.

We draw on the relational turbulence model to theorize about the role of interference from partners in people's reactions to irritations. Heightened goal interference during periods of growing interdependence is likely to make people less tolerant of problems in the relationship. Moreover, a partner's interference in goal achievement gives rise to increased emotional reactivity (e.g., Berscheid, 1983). Consequently, interference from partners should intensify people's perceptions of the severity of irritations. Consistent with this view, tests of the relational turbulence model have shown that interference from partners corresponds with perceptions of irritations as more severe and relationally threatening (Solomon & Knobloch, 2004; Theiss & Solomon, 2006b). Similarly, we predict that perceptions of a partner's interference are positively associated with an individual's appraisals of the severity of irritations.

Hypothesis 2 (H2): Interference from partners is positively associated with appraisals of the severity of irritations.

Dyadic Effects on Appraisals of the Severity of Irritations

Up to this point, we have focused on the ways that an individual's perceptions of relational uncertainty and interference from partners are associated with his or her own appraisals of the severity of irritations. Notably, much of the existing literature on the characteristics and outcomes of conflict in dating relationships privileges only

one partner's perceptions (e.g., Cloven & Roloff, 1991; Siegert & Stamp, 1994; Solomon & Knobloch, 2004; Theiss & Solomon, 2006b; but see Gottman & Levenson, 1988; Sillars et al., 2000). Because romantic relationships are inherently dyadic in nature, researchers consistently emphasize the need to examine relationship characteristics, processes, and perceptions from the perspective of both partners (e.g., Duck, 1990, 2008; Kenny, Kashy, & Cook, 2006). Thus, our study also examines how a partner's appraisals and behavior correspond with the actor's perceptions of the severity of irritations.

Research has revealed dyadic effects for a variety of relationship variables. Individuals who are dissatisfied with their marriage are more attentive to their partner's negative comments during interaction (Sillars, Weisberg, Burggraf, & Zietlow, 1990). Investigations of the demand/withdraw pattern in marriage demonstrate how, particularly among dissatisfied couples, one partner's demands correspond with the other partner's withdrawal from the interaction (e.g., Caughlin & Huston, 2002). Another study revealed that actors perceive their partner to be a more competent communicator when the partner seems sensitive to the actor's goals during interaction (Lakey & Canary, 2002). Although these studies suggest that people's behavior shapes how their partners perceive them and the interaction, research also indicates that what people do not say can also influence their partner's perceptions of the individual or the relationship. For example, suppressing emotion or stonewalling during marital interaction corresponds with reduced relationship satisfaction for both the suppressor and the partner (Gottman & Levenson, 1988). Moreover, suppressing emotion disrupts communication and increases blood pressure for both partners (Butler et al., 2003). These studies offer just a few examples of how individuals' action or inaction contributes to their partner's perceptions of the relationship. We follow the same logic to propose that a partner's perceptions of the relationship and expressions of dissatisfaction also shape the actor's perceptions of the severity of irritations. We focus on four predictors: a partner's reports of (a) relational uncertainty, (b) interference from the actor in daily activities, (c) the severity of irritations, and (d) the directness of communication about irritations (see Figure 1).

Recall that relational uncertainty reflects the doubts that an individual has about relationship involvement (e.g., Knobloch & Solomon, 1999). Research has shown that when people experience relational uncertainty, they enact an array of undesirable behaviors. Relationally uncertain individuals display more negative emotion (Planalp & Honeycutt, 1985), feel more jealousy (Afifi & Reichert, 1996), engage in more topic avoidance (Knobloch & Carpenter-Theune, 2004), and communicate indirectly about problems in the relationship (Theiss & Solomon, 2006a, 2006b). Taken together, these studies imply that people who experience relational uncertainty are more negative and withdrawn in their relationships. Based on this evidence, we suspect that a partner's relational uncertainty could create a climate in which the actor's appraisals of irritations are more severe. When a partner experiences relational uncertainty, the actor may appraise irritations as particularly severe in light of the partner's apparent

negativity or lack of investment in the relationship. Hence, we predict that a partner's relational uncertainty prompts actors to perceive irritations as more severe.

Hypothesis 3 (H3): A partner's relational uncertainty is positively associated with the actor's appraisals of the severity of irritations.

We employ similar reasoning to predict an association between a partner's perceptions of interference and the severity of an actor's irritations. Recall that a partner's interference arises when efforts to establish interdependence become disruptive to an individual's daily routines (Berscheid, 1983; Solomon & Knobloch, 2004). Research implies that people who perceive interference from their partner respond in ways that create a context for more severe appraisals of irritations. When individuals experience partner interference, they feel more negative emotion (Knobloch et al., 2007), particularly jealousy (Theiss & Solomon, 2006a). In addition, a partner's interference corresponds with more direct confrontations about relationship problems (Theiss & Solomon, 2006a, 2006b), but people's communication tends to be less fluent and effective under these circumstances (Knobloch, 2008). These studies suggest that interference from partners may lead to more negative and ineffective behavior. Thus, actors are likely to appraise irritations as more severe when a partner's perceptions of interference are manifest in negative action and ineffective communication. Based on this reasoning, we propose a fourth hypothesis:

Hypothesis 4 (H4): A partner's perception of interference from the actor is positively associated with the actor's appraisals of the severity of irritations.

In light of evidence that a partner's relational uncertainty and perceived interference from actors spark a variety of negative behaviors, we also consider the roles of a partner's irritations and expressions of irritability. First, we theorize about how an actor's appraisals of irritations are tied to the severity of the irritations his or her partner is experiencing. Research has demonstrated that negativity in romantic relationships corresponds with decreased satisfaction and increased negative affect over time (e.g., Gottman & Krokoff, 1989; Levenson & Gottman, 1985). One study of marital dyads revealed that husbands' negativity was related to wives' dissatisfaction 2 years later (Huston & Vangelisti, 1991). Moreover, the same study found that husbands became more negative over time when wives were dissatisfied early in the marriage. Husbands also perceive the absence of positive or affectionate behavior from wives as hostility (Gaelick, Bodenhausen, & Wyer, 1985). As a whole, these studies indicate that one person's irritability in a relationship may correspond with his or her partner's irritability. We take this evidence of reciprocal negativity to suggest that the severity of a partner's irritations will contribute to the actor's perceptions of the severity of irritations. Thus, we submit the following hypothesis:

Hypothesis 5 (H5): A partner's appraisals of the severity of irritations is positively associated with the actor's appraisals of the severity of irritations.

The directness of a partner's communication about his or her irritations is a final factor we expect to predict the actor's appraisals of irritations. Interpersonal communication research tends to highlight the benefits that open, direct, and integrative communication strategies have for individuals and their relationships (e.g., Canary & Cupach, 1988; Emmers & Canary, 1996; Kelley & Waldron, 2005; Planalp & Honeycutt, 1985; Planalp, Rutherford, & Honeycutt, 1988). In contrast, a growing literature indicates that an individual's directness about relationship circumstances contributes to more negative perceptions of the partner and the relationship for the receiver of such communication. One study found that expressions of jealousy were associated with increased relational uncertainty for the recipient of those messages (Bevan, 2004). Research has also shown that when one partner demands, nags, or criticizes, the other partner tends to withdraw and avoid interaction; moreover, this demand/withdraw pattern of interaction is often associated with relational dissatisfaction (e.g., Caughlin, 2002; Caughlin & Vangelisti, 1999). Viewed as a set, these studies indicate that when a partner expresses disdain for an actor, the actor may perceive his or her own irritations as more severe and relationally threatening. Formally stated,

Hypothesis 6 (H6): The directness of a partner's communication about his or her irritations is positively associated with the actor's appraisals of the severity of irritations.

Our hypothesized actor and partner effects are summarized in Figure 1. With regard to actor effects, we predicted that an actor's relational uncertainty (H1) and interference from a partner (H2) are positively associated with the actor's appraisals of the severity of irritations. These hypotheses are summarized on the left side of the figure. With regard to partner effects, we predicted that a partner's relational uncertainty (H3), perceived interference from the actor (H4), severity of irritations (H5), and directness of communication about irritations (H6) are all positively associated with the actor's appraisals of the severity of irritations. These hypotheses are summarized on the right side of the figure.

Method

We conducted a longitudinal Web-based survey in which both partners in a romantic dyad completed questionnaires about their courtship once per week for 6 consecutive weeks. Individuals enrolled in communication courses at large universities in the Midwestern and Northeastern United States were invited to participate if they had a romantic interest in another person who would complete the study with

them. The students earned a small amount of extra course credit for each wave of the study they completed, and the partners earned \$5 for each wave they completed.

Sample

The sample included 270 individuals (135 couples) who completed the first wave of data collection. Of these participants, 131 were male and 139 were female (131 heterosexual couples, 4 lesbian couples). Individuals ranged in age from 18 to 38 years ($M = 20.68$ years, $SD = 2.23$ years, median = 20 years). The majority of participants were White (65%); others were African American (13%), Hispanic (11%), Asian (9%), and Other (2%). The average length of relationships at the start of the study was 1.75 years ($SD = 1.98$ years, range = <1 month to >18 years, median = 1.18 years). Participants characterized the status of their relationship as friendship (4%), casually dating (14%), seriously dating (78%), or engaged to be married (4%).²

Procedures

Students signed up for the study by providing both their own and their partner's e-mail address. Each person received an e-mail message describing the study and asking him or her to respond if willing to participate. When the partners replied with their consent, we e-mailed each individual a Web link, along with a unique username and password to access the first questionnaire. The first questionnaire solicited demographic information as well as people's perceptions of intimacy, relational uncertainty, interference from partners, severity of irritations, and directness of communication about irritations.

Participants were e-mailed a new password to access the next questionnaire at the start of each week. The questionnaires for Weeks 2 to 5 began with an open-ended item asking participants to describe any changes to their relationship that had occurred during the previous week. Then, the questionnaire assessed people's perceptions of intimacy, relational uncertainty, interference from partners, severity of irritations, and directness of communication about irritations based on their experiences during the previous week.

Measures

We conducted confirmatory factor analyses (CFA) on data from the first week of the study to assess the unidimensionality of the closed-ended items. CFA procedures require that multi-item scales meet the criteria of face validity, internal consistency, and parallelism (Hunter & Gerbing, 1982). Our variables were computed by averaging the responses to the unidimensional items. (See Table 1 for sample sizes, descriptive statistics, and reliability scores for each variable for each week of the study.)

Table 1
Weekly Descriptive Statistics

	Week 1 (n = 268)	Week 2 (n = 249)	Week 3 (n = 236)	Week 4 (n = 233)	Week 5 (n = 234)	Week 6 (n = 229)						
Love	6.76	1.29 .81	6.80	1.35 .85	6.75	1.48 .88	6.85	1.48 .88	6.77	1.59 .90	6.88	1.72 .93
Commitment	5.34	0.79 .92	5.22	0.90 .94	5.13	0.99 .94	5.06	0.98 .92	5.04	1.08 .94	5.04	1.08 .94
Chance of lifelong commitment	66.37	27.02 —	65.74	26.92 —	66.20	28.46 —	65.93	29.32 —	65.91	29.99 —	65.46	30.43 —
Partner uncertainty	1.89	0.84 .91	1.89	0.97 .94	1.91	1.05 .95	2.01	1.15 .96	1.96	1.13 .96	1.96	1.15 .97
Relationship uncertainty	1.93	0.93 .90	2.01	0.99 .93	2.02	1.13 .95	2.03	1.17 .96	1.94	1.17 .96	1.99	1.19 .97
Interference from partners	2.03	0.79 .85	2.03	0.93 .91	2.06	1.02 .92	2.09	1.10 .94	2.02	1.07 .94	2.00	1.04 .93
Severity of irritations	2.46	0.94 .83	2.42	1.09 .88	2.38	1.13 .89	2.42	1.18 .92	2.46	1.19 .92	2.40	1.31 .95
Directness of communication	3.57	1.38 .86	3.20	1.61 .86	3.32	1.66 .88	3.34	1.73 .88	3.48	1.76 .89	3.52	1.77 .87
	4.75	1.23 .85	4.53	1.16 .74	4.71	1.08 .78	4.65	1.13 .77	4.83	1.06 .78	4.87	0.99 .73

Note: Cell entries are means, standard deviations, and α reliability scores.

Relational uncertainty. We used a shortened version of Knobloch and Solomon's (1999) scales to measure self, partner, and relationship uncertainty. Participants employed a 6-point scale to respond to items prefaced by the stem "How certain are you about . . . ?" (1 = *completely or almost completely uncertain*, 6 = *completely or almost completely certain*). Self uncertainty contained six unidimensional items (e.g., whether you want the relationship to work out in the long run; how much you like your partner). Partner uncertainty involved five unidimensional items (e.g., whether or not your partner is ready to commit to you; how important the relationship is to your partner). Relationship uncertainty included six unidimensional items (e.g., whether you and your partner will stay together; the boundaries for appropriate and/or inappropriate behavior in the relationship). Items were reverse-scored to index relational uncertainty.

Interference from partners. We used an abbreviated version of a scale developed by Solomon and Knobloch (2001) to measure perceptions of interference from partners. Participants reported their agreement with statements describing their partner (1 = *strongly disagree*, 6 = *strongly agree*). Five items comprised a unidimensional measure of interference from partners (e.g., this person interferes with whether I achieve the everyday goals I set for myself; this person interferes with my ability to use my time well).

Severity of irritations. Individuals reported up to three behaviors or personality characteristics of their partner that cause them to feel irritated (following Theiss & Solomon, 2006b). After describing each irritation, participants employed a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*) to indicate their agreement with two statements: (a) this behavior or characteristic is a problem, and (b) this behavior or characteristic threatens our relationship. A composite measure of severity was calculated by averaging the two items across all of the irritations participants reported in a given week.

Directness of communication about irritations. An expanded version of Theiss and Solomon's (2006b) scale gauged how directly participants communicate about irritations. Respondents used a 6-point scale (1 = *strongly disagree*, 6 = *strongly agree*) to report the directness of their communication about irritations. Four items formed a unidimensional scale of communicative directness (e.g., I have explicitly told my partner about behaviors that irritate me; I have had a direct conversation with my partner about my irritations).

Intimacy. The relational turbulence model argues that relational uncertainty and interference from partners peak at moderate levels of intimacy within courtship (Knobloch, 2007; Solomon & Knobloch, 2004). Although empirical tests of the relational turbulence model have produced mixed results with regard to the predicted

curvilinear association (e.g., Solomon & Knobloch, 2001, 2004; Solomon & Theiss, 2008), intimacy consistently emerges as an important covariate in tests of the model. Even more notably, research has documented a negative association between intimacy and the severity of irritations (Solomon & Knobloch, 2004; Theiss & Solomon, 2006b). Thus, we included a measure of intimacy to control for this variable in our analyses. Consistent with prior tests of the relational turbulence model (e.g., Solomon & Knobloch, 2004), we collapsed three measures into a parsimonious yet multifaceted operationalization of intimacy (cf. Cloven & Roloff, 1994; Solomon, 1997).

The first component included in the measure of intimacy was love (Rubin, 1970). Participants indicated their agreement with statements describing their relationship (1 = *not at all true*, 9 = *definitely true*). Eight items formed a unidimensional measure according to CFA results (e.g., I would do anything for my partner; one of my primary concerns is my partner's welfare). The second component of intimacy was commitment (Cloven & Roloff, 1994; Solomon, 1997). Participants reported their agreement with statements describing their relationship on a 6-point scale (1 = *strongly disagree*, 6 = *strongly agree*). Eight items formed a unidimensional measure of commitment (e.g., I am very committed to maintaining this relationship; I would make a great effort to maintain my relationship with this person). The third component of intimacy was likelihood of lifelong commitment (Lloyd, Cate, & Henton, 1984). Participants responded to the question, "At this point in time, what do you feel the chance is of your relationship leading to marriage or a similar lifelong commitment?" They chose a value from 0% to 100% on a scale providing increments of 5%. We computed a composite intimacy variable as the average of the *z*-scores of love, commitment, and likelihood of lifelong commitment based on CFA results indicating that the three measures were unidimensional at the second-order level.

Analyses

Preliminary Analyses

As a starting point, we examined data from the Week 1 questionnaire to evaluate sex differences in our variables. Paired-sample *t* tests revealed no significant differences between men and women on any of the variables. Next, we assessed the bivariate correlations among the substantive actor variables and between the substantive actor and partner variables (see Table 2). For actors, results indicated that the three sources of relational uncertainty were positively correlated with each other, with a partner's interference, and with the severity of irritations. In addition, interference from partners was positively associated with the perceived severity of irritations. Between actors and partners, all three sources of the partner's relational uncertainty were positively associated with the actor's appraisals of the severity of irritations. The severity of the partner's irritations was positively associated with the severity of the actor's irritations.

Table 2
Bivariate Correlations

	1	2	3	4	5
1: Actor's self uncertainty					
2: Actor's partner uncertainty	.50***				
3: Actor's relationship uncertainty	.72***	.67***			
4: Actor's interference from partners	.17**	.12*	.16***		
5: Actor's severity of irritations	.35***	.19**	.36***	.26***	
Partner's self uncertainty	.38***	.48***	.43***	.05	.24***
Partner's partner uncertainty	.48***	.41***	.46***	.05	.24***
Partner's relationship uncertainty	.43***	.46***	.46***	.07*	.27***
Partner's interference from partners	.05	.05	.07*	.26***	.05
Partner's severity of irritations	.24***	.24***	.27***	.05	.33***
Partner's directness about irritations	-.17***	-.21***	-.21***	.02	.02

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

We also calculated the intraclass correlation (ρ) for the dependent variable. The intraclass correlation quantifies the proportion of total variation in the dependent variable that is attributed to between-persons or between-groups variance, as opposed to within-person variance. An intraclass correlation that is close to zero indicates that the variability in the dependent variable is attributable mostly to within-person variance, and an intraclass correlation that is close to one suggests that most of the variance is between persons and groups (Kreft & De Leeuw, 1998). The intraclass correlation for appraisals of irritations was ($\rho = .27$). Thus, the majority of variability in irritations was attributable to within-person variation.

Substantive Analyses

The hypotheses were evaluated using hierarchical linear modeling (HLM) 6.0 software, which is designed to test multilevel models and accommodate nonindependent data (Bryk & Raudenbush, 1992). One advantage of using multilevel modeling is that this treatment of multiple observations as nested counteracts difficulties that often arise with unbalanced designs and missing data. Our analyses included data from all participants who provided data during the baseline week of the study and whose romantic partner also provided data during the baseline week of the study. We treated the multiple observations across weeks as nested within the individual and individuals as nested within their romantic dyad. Relationship change was represented through a three-level model using maximum likelihood estimation with time varying predictors at Level 1, variables measured across individuals at Level 2, and dyadic variables at Level 3.

We used an actor-partner interdependence model as the analytical framework for modeling the dyadic effects predicted by H3 through H6, because this methodological approach highlights the dynamic interdependence that exists between partners (e.g., Cook & Kenny, 2005; Cook & Snyder, 2005; Kashy & Kenny, 1999). The actor-partner interdependence model affords special status to partner effects and highlights the interactional and interdependent nature of interpersonal relationships. For these analyses, the data were configured such that each individual's record for a given week also included the data provided by the romantic partner for the same week. Thus, the repeated measures for both the individual and the partner were treated as Level 1 variables, the individual-level measures were treated as Level 2 variables, and characteristics of the dyad were treated as Level 3 variables. This strategy allowed us to model how an individual's perception of the severity of irritations was predicted by his or her own view of the relationship and by his or her partner's view of the relationship during the same week.

Results

Model 1: Relational Uncertainty and Partner Interference as Predictors of Appraisals

We predicted that relational uncertainty (H1) and a partner's interference (H2) are positively associated with the actor's appraisals of the severity of irritations. To test these hypotheses, we constructed a multilevel model in which the actor's appraisals of the severity of irritations was the dependent variable. Level 1 predictors were relational uncertainty and interference from partners. We also entered intimacy as a Level 1 covariate. Each source of relational uncertainty and interference from partners was evaluated as predictors in separate models to avoid problems due to multicollinearity. All Level 1 predictors were entered as group mean-centered (i.e., centered around the individual's mean across the 6 weeks of the study). We covaried baseline relationship status as a Level 2, grand mean-centered variable (i.e., centered around the population mean) on the intercept to control for between-person differences in appraisals of irritations due to relationship status. We also included the within-person means (i.e., the individual's mean across the 6 weeks of the study) for the relevant source of relational uncertainty or partner interference as Level 2 variables on the intercept. This strategy parses out between-person differences in the dependent variable that are attributable to those predictors so that the slopes represent only within-person effects. The within-person means were uncentered. The intercepts and Level 1 slopes for the model were estimated as random effects. (See Appendix A for model equations.)

Findings indicated that, in the model including partner interference as a predictor, baseline relationship status decreased the value of the intercept, such that people with higher levels of relationship status reported less severe irritations (see Table 3).

Table 3
Predicting the Severity of an Actor's Irritations
From Relational Uncertainty and a Partner's Interference

	Self Uncertainty	Partner Uncertainty	Relationship Uncertainty	A Partner's Interference
Intercept	2.11***	2.61***	1.71***	2.83***
Baseline relationship status	.08	-.11	.25	-.44**
Self uncertainty mean	.69***			
Partner uncertainty mean		.42***		
Relationship uncertainty mean			.84***	
Interference mean				.25**
Slopes				
Intimacy	-.55***	-.61***	-.61***	-.99***
Self uncertainty	.47***			
Partner uncertainty		.52***		
Relationship uncertainty			.55***	
Interference from partners				.15**
Residuals				
Intercept (2)	.56***	.65***	.59***	.57***
Intimacy	.53	.46*	.23*	.25
Self uncertainty	.13			
Partner uncertainty		.28***		
Relationship uncertainty			.21***	
Interference from partners				.12
Intercept (3)	.39***	.44***	.30***	.59***

Note: The dependent variable is the actor's perceived severity of irritations. Cell entries in the intercept category are the change in the intercept attributable to the within-person mean or relationship status, which represents the between-persons effect on the dependent variable. The cell entries in the slopes category represent the within-person slope over the course of the study. The cell entries in the residuals category are τ and represent the remaining unexplained variation in the intercept or in the slopes.

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

Across all models, the within-person mean for the relevant source of relational uncertainty or interference from partners increased the value of the intercept, such that individuals who experienced more relational uncertainty or partner interference appraised irritations as more severe. Turning to the slopes, intimacy was negatively associated with the severity of irritations across models, such that during weeks when individuals experienced above-average intimacy, they perceived irritations as less severe. Moreover, self uncertainty, partner uncertainty, relationship uncertainty, and interference from partners were positively associated with the severity of irritations, such that during weeks when individuals experienced above-average relational uncertainty or partner interference, they perceived irritations as more severe. Thus, H1 and H2 were supported. The residuals indicated that significant variability was

left to be explained in the Level 2 and Level 3 intercepts, as well as in the slopes for intimacy (in the partner and relationship uncertainty models), partner uncertainty, and relationship uncertainty.

Model 2: Predicting an Actor's Appraisals From a Partner's Relationship Characteristics

In addition to predicting actor effects, we advanced hypotheses regarding partner effects on an actor's appraisals of the severity of irritations. As a starting point, we predicted that an actor's perception of the severity of irritations is positively associated with the partner's relational uncertainty (H3) and the partner's perception of interference from the actor (H4), above and beyond the variance that is explained by the actor's own perceptions of those relationship characteristics. To test these hypotheses, we constructed a multilevel model that was identical to Model 1, except that we added the partner's perceptions of the relationship as predictors. An actor's perceived severity of irritations was the dependent variable. Level 1 predictors included the partner's judgments of relational uncertainty or interference from the actor. The predictors were entered in separate models to avoid problems due to multicollinearity. At Level 1, we also controlled for an actor's perceptions of intimacy and the actor's corresponding source of relational uncertainty or partner interference. All of the Level 1 predictors were entered as group mean-centered variables. At Level 2, we included baseline relationship status and the actor's within-person mean for the corresponding source of relational uncertainty or partner interference as covariates on the intercept. All of the intercepts and Level 1 slopes for the model were estimated as random effects. (See Appendix B for model equations.)

Results indicated that baseline relationship status decreased the value of the intercept in the models for partner uncertainty and interference from partners, such that individuals with a higher baseline relationship status reported less severe irritations (see Table 4). With the exception of the model for partner uncertainty, the within-person mean for each source of relational uncertainty and interference from partners increased the value of the intercept, such that individuals with more of these relationship characteristics reported more severe irritations. Turning to the slopes, an actor's perception of intimacy was negatively associated with the severity of irritations across models. Consistent with the findings for Model 1, the actor's perceptions of relational uncertainty and interference from partners were positively associated with the severity of irritations. With regard to partner effects, the partner's relational uncertainty was positively associated with the severity of the actor's irritations, but the partner's perceptions of interference from the actor were not. Thus, H3 was supported, but H4 was not. The residuals revealed that significant variability remained to be explained in both of the intercepts across all models. In the model including relationship uncertainty, significant variability was left to be explained in the slopes for intimacy and relationship uncertainty.

Table 4
Predicting the Severity of an Actor's Irritations From a Partner's Perceptions of Relational Uncertainty and a Partner's Interference

	Self Uncertainty	Partner Uncertainty	Relationship Uncertainty	A Partner's Interference
Intercept	2.12***	3.46***	1.73***	2.82***
Baseline relationship status	.06	-.46**	.24	-.45**
Self uncertainty mean	.67***			
Partner uncertainty mean		.16		
Relationship uncertainty mean			.84***	
Interference mean				.26**
Slopes				
Intimacy	-.49**	-.56***	-.54***	-.97***
Self uncertainty	.45***			
Partner's self uncertainty	.28***			
Partner uncertainty		.49***		
Partner's partner uncertainty		.22***		
Relationship uncertainty			.49***	
Partner's relationship uncertainty			.24***	
Interference from partners				.16*
Partner's interference from partners				-.02
Residuals				
Intercept (2)	.57***	.63***	.60***	.58***
Intimacy	.13	.54	.38**	.30
Self uncertainty	.66			
Partner's self uncertainty	.04			
Partner uncertainty		.30		
Partner's partner uncertainty		.05		
Relationship uncertainty			.28**	
Partner's relationship uncertainty			.01	
Interference from partners				.12
Partner's interference from partners				.09
Intercept (3)	.39***	.62***	.31***	.45***

Note: The dependent variable is the actor's perceived severity of irritations. Cell entries in the intercept category are the change in the intercept attributable to the within-person mean or relationship status, which represents the between-persons effect on the dependent variable. The cell entries in the slopes category represent the within-person slope over the course of the study. The cell entries in the residuals category are τ and represent the remaining unexplained variation in the intercept or in the slopes.

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

Model 3: Predicting an Actor's Appraisals From a Partner's Irritations and Directness

Our final hypotheses predicted that the severity of an actor's irritations is positively associated with the partner's severity of irritations (H5) and the partner's directness of communication about irritations (H6). To test these predictions, we

Table 5
Predicting the Severity of an Actor's Irritations From a Partner's Perceptions of Irritations and Directness of Communication About Irritations

	Severity of Partner's Irritations	Partner's Directness About Irritations
Intercept	3.46***	2.97***
Baseline relationship status	-.46**	-.46**
Slopes		
Intimacy	-.97***	-1.06***
Partner's severity of irritations	.21***	
Partner's directness about irritations		.10*
Residuals		
Intercept (2)	.63***	.59***
Intimacy	.19	.29
Partner's severity of irritations	.07	
Partner's directness about irritations		.00
Intercept (3)	.60***	.59***

Note: The dependent variable is the actor's perceived severity of irritations. The cell entry in the intercept category is the change in the intercept attributable to relationship status, which represents the between-persons effect on the dependent variable. The cell entries in the slopes category represent the within-person slope over the course of the study. The cell entries in the residuals category are τ and represent the remaining unexplained variation in the intercept or in the slopes.

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

constructed a third model in which the actor's severity of irritations was the dependent variable. Level 1 predictors included the partner's severity of irritations and the partner's directness of communication about irritations. We also included the actor's intimacy as a Level 1 covariate in the model. The Level 1 predictors were entered as group mean-centered variables. At Level 2, we included baseline relationship status as a grand mean-centered covariate on the intercept to control for between-person differences in the actor's appraisals of irritations that were attributable to differences in relationship status. All of the intercepts and Level 1 slopes for the model were estimated as random effects. (See Appendix C for model equations.)

Findings revealed that baseline relationship status decreased the value of the intercept in both models, such that individuals with a higher level of relationship status reported less severe irritations (see Table 5). For the slopes, the actor's intimacy was negatively associated with the severity of irritations. With regard to partner effects, both the partner's perceived severity of irritations and directness of communication about irritations were positively associated with the actor's perceived severity of irritations. Thus, H5 and H6 were supported. The residuals revealed that significant variability was left to be explained in the Level 2 and Level 3 intercepts.

Discussion

The goal of this study was to evaluate actor and partner effects of relationship characteristics on the perceived severity of an actor's irritations. Results indicated that individuals' perceptions of relational uncertainty and interference from partners are positively associated with the appraised severity of their own irritations. Moreover, our findings portray interdependence between the relationship experiences of actors and partners, such that partners' relational uncertainty, severity of irritations, and directness of communication about irritations are all positively associated with the severity of actors' irritations. On one level, this study highlights the intrapersonal and interpersonal mechanisms that contribute to appraisals of irritations. On a broader level, this study depicts the complex interdependence that exists between partners who are negotiating a romantic relationship. In the sections that follow, we discuss the implications of this research for extending the relational turbulence model and documenting the interdependence that exists between partners.

A Relational Turbulence Model of Irritations

One contribution of this study is extending research that has used the relational turbulence model to predict appraisals of irritations in courtship (Solomon & Knobloch, 2004; Theiss & Solomon, 2006b). Our results cohere with extant work such that the severity of irritations is positively associated with both relational uncertainty (H1) and interference from partners (H2). Whereas prior tests of the relational turbulence model have typically utilized cross-sectional data, our study employed a longitudinal research design. Longitudinal data are an important contribution because the model is intended to explain fluctuations in relationship characteristics as relationships develop. Thus, this study advances the literature on relational turbulence by more effectively modeling changes in relationship characteristics over time.

This study also marks the first test of the relational turbulence model using dyadic data. Although the model highlights intrapersonal and interpersonal changes during relationship development as mechanisms that provoke turbulence, previous studies have only considered the perceptions of one individual (e.g., Knobloch, 2007; Knobloch & Donovan-Kicken, 2006; Solomon & Theiss, 2008). Those studies were useful for testing the intrapersonal assumptions of the model, but they could not shed light on how interdependence between partners contributes to turmoil. The addition of dyadic data to the corpus of research on the relational turbulence model enhances our understanding of the interpersonal and interdependent relationship processes that give rise to turmoil in romantic relationships.

One notable departure from previous tests of the relational turbulence model is that we divorced relational uncertainty and partner interference from the trajectory of intimacy. Although Solomon and Knobloch (2004) developed the relational turbulence model to explain people's tendency to be reactive at moderate levels of intimacy

within courtship, subsequent work suggested that relational uncertainty and interference from partners are the more proximal predictors of reactivity during the transition from casual dating to serious involvement. Solomon and Theiss (2008) argued that perhaps experiences of turbulence are not limited to moderate levels of intimacy, and they suggested that future studies should not rely on intimacy to pinpoint periods of increased reactivity. Accordingly, we focused our predictions on relational uncertainty and interference from partners as two mechanisms that give rise to irritations. Although we observed a negative association between intimacy and the severity of irritations, our data imply that relational uncertainty and interference from partners may be especially potent predictors of people's appraisals of irritations.

Partner Effects on the Severity of an Actor's Irritations

The results of this study also shed light on the interdependent dynamics of conflict and relationship development. In addition to describing the association between an individual's perceptions of relationship characteristics and the severity of his or her own irritations, we also employed an actor-partner interdependence model to examine how a partner's relationship experiences correspond with the severity of an actor's irritations.

As might be expected, we found that when a partner communicates directly about his or her irritations, the actor experiences irritations more intensely (H6). This result complements previous findings that expressions of jealousy, criticisms, and demands elicit negative reactions from partners in the form of increased relational uncertainty or withdrawal from the relationship (Bevan, 2004; Caughlin, 2002). Given the interdependent nature of interpersonal communication, it makes sense that one person's expressed irritations would give rise to annoyance, irritation, and conflict for the other person. Our results also suggest, however, that partners do not need to be explicit about their irritations for those feelings to predict the actor's appraisals of irritations. Specifically, the severity of a partner's irritations was positively associated with the severity of an actor's irritations (H5), independent of the directness of communication about those annoyances. In other words, partners need not be explicit about their irritations for actors to sense potential problems in the relationship.

Our results also suggest that a partner's relational uncertainty is tied to the severity of an actor's irritations (H3), even though the partner's relational uncertainty may not be explicitly expressed. Although relational uncertainty is an intrapersonal experience, individuals may have difficulty suppressing cues that they are questioning the relationship. Recall that relational uncertainty corresponds with more extreme emotions (Planalp & Honeycutt, 1985), jealousy (Afifi & Reichert, 1996), topic avoidance (Knobloch & Carpenter-Theune, 2004), and indirect communication (Theiss & Solomon, 2006a, 2006b). Thus, a partner's experience of relational uncertainty may be perceived by the actor as dissatisfaction or reluctance to commit to the relationship. Hence, the perception that a partner is less involved in making the relationship work may contribute to irritations that are more severe.

In contrast, a partner's perceived interference from the actor was not significantly associated with the severity of the actor's irritations (H4). We see three possible explanations for the lack of an association. First, previous research on the relational turbulence model (and our own findings in this study) demonstrates that people's perceptions of interference from a partner are positively associated with appraisals of irritations as particularly severe and relationally threatening (Solomon & Knobloch, 2004; Theiss & Solomon, 2006b). Thus, we wonder if partners' perceptions of interference from the actor become manifest in their own irritations, which do in fact share a positive association with the severity of actors' irritations. Second, we consider the possibility that actors are less likely to see how their own behaviors are disruptive to their partner's routines. If actors lack awareness of their partner's perceptions of interference, then they may be less likely to become irritated by this feature of the partner's relationship experience. Future research should evaluate this possibility empirically. A third possibility is that a partner's interference predicts people's appraisals of some kinds of irritations but not others. Future research should examine the content of irritations to determine if some behaviors or personality traits are more irritating under conditions of partner interference than others.

Two practical implications of our results are apparent. First, because actors appraised irritations as more severe when partners communicated directly about irritations, our findings imply that direct communication may not always be beneficial to close relationships. Moreover, we found that direct communication about irritating circumstances is only one of several predictors of an actor's perceived severity of irritations. Accordingly, our results suggest that characteristics of relationships are also important in understanding irritations. Thus, advice for curtailing irritations in romantic relationships should take into account relational uncertainty and interference from partners in addition to people's communication behavior.

A second implication of our findings points to the potential for a downward spiral of negativity between partners. Our results suggest that the more irritated one partner becomes, the more irritated the other partner is likely to become. These patterns of behavior may create a double-bind for couples. A likely strategy for resolving irritations would be to communicate about the problematic behaviors or personality traits, but direct expressions of irritations also contribute to more severe appraisals of irritations. Thus, partners are faced with the challenge of finding less direct methods of addressing irritations that effectively resolve problems without alienating or offending the partner. Future research should examine how people employ indirect communication strategies to mitigate irritating circumstances.

Strengths, Limitations, and Future Directions

A strength of this study lies in its methodological contribution to the literature. First, the use of multiwave longitudinal data advances research on relationship development. Although longitudinal data are becoming increasingly more prominent in the literature, this is only the second test of the relational turbulence

model that employs longitudinal data (but see Solomon & Theiss, 2008; Theiss & Solomon, 2006a, 2006b, 2008) and most other longitudinal investigations focus on marital relationships rather than dating relationships (e.g., Huston & Vangelisti, 1991). Second, this study examines perceptions of a relationship from both members. Dyadic designs are useful for providing insight into the interdependence between partners. Third, this study adds to the growing body of research that employs the actor-partner interdependence model to examine the interpersonal complexities of developing romantic relationships (e.g., Cook & Kenny, 2005; Cook & Snyder, 2005; Kashy & Kenny, 1999). This data-analytic strategy reveals the reciprocal influence that partners have on each other within ongoing romantic associations.

Despite the strengths of this study, there are also some notable limitations. We only observed the courtships for 6 weeks, which is a relatively short period in the span of an ongoing romantic relationship. Although our decision to limit the study to 6 weeks was guided by previous longitudinal studies that documented significant changes in relationships over a 6-week period (e.g., Theiss & Solomon, 2006a, 2008; VanLear, 1987), future research should observe the development of romantic relationships over a longer period of time. In addition, our study relied on a convenience sample of college undergraduates. Future research is needed to determine whether our findings are generalizable to other populations.

Conclusion

The characteristics of developing romantic relationships create a context that is ripe for irritations, annoyances, and conflicts. Whereas some perspectives highlight individual change as the catalyst for increased reactivity to relationship events (e.g., Cloven & Roloff, 1991; Siegert & Stamp, 1994), the interdependent nature of romantic associations also contributes to relationship outcomes for actors and their partners (e.g., Kashy & Kenny, 1999). The current investigation juxtaposes these two approaches. Our findings indicate that people's appraisals of the severity of irritations are predicted by the perceptions of both actors and partners. Future research should continue to explore how interdependent facets of relationship development predict individual and relational outcomes.

Appendix A

In the models that follow, the subscript i refers to the time varying repeated measurements across weeks (Level 1), the subscript j refers to measures of individual-level variables (Level 2), and the subscript k refers to characteristics of the dyad that were measured only during the baseline week of the study (Level 3). The following equations represent the model when self

(continued)

Appendix A (continued)

uncertainty was a predictor. Identical models were constructed for each source of relational uncertainty and interference from partners.

Model 1: Relational Uncertainty and Partner Interference as Predictors of Irritations

Level 1 Equation

$$Y_{ijk} = \pi_{0jk} + \pi_{1jk} (\textit{intimacy}_{ijk} - \textit{intimacy}_{jk}) + \pi_{2jk} (\textit{self uncertainty}_{ijk} - \textit{self uncertainty}_{jk}) + r_{ijk}$$

Level 2 Equations

$$\begin{aligned} \pi_{0jk} &= \beta_{00} + \beta_{01} (\textit{Relationship Status} - \textit{RELATIONSHIP STATUS...}) \\ &\quad + \beta_{02} (\textit{self uncertainty}_{jk}) + u_{0j} \\ \pi_{1jk} &= \beta_{10} + u_{1j} \\ \pi_{2jk} &= \beta_{20} + u_{2j} \end{aligned}$$

Level 3 Equations

$$\begin{aligned} \beta_{00} &= \gamma_{000} + u_{00} \\ \beta_{01} &= \gamma_{010} \\ \beta_{02} &= \gamma_{020} \\ \beta_{10} &= \gamma_{100} \\ \beta_{20} &= \gamma_{200} \end{aligned}$$

Note: Centered variables are indicated in parentheses with the group mean or the grand mean subtracted from the observed variable. A group mean is denoted as lowercase and italicized (e.g., *self uncertainty_{jk}*) and a grand mean is denoted as uppercase and italicized (e.g., *RELATIONSHIP STATUS...*).

Appendix B

In the models that follow, the subscript *i* refers to the time varying repeated measurements across weeks (Level 1), the subscript *j* refers to measures of individual level variables (Level 2), and the subscript *k* refers to characteristics of the dyad that were measured only during the baseline week of the study (Level 3). The following equations represent the model when the partner's self uncertainty was added to Model 1 as a predictor. Identical models were constructed that replaced the actor's and the partner's self uncertainty as a predictor with the actor's and the partner's reports of partner uncertainty, relationship uncertainty, or interference from partners.

(continued)

Appendix B (continued)

Model 2: Predicting an Actor's Irritations From a Partner's Relationship Characteristics

Level 1 Equation

$$Y_{ijk} = \pi_{0jk} + \pi_{1jk} (\textit{intimacy}_{ijk} - \textit{intimacy}_{.jk}) + \pi_{2jk} (\textit{actor's self uncertainty}_{ijk} - \textit{actor's self uncertainty}_{.jk}) + \pi_{3jk} (\textit{partner's self uncertainty}_{ijk} - \textit{partner's self uncertainty}_{.jk}) + r_{ijk}$$

Level 2 Equations

$$\begin{aligned} \pi_{0jk} &= \beta_{00} + \beta_{01} (\textit{Relationship Status} - \textit{RELATIONSHIP STATUS}...) \\ &\quad + \beta_{02} (\textit{actor's self uncertainty}_{.jk}) + u_{0jk} \\ \pi_{1jk} &= \beta_{10} + u_{1j} \\ \pi_{2jk} &= \beta_{20} + u_{2j} \\ \pi_{3jk} &= \beta_{30} + u_{3j} \end{aligned}$$

Level 3 Equations

$$\begin{aligned} \beta_{00} &= \gamma_{000} + u_{00} \\ \beta_{01} &= \gamma_{010} \\ \beta_{02} &= \gamma_{020} \\ \beta_{10} &= \gamma_{100} \\ \beta_{20} &= \gamma_{200} \\ \beta_{30} &= \gamma_{300} \end{aligned}$$

Note: Centered variables are indicated in parentheses with the group mean or the grand mean subtracted from the observed variable. A group mean is denoted as lowercase and italicized (e.g., *self uncertainty_{.jk}*) and a grand mean is denoted as uppercase and italicized (e.g., *RELATIONSHIP STATUS...*).

Appendix C

In the models that follow, the subscript *i* refers to the time varying repeated measurements across weeks (Level 1), the subscript *j* refers to measures of individual level variables (Level 2), and the subscript *k* refers to characteristics of the dyad that were measured only during the baseline week of the study (Level 3). The following equations represent the model when the partner's severity of irritations was a predictor. An identical model was constructed for the partner's directness of communication about irritations.

(continued)

Appendix C (continued)

Model 3: Predicting an Actor's Irritations From a Partner's Irritations and Directness

Level 1 Equation

$$Y_{ijk} = \pi_{0jk} + \pi_{1jk} (\text{intimacy}_{ijk} - \textit{intimacy}_{jk}) + \pi_{2jk} (\text{partner's severity of irritations}_{ijk} - \textit{partner's severity of irritations}_{jk}) + r_{ijk}$$

Level 2 Equations

$$\begin{aligned} \pi_{0jk} &= \beta_{00} + \beta_{01} (\text{Relationship Status} - \textit{RELATIONSHIP STATUS...}) + u_{0j} \\ \pi_{1jk} &= \beta_{10} + u_{1j} \\ \pi_{2jk} &= \beta_{20} + u_{2j} \end{aligned}$$

Level 3 Equations

$$\begin{aligned} \beta_{00} &= \gamma_{000} + u_{00} \\ \beta_{01} &= \gamma_{010} \\ \beta_{10} &= \gamma_{100} \\ \beta_{20} &= \gamma_{200} \end{aligned}$$

Note: Centered variables are indicated in parentheses with the group mean or the grand mean subtracted from the observed variable. A group mean is denoted as lowercase and italicized (e.g., *intimacy_{jk}*) and a grand mean is denoted as uppercase and italicized (e.g., *RELATIONSHIP STATUS...*).

Notes

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2. We included couples in our sample if both individuals provided data for Week 1. In total, 13 of the 135 couples who began the study did not finish it (9.6% attrition). Four of those couples terminated their relationship in the midst of the study. We eliminated the other 9 couples during the study when one individual did not provide three consecutive waves of data. When we e-mailed to inquire about people's reasons for dropping out of the study, individuals reported a variety of reasons for not continuing (i.e., illness, travel, not enough time to complete the questionnaires). Because multilevel modeling is able to accommodate missing data, our substantive analyses include all couples who provided responses for Week 1.

References

- Affifi, W. A., & Burgoon, L. K. (1998). "We never talk about that": A comparison of cross-sex friendships and dating relationships on uncertainty and topic avoidance. *Personal Relationships, 5*, 255-272.
- Affifi, W. A., & Metts, S. (1998). Characteristics and consequences of expectation violations in close relationships. *Journal of Social and Personal Relationships, 15*, 365-392.
- Affifi, W. A., & Reichert, T. (1996). Understanding the role of uncertainty in jealousy experience and expression. *Communication Reports, 9*, 93-103.
- Amato, P. R., & Rogers, S. J. (1997). A longitudinal study of marital problems and subsequent divorce. *Journal of Marriage and the Family, 59*, 612-624.
- Berscheid, E. (1983). Emotion. In H. H. Kelley, E. Berscheid, A. Christensen, J. Harvey, T. L. Huston, G. Levinger, et al. (Eds.), *Close relationships* (pp. 110-168). San Francisco: Freeman.
- Bevan, J. L. (2004). General partner and relational uncertainty as consequences of another person's jealousy expression. *Western Journal of Communication, 68*, 195-218.
- Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models: Applications and data analysis methods*. Thousand Oaks, CA: Sage.
- Butler, E. A., Egloff, B., Wilhelm, F. H., Smith, N. C., Erickson, E. A., & Gross, J. J. (2003). The social consequences of expressive suppression. *Emotion, 3*, 48-67.
- Canary, D. J., & Cupach, W. R. (1988). Relational and episodic characteristics associated with conflict tactics. *Journal of Social and Personal Relationships, 5*, 305-325.
- Caughlin, J. P. (2002). The demand/withdraw pattern of communication as a predictor of marital satisfaction over time. *Human Communication Research, 28*, 49-85.
- Caughlin, J. P., & Huston, T. L. (2002). A contextual analysis of the association between demand/withdraw and marital satisfaction. *Personal Relationships, 9*, 95-119.
- Caughlin, J. P., & Vangelisti, A. L. (1999). Desire for change in one's partner as a predictor of the demand/withdraw pattern of marital communication. *Communication Monographs, 66*, 66-89.
- Cloven, D. H., & Roloff, M. E. (1991). Sense-making activities and interpersonal conflict: Communicative cues for the mulling blues. *Western Journal of Speech Communication, 55*, 134-158.
- Cloven, D. H., & Roloff, M. E. (1994). A developmental model of decisions to withhold relational irritations in romantic relationships. *Personal Relationships, 1*, 143-164.
- Cook, W. L., & Kenny, D. A. (2005). The actor-partner interdependence model: A model of bidirectional effects in developmental studies. *International Journal of Behavioral Development, 29*, 101-109.
- Cook, W. L., & Snyder, D. K. (2005). Analyzing nonindependent outcomes in couple therapy using the actor-partner interdependence model. *Journal of Family Psychology, 19*, 133-141.
- Cunningham, M. R., Shamblen, S. R., Barbee, A. P., & Ault, L. K. (2005). Social allergies in romantic relationships: Behavioral repetition, emotional sensitization, and dissatisfaction in dating couples. *Personal Relationships, 12*, 273-295.
- Duck, S. W. (1990). Relationships as unfinished business: Out of the frying pan and into the 1990s. *Journal of Social and Personal Relationships, 7*, 5-29.
- Duck, S. W. (2008). Silver anniversary essay: A past and future for relationship research. *Journal of Social and Personal Relationships, 25*, 189-200.
- Emmers, T. M., & Canary, D. J. (1996). The effect of uncertainty reducing strategies on young couples' relational repair and intimacy. *Communication Quarterly, 44*, 166-182.
- Fincham, F. D., Bradbury, T. N., & Grych, J. H. (1990). Conflict in close relationships: The role of intrapersonal phenomena. In S. Graham & V. S. Folkes (Eds.), *Attribution theory: Applications to achievement, mental health, and interpersonal conflict* (pp. 161-184). Hillsdale, NJ: Lawrence Erlbaum.
- Gaelick, L., Bodenhausen, G. V., & Wyer, R. S. (1985). Emotional communication in close relationships. *Journal of Personality and Social Psychology, 49*, 1246-1265.
- Gottman, J. M., & Krokoff, L. J. (1989). Marital interaction and satisfaction: A longitudinal view. *Journal of Counseling and Clinical Psychology, 57*, 47-52.

- Gottman, J. M., & Levenson, R. W. (1988). The social psychophysiology of marriage. In P. Noller and M. A. Fitzpatrick (Eds.), *Perspectives on marital interaction* (pp. 182-200). Clevedon, UK: Multilingual Matters.
- Gottman, J. M., & Levenson, R. W. (1992). Marital processes predictive of later dissolution: Behavior, physiology, and health. *Journal of Personality and Social Psychology*, *63*, 221-233.
- Hunter, J. E., & Gerbing, D. W. (1982). Unidimensional measurement, second order factor analysis, and causal models. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior* (Vol. 4, pp. 267-320). Greenwich, CT: JAI Press.
- Huston, T. L., Caughlin, J. P., Houts, R. M., Smith, S. E., & George, L. J. (2001). The connubial crucible: Newlywed years as predictors of delight, distress, and divorce. *Journal of Personality and Social Psychology*, *80*, 237-252.
- Huston, T. L., & Vangelisti, A. L. (1991). Socioemotional behavior and satisfaction in marital relationships: A longitudinal study. *Journal of Personality and Social Psychology*, *61*, 721-733.
- Kashy, D. A., & Kenny, D. A. (1999). The analysis of data in dyads and groups. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social psychology*. New York: Cambridge University Press.
- Kelley, H. H., Berscheid, E., Christensen, A., Harvey, J. H., Huston, T. L., Levinger, G., et al. (1983). Analyzing close relationships. In H. H. Kelley, E. Berscheid, A. Christensen, J. H. Harvey, T. L. Huston, G. Levinger, et al. (Eds.), *Close relationships* (pp. 20-67). San Francisco: Freeman.
- Kelley, D. L., & Waldron, V. R. (2005). An investigation of forgiveness: Seeking communication and relational outcomes. *Communication Quarterly*, *53*, 339-358.
- Kenny, D. A., Kashy, D. A., & Cook, W. L. (2006). *Dyadic data analysis*. New York: Guilford.
- Knobloch, L. K. (2007). Perceptions of turmoil within courtship: Associations with intimacy, relational uncertainty, and interference from partners. *Journal of Social and Personal Relationships*, *24*, 363-384.
- Knobloch, L. K. (2008). Extending the Emotion-in-Relationships Model to conversation. *Communication Research*, *35*, 822-848.
- Knobloch, L. K., & Carpenter-Theune, K. E. (2004). Topic avoidance in developing romantic relationships: Associations with intimacy and relational uncertainty. *Communication Research*, *31*, 173-205.
- Knobloch, L. K., & Donovan-Kicken, E. (2006). Perceived involvement of network members in courtships: A test of the relational turbulence model. *Personal Relationships*, *13*, 281-302.
- Knobloch, L. K., Miller, L. E., & Carpenter, K. E. (2007). Using the relational turbulence model to understand negative emotion within courtship. *Personal Relationships*, *14*, 91-112.
- Knobloch, L. K., & Solomon, D. H. (1999). Measuring the sources and content of relational uncertainty. *Communication Studies*, *50*, 261-278.
- Knobloch, L. K., & Solomon, D. H. (2002a). Information seeking beyond initial interaction: Negotiating relational uncertainty within close relationships. *Human Communication Research*, *28*, 243-257.
- Knobloch, L. K., & Solomon, D. H. (2002b). Intimacy and the magnitude and experience of episodic relational uncertainty within romantic relationships. *Personal Relationships*, *9*, 457-478.
- Knobloch, L. K., & Solomon, D. H. (2003). Manifestations of relationship conceptualizations in conversation. *Human Communication Research*, *29*, 482-515.
- Knobloch, L. K., Solomon, D. H., & Cruz, M. G. (2001). The role of relationship development and attachment in the experience of romantic jealousy. *Personal Relationships*, *8*, 205-224.
- Kreft, I., & De Leeuw, J. (1998). *Introducing multilevel modeling*. Thousand Oaks, CA: Sage.
- Lakey, S. G., & Canary, D. L. (2002). Actor goal achievement and sensitivity to partner as critical factors in understanding interpersonal communication competence and conflict strategies. *Communication Monographs*, *69*, 217-235.
- Levenson, R., & Gottman, J. (1985). Physiological and affective predictors of change in relationship satisfaction. *Journal of Personality and Social Psychology*, *49*, 85-94.
- Lloyd, S. A., Cate, R. M., & Henton, J. M. (1984). Predicting premarital relationship stability: A methodological refinement. *Journal of Marriage and the Family*, *46*, 71-76.
- Newell, S. E., & Stutman, R. K. (1991). The episodic nature of social confrontation. In J. A. Anderson (Ed.), *Communication Yearbook 14* (pp. 359-414). Thousand Oaks, CA: Sage.

- Planalp, S., & Honeycutt, J. M. (1985). Events that increase uncertainty in personal relationships. *Human Communication Research, 11*, 593-604.
- Planalp, S., Rutherford, D. K., & Honeycutt, J. M. (1988). Events that increase uncertainty in personal relationships II: Replication and extension. *Human Communication Research, 14*, 516-547.
- Rubin, Z. (1970). Measurement of romantic love. *Journal of Personality and Social Psychology, 16*, 265-273.
- Siebert, J. R., & Stamp, G. H. (1994). "Our first big fight" as a milestone in the development of close relationships. *Communication Monographs, 61*, 345-360.
- Sillars, A. L., Roberts, L. J., Leonard, K. E., & Dun, T. (2000). Cognition during marital conflict: The relationship of thought and talk. *Journal of Social and Personal Relationships, 17*, 479-502.
- Sillars, A. L., Weisberg, J., Burggraf, C. S., & Zietlow, P. H. (1990). Communication and understanding revisited: Married couples' understanding and recall of conversation. *Communication Research, 17*, 500-522.
- Solomon, D. H. (1997). A developmental model of intimacy and date request explicitness. *Communication Monographs, 64*, 99-118.
- Solomon, D. H., & Knobloch, L. K. (2001). Relationship uncertainty, partner interference, and intimacy within dating relationships. *Journal of Social and Personal Relationships, 18*, 804-820.
- Solomon, D. H., & Knobloch, L. K. (2004). A model of relational turbulence: The role of intimacy, relational uncertainty, and interference from partners in appraisals of irritations. *Journal of Social and Personal Relationships, 21*, 795-816.
- Solomon, D. H., & Theiss, J. A. (2008). A longitudinal test of the relational turbulence model of romantic relationship development. *Personal Relationships, 15*, 339-357.
- Theiss, J. A. (2005, November). *The effects of relational uncertainty and indirect communication on cognitive reactions to sexual intimacy*. Paper presented at the meeting of the National Communication Association, Boston.
- Theiss, J. A., & Solomon, D. H. (2006a). Coupling longitudinal data and multilevel modeling to examine the antecedents and consequences of jealousy experiences in romantic relationships: A test of the relational turbulence model. *Human Communication Research, 32*, 469-503.
- Theiss, J. A., & Solomon, D. H. (2006b). A relational turbulence model of communication about irritations in romantic relationships. *Communication Research, 33*, 391-418.
- Theiss, J. A., & Solomon, D. H. (2008). Parsing the mechanisms that increase relational intimacy: The effects of uncertainty amount, open communication about uncertainty, and the reduction of uncertainty. *Human Communication Research, 34*, 625-654.
- VanLear, C. A. (1987). The formation of social relationships: A longitudinal study of social penetration. *Human Communication Research, 13*, 199-322.

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