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# Depression, Relationship Quality, and Couples' Demand/Withdraw and Demand/Submit Sequential Interactions

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Over four decades of evidence suggests that depression is strongly associated with distress in intimate relationships (for review, see Rehman, Gollan, & Mortimer, 2008). To explain this association, systemic theories (e.g., Beach & Cassidy, 1991; Coyne, 1976; Joiner, Alfano, & Metalsky, 1993) suggest that depression in couples is related to specific patterns of interpersonal behavior that become stable, chronic, and self-perpetuating over time. However, relatively little is known about how couples express these behaviors sequentially within their interaction. In this study, we employed moment-by-moment observational assessment to examine two specific sequences of interpersonal behavior in couples suffering from depression and relationship distress.

## Demand/Withdraw, Relationship Distress, and Depression

One widely studied interpersonal pattern in couples, labeled *demand/withdraw* by Christensen and colleagues (Christensen, 1987, 1988; Sullaway & Christensen, 1983), occurs when one person blames, accuses, criticizes, or demands change from his or her partner (demand); in response, the other partner avoids, fails to respond, is silent or defensive, or refuses to discuss the issue (withdraw).

Demand/withdraw is associated with a variety of indicators of poor individual- and relationship-level adjustment, including negative emotion (Papp, Kouros, & Cummings, 2009), intrusive thoughts and hyperarousal (Malis & Roloff, 2006), partner hostility and aggression (Holtzworth-Munroe, Smutzler, & Stuart, 1998; Sagrestano, Heavey, & Christensen, 1999), relationship dissatisfaction (Baucom, McFarland, & Christensen, 2010; Christensen, Eldridge, Catta-Preta, Lim, & Santagata, 2006; Eldridge, Sevier, Jones, Atkins, & Christensen, 2007; McGinn, McFarland, & Christensen, 2009), and divorce (Christensen & Shenk, 1991). Although demand/withdraw is correlated with global negativity and positivity, factor analysis suggests demand/withdraw is a distinct construct that predicts relationship quality after covarying other, related forms of negative behavior (e.g., expressing anger and criticism) and positive behavior (e.g., expressing love or compliments; Caughlin & Huston, 2002).

Investigations of gender differences related to demand/withdraw have obtained mixed results. Although heterosexual couples report nearly equal occurrence of male demand/female withdraw and female demand/male withdraw while at home (Papp et al., 2009), some laboratory-based observational studies find that women are more likely to demand, while men are more likely to withdraw (e.g., Christensen & Shenk, 1991; Eldridge et al., 2007). However, other studies fail to find gender effects when conflict role (i.e., which partner identifies the conflict topic) is considered (Holtzworth-Munroe et al., 1998; McGinn et al., 2009). These studies suggest that, regardless of gender, the partner desiring change is more likely to demand, while the partner from whom change is being requested is more likely to withdraw.

Although demand/withdraw is hypothesized to be associated with depression, especially for women (e.g., Koerner, Prince, & Jacobson, 1994), empirical evidence linking it to depression over and above relationship distress has been inconsistent. For example, after covarying relationship distress, Byrne, Carr, and Clark (2004) failed to find an association between demand/withdraw and depression, while Papp et al. (2009) found that husband demand/wife withdraw (but not wife demand/husband withdraw) predicted husbands' and wives' depression. Although Uebelacker, Courtnage, and Whisman (2003) found the exact opposite—wife demand/husband withdraw (but not husband demand/wife withdraw) predicted husbands' and wives' depression—they did not covary relationship distress. It is important to note that depression was assessed via self-reported symptoms in all these studies. The only study we could locate that measured depression as clinical disorder indexed via standard diagnostic interview showed that men diagnosed with depression experienced more female demand/male withdraw sequences (Baucom et al., 2007).

Why has research on depression and demand/withdraw in the context of relationship distress shown such an inconsistent pattern of results? Various conceptual and methodological explanations may be relevant. For example, perhaps a certain threshold of depression severity (e.g., as indexed by diagnosis) is required to account for unique variance in demand/withdraw over and above that attributable to relationship dysfunction. With respect to methodology, demand/withdraw has usually been studied via self-report (with the Communication Patterns Questionnaire, or CPQ; Christensen & Sulllaway, 1984) or, much less frequently, using observational assessment of couples' behavior measured in aggregate (typically with the Couple Interaction Rating System, or CIRS; Heavey, Gill, & Christensen, 1996). However, relatively little is known about how these behaviors unfold over the course of an interaction.

A related problem involves operationalizing demand/withdraw by summing the frequencies of these behaviors measured separately. For example, in Eldridge et al.'s (2007) study, observers watched couples' 10-min interactions and rated the frequency of demand and withdraw behaviors using the CIRS. Demand/withdraw was derived by adding the frequency of an individual's demand behavior to his or her partner's withdraw behavior. Although this measurement approach represents an important first step in establishing that demand and withdraw behaviors are co-associated, it cannot differentiate whether demand/withdraw behaviors are truly contingent on each other at the utterance-by-utterance level. Thus, it is unclear whether the aggregate base rate of demand and withdraw behaviors, or the actual contingent responding of one partner to another, is associated with depression in the context of relationship distress.

We could find only one study (Klinetob & Smith, 1996) that coded demand/withdraw at the utterance-by-utterance level; their time-series analysis revealed that demand and withdraw behavior are generally temporally associated, although patterns of contingency vary within and between couples. Therefore, it remains uncertain whether demand/withdraw is relatively temporary, cursory, or infrequent within couples' interaction, or whether this sequence repeats frequently enough over time to develop into a stable pattern.

Given these ambiguities regarding the associations between demand/withdraw and depression in the context of relationship distress, it is possible that relationship distress, rather than the presence of depression per se, is responsible for demand/withdraw interactions. This has important treatment implications: If relationship distress is responsible for the dysfunctional interactional patterns observed in depressed couples, the primary target of treatment should be relationship distress, not depression (Schmaling & Jacobson, 1990).

## Demand/Submit, Relationship Distress, and Depression

Although demand/withdraw has been studied exclusively to date, other plausible sequences related to relationship distress and depression have been suggested. For example, relational control theory (Zietlow & VanLear, 1991) posits that couples consistently negotiate bids for dominance and submission in interaction. Couples married 13–39 years who exhibited a dominant/submissive relational control pattern were less satisfied in their relationships (Zietlow & VanLear, 1991). Depression, too, may be related to dominant/submissive interactions: Depressed individuals generally experience others as dominant (Constantino et al., 2008; McCullough, 2000) and themselves as submissive (Barrett & Barber, 2007; Constantino et al., 2008).

Therefore, the interpersonal sequence of *demand/submit* may be a particularly important alternative sequence relevant to understanding depression and relationship distress in couples. Demand/submit occurs when one partner person blames, accuses, criticizes, or demands change from his or her partner (demand); in response, the other partner defers, gives in, yields, surrenders, or complies (submit). To date, demand/submit has been relatively unexplored in observational studies of couples.

## Using Interpersonal Theory and Circumplex Models to Assess Couples' Behavior

To tease apart relevant differences between demand/withdraw and demand/submit, it is important to use a comprehensive measurement model that can distinguish between them. Interpersonal theory, building on the seminal contributions of Harry Stack Sullivan (1953, 1954) and Timothy Leary and colleagues (Freedman, Leary, Ossorio, & Coffey, 1951; Leary, 1957), provides a useful conceptual and measurement framework. Although theorists have long argued that description of interpersonal behavior is critical to understanding psychopathology, including depression (Adams, 1964; Carson, 1969; McLemore & Benjamin, 1979), couple researchers have not widely applied the theory's measurement tools, particularly the interpersonal circumplex.

The *interpersonal circumplex* is a comprehensive model of interpersonal behavior (Freedman et al., 1951). It arranges the array of interpersonal behavior into a circular continuum constructed using two bipolar orthogonal constructs: *control* (ranging from dominance to submission) and *affiliation*(ranging from hostility to friendliness). Using these two dimensions, interpersonal behavior can be measured on a dimensional basis, as similar behaviors are represented spatially next to each other around a circle with fuzzy boundaries between them.

Structural Analysis of Social Behavior (SASB; Benjamin, 1979a, 1987, 2000a) is a system for operationalizing interaction that integrates Leary's scheme with Schaefer's (1965) model of parent–child behavior, which additionally emphasized the importance of behavioral focus and the degree of enmeshment versus differentiation present in behavior. SASB's circumplex employs three dimensions: behavioral focus, affiliation, and interdependence. These are used to derive 16 clusters of behavior (see Figure 1). The ordering of clusters around SASB's axes of affiliation and autonomy are trigonometrically defined such that (a) adjoining clusters are conceptually related and positively correlated, (b) clusters at 90° angles are conceptually unrelated and uncorrelated, and (c) clusters at 180° angles are conceptual opposites and negatively correlated (Pincus, Newes, Dickinson, & Ruiz, 1998).

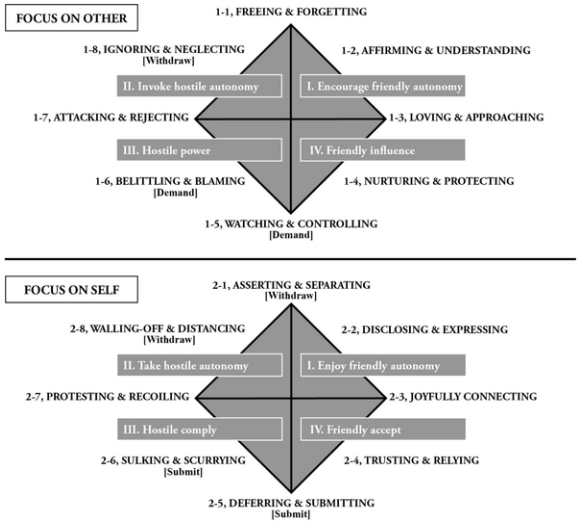


*Figure 1. Structural Analysis of Social Behavior, first two surfaces. The two-word, eight-cluster version used for the coding in this study was from Benjamin (1987). The quadrant version was from Benjamin (1979a). The combination of the quadrant and cluster version was adapted from SASB Intrex User's Manual for Short, Medium and Long Form Questionnaires, by L. S. Benjamin, 2000, Salt Lake City: University of Utah. Copyright 2000 by the University of Utah.*

SASB provides a clear discrimination between withdrawal and submission, a distinction highly relevant to the sequences explored in this study. At the bottom of each SASB surface, clusters include forms of demand and

submit behaviors blended with degrees of hostility or neutrality (see Figure 1). Clusters at the top of the model contain separate or withdraw behaviors, again blended with degrees of hostility or neutrality.

Empirical definition of demand, withdraw, and submit behaviors using SASB is straightforward. Demand (blames, accuses, criticizes, or demands change from his or her partner) constitutes any behavior located in the Belittling and Blaming cluster (SASB Cluster 1–6) or the Watching and Controlling cluster (SASB Cluster 1–5). Withdraw (avoids, fails to respond, is silent or defensive, or refuses to discuss the issue) contains forms of Ignoring and Neglecting behavior (SASB Cluster 1–8), Walling Off and Distancing behavior (SASB Cluster 2–8), or Asserting and Separating behavior (SASB Cluster 2–1), depending on the degree of hostility present. Submit (defers, gives in, yields, surrenders, or complies) involves any behavior in SASB's Deferring and Submitting cluster (SASB Cluster 2–5) or Sulking and Scurrying cluster (SASB Cluster 2–6).

## Interpersonal Complementarity

Interpersonal theory, which postulates that any interpersonal act is designed to elicit a complementary response, suggests that demanding behaviors are more likely to elicit submission rather than withdrawal (Benjamin, 1996). *Complementarity* means that "our interpersonal actions are designed to invite, pull, elicit, draw, entice, or evoke 'restricted classes' of reactions from persons with whom we interact, especially from significant others" (Kiesler, 1983, p. 198). Complementarity is empirically defined within the SASB model (see Figure 1) as behaviors located in the same circular position but on opposing surfaces, such that they contain the same underlying dimensionality but differ in their focus (Benjamin, 1996). It should be noted that demand/withdraw is *not* defined as a complementary sequence by the SASB model. Instead, the complement of *demand*(control) is *submit* (the bottom of each surface in Figure 1), while the complement of *withdraw* is *ignore* (the upper left of each surface in Figure 1). While complementarity has been empirically supported in a variety of contexts (e.g., Gurtman, 2001), base rates of behaviors are important to take into account because some classes of behaviors (e.g., affiliation) are more likely to be demonstrated than others (e.g., hostility), regardless of the preceding antecedent behaviors (Tracey, 1994).

## Actor and Partner Effects Associated With Interpersonal Sequences

Relatively little is known about the relational and psychological correlates associated with enacting a demanding, withdrawing, and/or submitting interpersonal role, or experiencing one's partner in those roles. For example, are individuals who demand change from their partners likely to be dissatisfied in the relationship? If one withdraws, is one's partner prone to depression? Are individuals who submit more depressed than those who demand change? To investigate these types of questions in dyadic data, the Actor–Partner Interdependence Model (APIM; Kenny, Kashy, & Cook, 2006) has been developed to evaluate both actor and partner effects. *Actor effects* are the effects of an individual's independent variable score on his or her dependent variable score (e.g., the association between a husband's depression and his withdrawal). *Partner effects* are the effects of the partner's independent variable score on the actor's dependent variable score (e.g., the association between a husband's depression and his wife's withdrawal). To our knowledge, no previous study has employed the APIM to investigate the actor and partner effects associated with demand/withdraw and demand/submit.

## Purpose of the Current Study

This study was designed to investigate sequential patterns of interpersonal behavior in couples experiencing depression and relationship distress. We employed SASB, a circumplex-based model of observational assessment, at the level of moment-by-moment interaction. Interpersonal behavior was evaluated at varying levels of specificity, in an effort to identify the degree to which demand, withdraw, and submit behaviors—both

in aggregate and in sequence—are associated with actors' and partners' depression and relationship distress. To facilitate the comparison of results obtained when depression is measured as clinical disorder versus symptoms, we assessed depression both categorically (via diagnosis) and dimensionally (via symptom reports). Relationship quality was measured using reports of both relationship satisfaction and adjustment. Finally, given previous conflicting results regarding gender-linked patterns in demand/withdraw (Christensen & Shenk, 1991; Eldridge et al., 2007; Papp et al., 2009), we were particularly interested in exploring gender differences.

We evaluated four formal hypotheses; in each, we employed gender as a covariate to explore gender effects. Hypothesis 1 (H1) predicts that demand, withdraw, and submit behaviors, measured in aggregate, are positively associated with actors' and partners' relationship distress and depression. H1 is posed to replicate previous work, as well as to provide a benchmark for comparing results obtained via behavioral aggregates with those derived from sequential analyses. H2 investigates the overall (raw) frequency count of sequences; it predicts that the frequency of demand/withdraw and demand/submit sequences are positively associated with actors' and partners' relationship distress and depression. H3 compares the degree of contingency between demand/withdraw and demand/submit behaviors. Based on complementarity theory, H3 suggests that the strength of association between demand and submit is stronger overall than the association between demand and withdraw. H4 tests the temporal nature of demand, withdraw, and submit behaviors on a dyad-by-dyad basis using Markov chain analysis. It is expected that couples exhibit predictable sequences of contingent response that are stable over time.

# Method

## Participants

Participants were recruited for a study of depression, relationship distress, interpersonal behavior, and conjoint psychotherapy conducted at an urban, university-affiliated outpatient mental health center. Couples were recruited via radio, print, and Internet advertisements, along with flyers posted in local community centers, stores, churches, and synagogues. Participants were ineligible if they had been together less than 3 months; if either partner reported imminent suicide potential, psychosis, or domestic violence; or if they were currently participating in conjoint therapy. Those excluded based on these criteria were referred to appropriate resources within the community.

In response to recruitment efforts, 396 couples made initial phone calls requesting more information, 279 couples agreed to have study information mailed to them, and 126 couples participated in assessment procedures. Of these, one couple was excluded because they did not meet inclusion criteria,and another 28 did not complete the observational assessment. Therefore, the sample comprised a total of 97 heterosexual couples (*N* = 194 individuals).

After data collection procedures for the current study were completed, a subsample of couples (*n* = 46) who met criteria for depression and/or relationship distress qualified for a second, subsequent study of couple treatment; they were offered 16 sessions of free therapy in exchange for their participation in both studies. Those who did not meet the second study's inclusion criteria, or who chose not to participate in it (*n* = 51), received $100 for this study.

Participants ranged from 21 to 90 years of age (males: *M* = 43.80 years, *SD* = 12.44 years; females: *M* = 41.66 years, *SD* = 11.75 years). The sample was 69.0% White, 14.7% Black or African American, 8.7% Hispanic or Latino/a, 5.4% Asian or Asian American, 1.6% Native American or Pacific Islander, and 0.5% biracial. The sample included 74 married couples, 16 cohabitating couples, and seven dating couples; their relationships averaged 10.48 years in length (*SD* = 11.02 years). Approximately 69% of participants had children.

## Procedure and Measures

### Depression diagnostic status

To identify the presence of current major depressive disorder (MDD) or dysthmic disorder (DD), a trained diagnostic interviewer met with each member of the couple to complete the Structured Clinical Interview for *DSM–IV* (SCID–IV; First, Spitzer, Gibbon, & Williams, 1997, 2002). The SCID is a clinician-administered, semistructured interview used to diagnose Axis I psychiatric disorders according to the *Diagnostic and Statistical Manual of Mental Disorders–Fourth Edition* (*DSM–IV*; American Psychiatric Association, 1994). The SCID is widely employed in intervention research and displays high interrater reliability (Williams, Gibbon, First, & Spitzer, 1992). It takes 45–180 min to administer, depending on the degree of pathology present. A team of licensed clinical psychologists and advanced graduate students conducted the SCIDs (interviews conducted by graduate students were supervised by the first and last authors to confirm diagnoses). A total of 19 men (19.6%) and 23 women (23.7%) met diagnostic criteria for MDD (12 men, 17 women), DD (five men, three women), or both (two men, three women).

### Depression symptoms

The Beck Depression Inventory (BDI–1A; Beck & Steer, 1993) was used to assess depression symptoms. The BDI asks participants to indicate the severity of depression symptoms experienced in the last week using a scale anchored by four exemplars. The 21-item BDI shows strong internal consistency and test–retest reliability and has been validated using both community and clinical samples (for review, see Beck, Steer, & Garbin, 1988). Scores ranged from 0 to 45 ($M$ = 13.22, $SD$ = 9.09, $\alpha$ = .89). According to guidelines (Beck & Steer, 1993), 43.6% of participants reported none to mild symptoms (< 10), 33.1% reported mild to moderate symptoms (10–18), 16.9% reported moderate to severe symptoms (19–29), and 6.4% reported severe symptoms (≥ 30).

### Relationship quality

Relationship quality is a complex, multidimensional construct (Crane, Allgood, Larson, & Griffin, 1990; Whisman & Jacobson, 1992) that includes elements of both couple functioning and relationship satisfaction. For the sake of comprehensiveness, relationship quality was measured using both the Dyadic Adjustment Scale (DAS; Spanier, 1988) and the Global Distress subscale of the Marital Satisfaction Inventory–Revised (MSI–R; Snyder, 1997).

The DAS is a 32-item measure of *relationship adjustment*. It assesses frequency of communication and conflict between partners, expressions of affection, positive time together, and commitment to the relationship using a Likert scale. The DAS shows excellent measurement properties (Carey, Spector, Lantinga, & Krauss, 1993; Kurdek, 1992; Sabourin, Lussier, Laplante, & Wright, 1990). DAS scores ranged from 9 to 135 ($M$ = 88.84, $SD$ = 22.85, $\alpha$ = .94); approximately 66% of participants scored ≤ 97, the suggested cutoff score for relationship distress (Jacobson, Schmaling, & Holtzworth-Munroe, 1987).

The Global Distress subscale of the MSI–R (Snyder, 1997) contains 22 true/false items measuring *relationship satisfaction*. The subscale displays strong internal consistency, test–retest reliability, convergent validity, and discriminant validity (Snyder & Aikman, 1999). In this sample, 78.5% of participants reported scores above the 9-point cutoff value for relationship distress (range = 0–22, $M$ = 13.64, $SD$ = 6.15, $\alpha$ = .93). As expected, the DAS and the MSI's Global Distress subscale shared a negative correlation (−.82 for men and −.78 for women).

### Observational assessment of couples' behavior

As part of a lab-based assessment of interpersonal behavior, couples completed two 10-min videotaped conflict discussions. One conflict topic for each partner was selected from participants' highest-rated area of disagreement on the DAS. If both partners rated the same topic equally highly, the research assistant chose the

man's next-most-highly rated area of disagreement for his conflict discussion. Couples were asked to discuss the disagreement and try to come up with a solution they both agreed upon.

### Structural Analysis of Social Behavior (SASB)

The SASB coding system (Benjamin & Cushing, 2000) was used to assess couples' moment-by-moment interpersonal behavior. SASB is built around the orthogonal constructs of *affiliation* and *interdependence*. It also takes into account the interpersonal *focus* of behavior using two different types: "I focus on you" (other focus) and "I react to your focus on me" (self focus; Benjamin, 2000a, p. 20). These types of behavioral focus are represented using separate circumplexes, called *surfaces* (see Figure 1). Surface 1, *Focus on Other,* is transitive, describing behavior done to, for, or about another person (e.g., "he controls her," or "she ignores him"). Surface 2, *Focus on Self,* is intransitive, describing behavior done to, for, or about the self in relation to the other person (e.g., "she submits to him," or "he withdraws from her").

Each SASB surface is composed of two dimensions. The *affiliation dimension* ranges on both Surface 1 and Surface 2 from extremes of hate (attack, recoil) to love (active love, reactive love). The *interdependence dimension* spans extremes of differentiation (give autonomy, be separate) to enmeshment (control, submit) and is divided into separate axes by surface. For Surface 1 (Focus on Other), the interdependence dimension ranges from autonomy granting to control. For Surface 2 (Focus on Self), it ranges from autonomy taking to submission.

The combination of behavioral focus, affiliation, and interdependence assesses the full array of interpersonal behavior using 16 categories on the SASB model called *clusters* (characterized by the descriptive labels shown in Figure 1). The coding procedure measures the frequency of occurrence of the various SASB clusters.

#### *Coding procedure*

Couples' interactions were coded by a team of 86 coders (16 men, 70 women); this group consisted of 70 undergraduate students, 13 graduate students, and three clinical psychologists. Under the supervision of the first and second authors, all coders completed at least 50 hr of formal training; this included didactic instruction, practice assignments, and reliability checks using pilot data coded by the first or second author. As recommended by Benjamin and Cushing (2000), coders were required to achieve a weighted kappa (Cohen, 1968) reliability level of at least .70 compared with the first or second author on pilot material before coding study data.

After this benchmark was achieved, interactions were coded following procedures outlined in the coding manual (Benjamin & Cushing, 2000). First, written transcripts of couples' interactions were segmented into *talk turns* or speaking turns (i.e., a husband's talk turn consists of everything he says after his wife finishes speaking and ends when she starts speaking again). Second, each person's talk turns were further divided into units of verbal behavior called *coding units*, defined as independent clauses or sentences typically containing a subject, verb, and object. Next, pairs of coders, blind to couples' depression and relationship distress status, worked together using videotape and written transcripts to rate both partners' behavior, attending to verbal and nonverbal cues.

Coders began by identifying the focus of each behavior on either the Focus on Other or Focus on Self surface. Second, they categorized each behavior in terms of affiliation (friendly, neutral, or hostile) and interdependence (autonomous, neutral, or enmeshed). Finally, these judgments were used to locate each behavior in Euclidean space within the appropriate SASB cluster (see Figure 1). For example, if the wife said to her husband "I'm proud of our family," it would be judged as self-focused, friendly, and moderately autonomy taking, and categorized within the Disclosing and Expressing cluster on Surface 2. If the husband said to his wife, "You're a lousy driver," it would be judged as other-focused, hostile, and controlling, and categorized within the Belittling and Blaming cluster on Surface 1.

Coders assigned behavior into more than one cluster if necessary to capture its full meaning. For example, "If you don't stop yelling right now, I'm going to walk out" would be coded as both Watching and Controlling behavior and Asserting and Separating behavior. If coders disagreed on which SASB cluster(s) to assign, they resolved their disagreement through discussion to consensus. Under the supervision of the first author, coders met weekly in groups to minimize drift.

***Coding reliability***

Although study data represent a consensus between two coders, as recommended by Benjamin and Cushing (2000) we chose to measure reliability based on two coders working independently to ensure conservative estimates. To calculate reliability, two coders working separately classified the first 50 coding units (approximately 20% of the total number of units per discussion) for 192 of the 194 interactions. This independent coding was utilized only for reliability estimates, and was not included in study data.

Because behavioral data were analyzed globally, as well as unit-by-unit for sequential analyses, two indices of coder reliability (intraclass correlation and weighted kappa) were computed to provide a comprehensive picture of coder agreement. Intraclass correlation coefficients reflecting the average of two raters (i.e., ICC [1, 2]; Shrout & Fleiss, 1979) for the demand, withdraw, and submit behaviors ranged from .79 for men's withdraw to .90 for women's demand.

Weighted kappa was calculated as a secondary measure of coder reliability. Highly recommended for sequential analyses using SASB data (Benjamin & Cushing, 2000), weighted kappa is a much more conservative index than ICC because it computes reliability at the utterance-by-utterance level. Weighted kappa also takes into account the extent of agreement between two coders, which is valuable because adjacent SASB clusters are related to each other. We computed weighted kappa following the formula outlined by Benjamin and Cushing (2000); all 16 SASB clusters were included in this calculation. Weights (ranging from +1.00 to −1.00) were assigned to each pair of codes according to the similarity of their position around the circumplex. For example, +1.00 was assigned when both coders picked the same SASB cluster on the same surface for a given unit (e.g., both coders assigned SASB Cluster 1–2, Affirming and Understanding, for that unit; see Figure 1). −1.00 was assigned when both coders showed total disagreement on all three SASB dimensions of focus, affiliation, and interdependence (e.g., if Coder 1 assigned SASB Cluster 1–2, Affirming and Understanding, while Coder 2 assigned SASB Cluster 2–6, Sulking and Scurrying). Intermediate weights were assigned to units in which coders disagreed by one, two, three, or four steps around the circumplex (disagreement in focus is considered a step). When coders disagreed by one step, +0.60 was assigned (e.g., if Coder 1 assigned SASB Cluster 1–2, Affirming and Understanding, while Coder 2 assigned SASB Cluster 2–2, Disclosing and Expressing); +0.20 was assigned when coders disagreed by two steps; −0.20 was assigned when coders disagreed by three steps; and −0.60 was assigned when coders disagreed by four steps.

As expected, weighted kappa showed lower, but still adequate reliability (.65 for men's and .62 for women's conflict discussions). These estimates are comparable to other SASB-coded studies of complex interactions marked by a high degree of individual and/or relational pathology (Benjamin & Cushing, 2000).

***Frequency of demand, withdraw, and submit behaviors***

Descriptive statistics, including the frequency of demand, submit, and withdraw behaviors divided by the total number of behavioral units assigned per interactant, are presented in Table 1. Proportions ranged from .26 (women's demand) to .11 (women's submit).

Table 1
*Paired Samples T Tests Comparing Males and Females*

| Variable | Males | Females | *t*(97) |
|---|---|---|---|
| Beck Depression Inventory | 11.84 (7.59) | 14.80 (9.59) | −2.58* |
| Dyadic Adjustment Scale | 91.18 (20.09) | 84.36 (24.08) | 3.52*** |
| Marital Satisfaction Inventory–Global Distress subscale | 12.60 (5.87) | 14.73 (6.17) | −4.80*** |
| Demand behaviors | 0.21 (0.13) | 0.26 (0.14) | −3.43*** |
| Withdraw behaviors | 0.25 (0.09) | 0.22 (0.07) | 3.08** |
| Submit behaviors | 0.13 (0.10) | 0.11 (0.08) | 1.46 |
| Demand/withdraw sequences | 7.93 (5.51) | 6.60 (5.58) | 2.67** |
| Demand/submit sequences | 6.47 (6.86) | 5.08 (4.62) | 2.13* |
| Demand/withdraw phi coefficients | 0.04 (0.14) | 0.03 (0.11) | 0.49 |
| Demand/submit phi coefficients | 0.13 (0.14) | 0.12 (0.15) | 0.57 |

*Note*. $N = 97$ couples. Cell entries are means; values in parentheses are standard deviations. Beck Depression Inventory = depression symptoms; Dyadic Adjustment Scale = relationship adjustment; Marital Satisfaction Inventory–Global Distress = relationship satisfaction. Scores for demand, withdraw, and submit behaviors represent percentages of occurrence, averaged across women's and men's conflict discussions. Scores for demand/withdraw and demand/submit sequences represent raw frequencies of demand/withdraw and demand/submit sequences, averaged across discussions. Scores for demand/withdraw and demand/submit phi coefficients represent the strength of association between these behaviors, averaged across men's and women's conflict discussions.
* $p < .05$. ** $p < .01$. *** $p < .001$.

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| Demand/withdraw phi coefficients | 0.04 (0.14) | 0.03 (0.11) | 0.49 |
| Demand/submit phi coefficients | 0.13 (0.14) | 0.12 (0.15) | 0.57 |

*Note*. *N* = 97 couples. Cell entries are means; values in parentheses are standard deviations. Beck Depression Inventory = depression symptoms; Dyadic Adjustment Scale = relationship adjustment; Marital Satisfaction Inventory–Global Distress = relationship satisfaction. Scores for demand, withdraw, and submit behaviors represent percentages of occurrence, averaged across women's and men's conflict discussions. Scores for demand/withdraw and demand/submit sequences represent raw frequencies of demand/withdraw and demand/submit sequences, averaged across discussions. Scores for demand/withdraw and demand/submit phi coefficients represent the strength of association between these behaviors, averaged across men's and women's conflict discussions.
* $p < .05$. ** $p < .01$. *** $p < .001$.

### *Derivation of demand/withdraw and demand/submit sequences*

To examine sequences at varying levels of specificity, we evaluated three different types of sequences: (a) raw frequency counts of the target sequences; (b) phi coefficients computed for each partner to compare the couple-level strength of association between demand/withdraw and demand/submit; and (c) predicted sequences of contingent behaviors projected over time using Markov chain analysis.

At the most microanalytic level of sequence measurement, *raw frequencies*of two-step behavioral sequences were computed in several steps. First, each person's talk turn was evaluated for the presence versus absence of demand. Next, the partner's immediately following talk turn was evaluated for the presence versus absence of

withdraw and/or the presence versus absence of submit. Finally, the frequency of each demand/withdraw and demand/submit sequence was tabulated according to the gender of the partner initiating the sequence (see Table 1). For example, the frequency of women's demand/submit equals the number of times women displayed demand behavior and their partners followed with submit behavior.

To index the conditional nature of demand/withdraw and demand/submit sequences observed for each couple, we computed *phi coefficients* to calculate the probability that a given behavior would follow another. A mathematically equivalent variation of the Pearson product–moment correlation coefficient, the phi coefficient provides an index of the strength of the association between two dichotomous variables (Cohen & Cohen, 1983), independent from the simple frequency of these variables (Bakeman & Gottman, 1997). It measures not the mere presence of target sequences (as in the raw frequency counts), but the tendency for one behavior to specifically follow another. Descriptive statistics for the demand/withdraw and demand/submit phi coefficients are presented for men and women in Table 1. Because the phi coefficients deviated from normality according to the Kolmogorov–Smirnov and Shapiro–Wilk tests (Field, 2005), nonparametric tests were used whenever they were employed.

Finally, at the most macroanlytic level of evaluating sequences, Markov chain analysis (Isaacson & Madsen, 1976) was conducted to evaluate the overall stability of interactions over time. Following procedures described by Benjamin (1979b) for use with SASB data, a pair of transition matrices was constructed separately for each couple. Each matrix consists of rows that contain the proportion of behavior observed to follow each possible SASB-defined behavior by the partner. Individual cells thus contain the conditional probability of one partner's behavior following the other. One matrix was computed for actors' behavior following partners' talk turns (A), and another was computed for partners' behavior following actors' talk turns (B). Rows and columns reflect all possible combinations of SASB-defined clusters, so that each row of transitional probabilities sum to 1.0 (unless there are no observed examples of the behavior at Step 1, in which case all entries for the row equal zero). Next, each couple's matrices are multiplied together to produce Matrices AB and BA, which mathematically define the successive probabilities of a given partner moving from one state to another on his or her next turn at talk (Lichtenberg & Hummel, 1976). For example, if the husband submits at Step 1, and his wife responds, Matrix AB gives the probability that the husband will return to submitting, withdrawing, or any other behavior on his next step, given his own and his wife's patterns of contingent response.

Markov chain analysis is used to calculate the expected long-run probabilities of actors' and partners' behavior, in order to assess whether there is some long-run pattern that is predicted from successive iterations of the couple's interaction (called *ergodicity*). This is calculated by raising the AB and BA matrices to higher powers.

The long-run prediction of each couple's behavior presumes that the underlying patterns of contingent response are themselves stable during the interaction sampled; this is called the Markov stationarity assumption. To assess the validity of the stationarity assumption, we compared predictions based on the first half and last half of each couple's interaction. A high degree of correspondence between the predictions made by the first half and the last half of each couple's interaction provides evidence to support the stationarity assumption. If stationarity is supported, the main Markov analysis is conducted using a couple's entire interaction to produce the final matrix for each couple.

The expected probabilities of actors' behavior over 25 successive iterations was calculated by raising the AB and BA matrices to the 25th power, which models what could be expected if the couple were to interact about the same topic under the same conditions for as many iterations as the exponent placed on the matrix (in this case, 25 more times). Using 25 iterations follows Benjamin's (2000b) precedent for Markov analysis and is sufficient to estimate the long-run predicted pattern for each couple.

Stability of behavior was assessed by comparing starting vectors (i.e., the initial proportions of observed behavior for actors and partners) with each Markov probability matrix raised to the 25th power. For behavioral sequences rarely observed and unlikely to recur, the various probabilities reduce to zero. Sequences likely to repeat show increases in their probabilities. Highly stable sequences show little expected change from the probabilities defined by their starting conditions. Interested readers are referred to comprehensive overviews of Markov chain analysis (e.g., Benjamin, 1979b, 1986; Ivanouw, 2007; Kaplan, 2008), as well as detailed examples (e.g., Duys & Headrick, 2004; Hertel, 1972; Lichtenberg & Heck, 1986).

# Results

## Preliminary Analyses

First, gender differences were examined in the independent and dependent variables. Results of paired samples *t* tests indicated that women reported more depressive symptoms and less relationship quality than men (see Table 1). Overall, women also exhibited more demand and less withdraw behavior than men. Because of these gender differences, couples were treated as distinguishable dyads (Kenny et al., 2006) in hypothesis tests.

Second, bivariate correlations were computed among depression symptoms, relationship quality, and the various forms of demand, withdraw, and submit behaviors among men, among women, and between partners (see Table 2). These behaviors shared strong positive correlations between partners. Relationship length was uncorrelated with demand, withdraw, or submit behaviors (in aggregate or in sequences) for either men or women.

Table 2
*Bivariate Correlations Among Males, Among Females, and Between Partners*

| Variable | V1 | V2 | V3 | V4 | V5 | V6 |
|---|---|---|---|---|---|---|
| V1: BDI | **.15** | −.28** | .16 | −.18 | .15 | .02 |
| V2: DAS | −.48*** | **.64**** | −.77*** | −.25* | −.01 | −.2 |
| V3: MSI−Global Distress subscale | .39*** | −.75*** | **.74**** | .26* | −.03 | .27** |
| V4: Demand behaviors | .28** | −.26* | .29** | **.54**** | −.16 | .20* |
| V5: Withdraw behaviors | −.10 | .03 | −.04 | −.13 | **.32**** | −.06 |
| V6: Submit behaviors | .13 | .07 | .01 | .27** | −.05 | **.38**** |

*Note.* $N = 97$ males, females, or couples. Correlations for males appear above the diagonal; correlations for females appear below the diagonal. Between-partner correlations appear on the diagonal in bold. BDI = Beck Depression Inventory (depression symptoms); DAS = Dyadic Adjustment Scale (relationship adjustment); MSI–Global Distress = Marital Satisfaction Inventory–Global Distress subscale (relationship satisfaction). Scores for demand, withdraw, and submit behaviors were averaged across women's and men's conflict discussions.
* $p < .05$. ** $p < .01$. *** $p < .001$.

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| V3: MSI-Global Distress subscale | .39*** | -.75*** | **.74*** ** | .26* | -.03 | .27** |
| V4: Demand behaviors | .28** | -.26* | .29** | **.54*** ** | -.16 | .20* |
| V5: Withdraw behaviors | -.10 | .03 | -.04 | -.13 | **.32*** ** | -.06 |
| V6: Submit behaviors | .13 | .07 | .01 | .27** | -.05 | **.38*** ** |

*Note*. *N* = 97 males, females, or couples. Correlations for males appear above the diagonal; correlations for females appear below the diagonal. Between-partner correlations appear on the diagonal in bold. BDI = Beck Depression Inventory (depression symptoms); DAS = Dyadic Adjustment Scale (relationship adjustment); MSI–Global Distress = Marital Satisfaction Inventory–Global Distress subscale (relationship satisfaction). Scores for demand, withdraw, and submit behaviors were averaged across women's and men's conflict discussions.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Finally, the stability of behavior across men's and women's conflict discussions was examined. Bivariate correlations revealed that participants' behavior was moderately stable at the aggregate level regardless of which partner's conflict was the topic of discussion (demand: for males, $r = .60$, for females, $r = .56$; withdraw: for males, $r = .22$, for females, $r = .20$; and submit: for males, $r = .52$, for females, $r = .39$; all $p$s $< .05$).

## Analytic Strategy for Multilevel Modeling

Multilevel modeling was used for tests of H1 and H2 to accommodate the statistical dependence in observations across conversations and between partners (Raudenbush & Bryk, 2002; Snijders & Boskers, 1999). The APIM (Kenny et al., 2006) was used to evaluate both actor and partner effects. Multilevel models were constructed such that conflict topic (men's vs. women's topic) was crossed within individuals, individuals were nested within couples, partners were distinguished by an actor's sex, and an interaction term was computed to examine an actor's sex as a moderator. Following recommendations by Kenny et al. (2006), restricted maximum likelihood was used as the method of estimation, the covariance structure was heterogeneous compound symmetry, and predictors were centered around group means to make intercepts interpretable and allow for tests of interactions. Standardized regression coefficients (betas) are presented in the text as effect size estimates.

### H1

The first hypothesis predicts that demand, withdraw, and submit behaviors are positively associated with actors' and partners' relationship distress and depression. To test this, we evaluated associations between relationship quality, depression, and actors' demand, withdraw, and submit behaviors using multilevel models, employing gender and conflict topic (men's vs. women's topic) as covariates. Two sets of two-level models were constructed using the following predictors: (a) conflict topic (men's vs. women's topic) as a Level-1 predictor; (b) an actor's sex as a Level-1 predictor (coded such that 1 = males, −1 = females); (c) actors' and partners' relationship quality as grand-mean centered Level-1 predictors; (d) actors' and partners' depression as grand-mean centered Level-1 predictors; and (e) four Level-1 interaction terms computed as an actor's sex multiplied by an actor's or a partner's relationship quality or depression. The model sets were designed to evaluate the predictive validity of depression measured as symptoms versus disorder. In the first model set, relationship satisfaction was assessed using the MSI Global Distress subscale and depression symptoms were measured dimensionally using the BDI; in the second model set, relationship adjustment was measured using the DAS, and depression was indexed dichotomously as depressive disorder status (1 = present; −1 = absent). Results are presented separately for each behavior type (see Tables 3 and 4 for unstandardized model parameter estimates).

Table 3
*Multilevel Models Predicting Demand, Withdraw, and Submit Behaviors From Actor and Partner Depression Symptoms and Relationship Satisfaction*

| Variable | Demand | Withdraw | Submit |
|---|---|---|---|
| Fixed effects | | | |
| Intercept | .238 (.013)*** | .216 (.008)*** | .123 (.009)*** |
| Conflict topic | −.012 (.011) | .024 (.009)** | −.002 (.008) |
| Actor BDI | −.007 (.022) | .011 (.015) | .009 (.015) |
| Partner BDI | −.006 (.023) | .006 (.014) | −.008 (.015) |
| Actor MSI | .075 (.037)* | −.055 (.028)* | .002 (.026) |
| Partner MSI | .064 (.037) | .063 (.027)* | .053 (.026)* |
| Actor sex | −.022 (.006)*** | .010 (.005) | .005 (.005) |
| Actor Sex*BDI | −.074 (.024)** | .028 (.015) | −.019 (.016) |
| Partner Sex*BDI | .028 (.024) | −.003 (.015) | .022 (.015) |
| Actor Sex*MSI | .069 (.058) | −.054 (.035) | .068 (.037) |
| Partner Sex*MSI | −.080 (.058) | .054 (.035) | −.024 (.037) |
| Random parameters | | | |
| Women | | | |
| Women's conflict | .027 (.004) | .010 (.001) | .008 (.001) |
| Men's conflict | .021 (.004) | .007 (.001) | .009 (.001) |
| Men | | | |
| Women's conflict | .019 (.003) | .014 (.002) | .013 (.002) |
| Men's conflict | .018 (.003) | .011 (.002) | .010 (.001) |

*Note*. $N$ = 194 scores (two individuals nested within 97 couples). For fixed effects, cell entries are unstandardized slopes; values in parentheses are standard errors of the parameter estimates. For random parameters, cell entries are covariance estimates; values in parentheses are standard errors of the parameter estimates. BDI = Beck Depression Inventory (depression symptoms); MSI = Marital Satisfaction Inventory–Global Distress subscale (relationship satisfaction). BDI and MSI values are grand-mean centered. Actor's sex was coded such that 1 = males, −1 = females.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3. *Multilevel Models Predicting Demand, Withdraw, and Submit Behaviors From Actor and Partner Depression Symptoms and Relationship Satisfaction*

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| Partner BDI | −.006 (.023) | .006 (.014) | −.008 (.015) |
| Actor MSI | .075 (.037)* | −.055 (.028)* | .002 (.026) |
| Partner MSI | .064 (.037) | .063 (.027)* | .053 (.026)* |
| Actor sex | −.022 (.006)*** | .010 (.005) | .005 (.005) |
| Actor Sex*BDI | −.074 (.024)** | .028 (.015) | −.019 (.016) |
| Partner Sex*BDI | .028 (.024) | −.003 (.015) | .022 (.015) |
| Actor Sex*MSI | .069 (.058) | −.054 (.035) | .068 (.037) |
| Partner Sex*MSI | −.080 (.058) | .054 (.035) | −.024 (.037) |
| Random parameters | | | |
| Women | | | |
| Women's conflict | .027 (.004) | .010 (.001) | .008 (.001) |
| Men's conflict | .021 (.004) | .007 (.001) | .009 (.001) |
| Men | | | |
| Women's conflict | .019 (.003) | .014 (.002) | .013 (.002) |
| Men's conflict | .018 (.003) | .011 (.002) | .010 (.001) |

*Note*. $N$ = 194 scores (two individuals nested within 97 couples). For fixed effects, cell entries are unstandardized slopes; values in parentheses are standard errors of the parameter estimates. For random parameters, cell entries are covariance estimates; values in parentheses are standard errors of the parameter estimates. BDI = Beck Depression Inventory (depression symptoms); MSI = Marital Satisfaction Inventory–Global Distress subscale (relationship satisfaction). BDI and MSI values are grand-mean centered. Actor's sex was coded such that 1 = males, −1 = females.

$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Table 4
*Multilevel Models Predicting Demand, Withdraw, and Submit Behaviors From Actor and Partner Depression Diagnostic Status and Relationship Adjustment*

| Variable | Demand | Withdraw | Submit |
|---|---|---|---|
| Fixed effects | | | |
| Intercept | .235 (.017)*** | .214 (.010)*** | .122 (.011)*** |
| Conflict topic | −.012 (.011) | .025 (.010)** | −.002 (.008) |
| Actor depression | −.001 (.011) | −.002 (.007) | .005 (.007) |
| Partner depression | −.005 (.011) | −.006 (.007) | −.001 (.007) |
| Actor DAS | −.048 (.013)*** | .008 (.010) | .008 (.009) |
| Partner DAS | −.001 (.014) | −.014 (.010) | −.028 (.009)** |
| Actor sex | −.028 (.008)*** | .020 (.006)** | .003 (.006) |
| Actor Sex*Depression | −.023 (.012) | .007 (.007) | .008 (.008) |
| Partner Sex*Depression | .003 (.012) | .006 (.007) | −.008 (.007) |
| Actor Sex*DAS | −.008 (.021) | −.002 (.013) | −.004 (.013) |
| Partner Sex*DAS | .006 (.021) | .005 (.012) | −.016 (.013) |
| Random effects | | | |
| Women | | | |
| Women's conflict | .027 (.004) | .010 (.002) | .008 (.001) |
| Men's conflict | .023 (.003) | .007 (.001) | .009 (.001) |
| Men | | | |
| Women's conflict | .019 (.003) | .013 (.002) | .013 (.002) |
| Men's conflict | .019 (.003) | .012 (.002) | .010 (.001) |

*Note*. $N = 194$ scores (two individuals nested within 97 couples). For fixed effects, cell entries are unstandardized slopes; values in parentheses are standard errors of the parameter estimates. For random parameters, cell entries are covariance estimates; values in parentheses are standard errors of the parameter estimates. DAS = Dyadic Adjustment Scale (relationship adjustment); DAS values are grand-mean centered. Depression diagnostic status was coded such that 1 = currently depressed, −1 = not currently depressed. Actor's sex was coded such that 1 = males, −1 = females.
$^{**}p < .01$. $^{***}p < .001$.

Table 4. *Multilevel Models Predicting Demand, Withdraw, and Submit Behaviors From Actor and Partner Depression Diagnostic Status and Relationship Adjustment*

| Variable | Demand | Withdraw | Submit |
|---|---|---|---|
| Fixed effects | | | |
| Intercept | .235 (.017)*** | .214 (.010)*** | .122 (.011)*** |
| Conflict topic | −.012 (.011) | .025 (.010)** | −.002 (.008) |
| Actor depression | −.001 (.011) | −.002 (.007) | .005 (.007) |
| Partner depression | −.005 (.011) | −.006 (.007) | −.001 (.007) |
| Actor DAS | −.048 (.013)*** | .008 (.010) | .008 (.009) |
| Partner DAS | −.001 (.014) | −.014 (.010) | −.028 (.009)** |
| Actor sex | −.028 (.008)*** | .020 (.006)** | .003 (.006) |
| Actor Sex*Depression | −.023 (.012) | .007 (.007) | .008 (.008) |
| Partner Sex*Depression | .003 (.012) | .006 (.007) | −.008 (.007) |
| Actor Sex*DAS | −.008 (.021) | −.002 (.013) | −.004 (.013) |
| Partner Sex*DAS | .006 (.021) | .005 (.012) | −.016 (.013) |
| Random effects Women | | | |
| Women's conflict | .027 (.004) | .010 (.002) | .008 (.001) |
| Men's conflict | .023 (.003) | .007 (.001) | .009 (.001) |
| Men | | | |
| Women's conflict | .019 (.003) | .013 (.002) | .013 (.002) |
| Men's conflict | .019 (.003) | .012 (.002) | .010 (.001) |

*Note*. $N = 194$ scores (two individuals nested within 97 couples). For fixed effects, cell entries are unstandardized slopes; values in parentheses are standard errors of the parameter estimates. For random parameters, cell entries are covariance estimates; values in parentheses are standard errors of the parameter estimates. DAS = Dyadic Adjustment Scale (relationship adjustment); DAS values are grand-mean centered. Depression diagnostic

status was coded such that 1 = currently depressed, −1 = not currently depressed. Actor's sex was coded such that 1 = males, −1 = females.
** $p < .01$. *** $p < .001$.

### *Demand*

With respect to relationship quality, actors' relationship satisfaction, β = .021, $t(312) = 2.04$, $p = .042$, and their relationship adjustment, β = .034, $t(280) = 3.60$, $p < .001$, were negatively associated with their demand behavior. For depression, no main effects were evident, but a Depression Symptoms × Gender interaction emerged, β = .031, $t(130) = 3.16$, $p = .002$. To examine whether the respective parameter estimates for men and women differed significantly from zero, we constructed a separate, two-intercept model (Kenny et al., 2006). This approach involves estimating and testing separate depression symptom coefficients for men and women, using dummy codes to identify whether an observation was from the male partner or from the female partner. Results showed women's depression symptoms were positively associated with their demand behavior, β = .038, $t(107) = 2.99$, $p = .003$, but men's depression symptoms were negatively associated with their demand behavior, β = .029, $t(109) = 2.05$, $p = .043$.

### *Withdraw*

Participants exhibited more withdraw behavior during women's conflict discussions than they did during men's conflict discussions, β = .024, $t(276) = 2.69$, $p = .008$. For relationship quality, actors' relationship satisfaction, β = .015, $t(352) = 2.01$, $p = .045$, was positively associated with their withdraw behavior. In contrast, partners' relationship satisfaction was negatively associated with actors' withdraw behavior, β = .018, $t(355) = 2.30$, $p = .022$. No depression effects reached statistical significance.

### *Submit*

For relationship quality, two partner effects were evident: Partners' relationship satisfaction, β = .015, $t(340) = 2.05$, $p = .041$, and adjustment, β = .020, $t(327) = 3.09$, $p = .002$, were negatively associated with actors' submissive behavior. No depression effects emerged.

## H2

The second hypothesis predicts that the overall (raw) frequency of demand/withdraw and demand/submit sequences are positively associated with actors' and partners' relationship distress and depression. Following procedures used in tests of H1, two sets of two-level models were constructed in which conflict topic was crossed within individuals, and individuals were nested within couples. The models contained the following predictors: (a) conflict topic (men's vs. women's topic) as a Level-1 predictor; (b) an actor's sex as a Level-1 predictor (1 = males, −1 = females); (c) an actor's and a partner's relationship quality as grand-mean centered Level-1 predictors; (d) an actor's and a partner's depression as grand-mean centered Level-1 predictors; and (e) four interaction terms computed as an actor's sex multiplied by an actor's or a partner's relationship quality or depression. In the first model set, relationship satisfaction was indexed using the MSI Global Distress subscale and depression symptoms were measured using the BDI; in the second model set, relationship adjustment was assessed using the DAS, and depression was indexed dichotomously as depression status (1 = present; −1 = absent). Results are presented by type of sequence (see Tables 5 and 6).

Table 5
*Multilevel Models Predicting the Raw Frequency of Demand/Withdraw and Demand/Submit Sequences From Actor and Partner Depression Symptoms and Relationship Satisfaction*

| Variable | Demand/withdraw | Demand/submit |
|---|---|---|
| Fixed effects | | |
| Intercept | 7.824 (0.6207)*** | 6.211 (0.631)*** |
| Conflict topic | −0.909 (0.462)* | −0.689 (0.515) |
| Actor BDI | 1.244 (1.007) | 0.191 (1.01) |
| Partner BDI | 0.079 (0.993) | 0.037 (0.963)* |
| Actor MSI | −1.554 (1.613) | 0.314 (1.73) |
| Partner MSI | 2.886 (1.610) | 2.586 (1.719) |
| Actor sex | 0.530 (0.264)* | 0.630 (0.308)* |
| Actor Sex*BDI | −0.186 (1.082) | −0.926 (1.070) |
| Partner Sex*BDI | 1.956 (1.068) | 1.884 (1.022) |
| Actor Sex*MSI | 2.453 (2.656) | 4.341 (2.514) |
| Partner Sex*MSI | −2.736 (2.654) | −2.391 (2.508) |
| Random parameters | | |
| Women | | |
| Women's conflict | 36.542 (5.209) | 25.246 (3.738) |
| Men's conflict | 37.791 (5.425) | 37.594 (5.415) |
| Men | | |
| Women's conflict | 44.192 (6.472) | 52.792 (7.505) |
| Men's conflict | 43.851 (.054) | 58.367 (8.380) |

*Note*. $N = 194$ scores (two individuals nested within 97 couples). For fixed effects, cell entries are unstandardized slopes; values in parentheses are standard errors of the parameter estimates. For random parameters, cell entries are covariance estimates; values in parentheses are standard errors of the parameter estimates. BDI = Beck Depression Inventory (depression symptoms); MSI = Marital Satisfaction Inventory–Global Distress (relationship satisfaction). BDI and MSI values are grand-mean centered. Actor's sex was coded such that 1 = males, −1 = females.
* $p < .05$. *** $p < .001$.

Table 5. *Multilevel Models Predicting the Raw Frequency of Demand/Withdraw and Demand/Submit Sequences From Actor and Partner Depression Symptoms and Relationship Satisfaction*

| Variable | Demand/withdraw | Demand/submit |
|---|---|---|
| Fixed effects | | |
| Intercept | 7.824 (0.6207)*** | 6.211(0.631)*** |
| Conflict topic | −0.909 (0.462)* | −0.689 (0.515) |
| Actor BDI | 1.244 (1.007) | 0.191 (1.01) |
| Partner BDI | 0.079 (0.993) | 0.037 (0.963)* |
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| Actor Sex*MSI | 2.453 (2.656) | 4.341 (2.514) |
| Partner Sex*MSI | −2.736 (2.654) | −2.391 (2.508) |
| Random parameters | | |
| Women | | |
| Women's conflict | 36.542 (5.209) | 25.246 (3.738) |
| Men's conflict | 37.791 (5.425) | 37.594 (5.415) |
| Men | | |
| Women's conflict | 44.192 (6.472) | 52.792 (7.505) |
| Men's conflict | 43.851 (.054) | 58.367 (8.380) |

*Note*. $N = 194$ scores (two individuals nested within 97 couples). For fixed effects, cell entries are unstandardized slopes; values in parentheses are standard errors of the parameter estimates. For random parameters, cell entries are covariance estimates; values in parentheses are standard errors of the parameter estimates. BDI = Beck Depression

Inventory (depression symptoms); MSI = Marital Satisfaction Inventory–Global Distress (rela- tionship satisfaction). BDI and MSI values are grand-mean centered. Actor's sex was coded such that 1 = males, −1 = females.
$^{*}p < .05$. $^{***}p < .001$.

Table 6
*Multilevel Models Predicting the Raw Frequency of Demand/Withdraw and Demand/Submit Sequences From Actor and Partner Depression Diagnostic Status and Relationship Adjustment*

| Variable | Demand/withdraw | Demand/submit |
|---|---|---|
| Fixed effects | | |
| Intercept | 7.769 (0.743)*** | 5.785 (0.741)*** |
| Conflict topic | −0.910 (0.457)* | −0.664 (0.505) |
| Actor depression | −0.078 (0.466) | −0.054 (0.470) |
| Partner depression | 0.065 (0.463) | −0.093 (0.459) |
| Actor DAS | 0.785 (0.592) | 1.153 (0.636) |
| Partner DAS | −1.612 (0.577)** | −2.438 (0.590)*** |
| Actor sex | 0.983 (0.319)** | 0.549 (0.366) |
| Actor Sex*Depression | −0.360 (0.518) | 0.130 (0.511) |
| Partner Sex*Depression | 1.391 (.515)** | 0.242 (0.501) |
| Actor Sex*DAS | −0.464 (0.916) | 0.332 (0.893) |
| Partner Sex*DAS | 0.824 (0.906) | −1.132 (0.861) |
| Random parameters | | |
| Women | | |
| Women's conflict | 36.493 (5.203) | 25.242 (3.728) |
| Men's conflict | 36.957 (5.301) | 39.836 (5.771) |
| Men | | |
| Women's conflict | 41.784 (6.075) | 54.396 (7.864) |
| Men's conflict | 45.178 (6.653) | 53.202 (7.713) |

*Note*. $N$ = 194 scores (two individuals nested within 97 couples). For fixed effects, cell entries are unstandardized slopes; values in parentheses are standard errors of the parameter estimates. For random parameters, cell entries are covariance estimates; values in parentheses are standard errors of the parameter estimates. DAS = Dyadic Adjustment Scale (relationship adjustment); DAS values are grand-mean centered. Depression diagnostic status was coded such that 1 = currently depressed, −1 = not currently depressed. Actor's sex was coded such that 1 = males, −1 = females.
$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

*Table 6. Multilevel Models Predicting the Raw Frequency of Demand/Withdraw and Demand/Submit Sequences From Actor and Partner Depression Diagnostic Status and Relationship Adjustment*

| Variable | Demand/withdraw | Demand/submit |
|---|---|---|
| Fixed effects | | |
| Intercept | 7.769 (0.743)*** | 5.785 (0.741)*** |
| Conflict topic | −0.910 (0.457)* | −0.664 (0.505) |
| Actor depression | −0.078 (0.466) | −0.054 (0.470) |
| Partner depression | 0.065 (0.463) | −0.093 (0.459) |
| Actor DAS | 0.785 (0.592) | 1.153 (0.636) |
| Partner DAS | −1.612 (0.577)** | −2.438 (0.590)*** |
| Actor sex | 0.983 (0.319)** | 0.549 (0.366) |
| Actor Sex*Depression | −0.360 (0.518) | 0.130 (0.511) |
| Partner Sex*Depression | 1.391 (.515)** | 0.242 (0.501) |
| Actor Sex*DAS | −0.464 (0.916) | 0.332 (0.893) |
| Partner Sex*DAS | 0.824 (0.906) | −1.132 (0.861) |
| Random parameters | | |
| Women | | |
| Women's conflict | 36.493 (5.203) | 25.242 (3.728) |
| Men's conflict | 36.957 (5.301) | 39.836 (5.771) |
| Men | | |
| Women's conflict | 41.784 (6.075) | 54.396 (7.864) |

| | | |
|---|---|---|
| Men's conflict | 45.178 (6.653) | 53.202 (7.713) |

*Note*. $N = 194$ scores (two individuals nested within 97 couples). For fixed effects, cell entries are unstandardized slopes; values in parentheses are standard errors of the parameter estimates. For random parameters, cell entries are covariance estimates; values in parentheses are standard errors of the parameter estimates. DAS = Dyadic Adjustment Scale (relationship adjustment); DAS values are grand-mean centered. Depression diagnostic status was coded such that 1 = currently depressed, −1 = not currently depressed. Actor's sex was coded such that 1 = males, −1 = females.
$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

### *Demand/withdraw sequences*

Overall, men initiated more demand/withdraw sequences than women did, β = .531, $t(282) = 2.01$, $p = .045$. Demand/withdraw also occurred more frequently in men's versus women's conflict discussions, β = .909, $t(283) = 1.97$, $p = .05$. For relationship quality, partners' relationship adjustment was negatively associated with actors' initiation of demand/withdraw sequences, β = 1.126, $t(267) = 2.80$, $p = .006$. With respect to depression, a Gender × Partner's Depression diagnostic status interaction was evident, β = 1.149, $t(120) = 2.70$, $p = .008$. The two-intercept model constructed to estimate and test separate coefficients for men and women (Kenny et al., 2006) revealed that men's depression status was positively associated with female demand/male withdraw sequences, β = 1.279, $t(105) = 2.27$, $p = .025$. In contrast, women's depression status was negatively associated with male demand/female withdraw sequences but missed significance, β = .869, $t(110) = 1.55$, $p = .124$.

### *Demand/submit sequences*

A gender main effect revealed that men initiated more demand/submit sequences overall than women did, β = .630, $t(250) = 2.05$, $p = .042$. For relationship quality, partners' relationship adjustment was negatively associated with actors' initiation of demand/submit sequences, β = 1.703, $t(304) = 4.13$, $p = < .001$. No depression effects reached significance.

## H3

Drawing on the interpersonal theory of complementarity, H3 predicts that the association between demand and submit is stronger overall than the association between demand and withdraw. To evaluate this, we used the nonparametric version of a dependent-samples *t* test, the Wilcoxon signed-rank test, to compare the magnitude of the demand/withdraw and demand/submit phi coefficients. Results indicated that for both men and women, demand/submit had a stronger association than demand/withdraw (test statistic = 5,729.00, standardized test statistic = −4.41, $p < .001$ for men, and test statistic = 5,052.00, standardized test statistic = −4.96, $p < .001$ for women).

## H4

The final hypothesis predicted that couples demonstrate a high degree of stability over time in demand, withdraw, and submit behaviors. We began this analysis by testing the Markov stationarity assumption. First, we split each couple's interaction in half and constructed two pairs of AB and BA matrices, one from the first half and one from the last half of the interaction. Next, we compared the proportions of behavior predicted for each partner by these matrices. To do this, we employed profile correlations that incorporated all SASB clusters, as well as repeated-measures *t* tests of the demand, submit, and withdraw behaviors. Both methods indicated a high level of consistency. The average profile correlations for the sample were $r = .77$ (for men) and $r = .78$ (for women) in each conflict task. In the man's conflict task, female submission was the only significant difference among demand, submit, and withdraw behaviors across halves of both conflict tasks, increasing slightly from a proportion of .12 to .14, $t(96) = -2.30$, $p = .024$. Taken together, these data indicate strong similarity across halves of each couple's interaction, justifying the Markov stationarity assumption.

To test H4, we raised the AB and BA Markov matrices for each couple and conflict task to the 25th power, producing the expected behavioral patterns for each partner projected over time. The resulting Markov vectors were then compared with the initial proportions of actors' observed behavior. Inspection of the results in Figure 2 show that demand and withdraw behaviors (both observed and predicted) occurred at approximately the same rate, with submit behaviors exhibited about half as often. Correlational analysis of the resulting profiles for each dyad revealed a high degree of consistency between initial and predicted behavior across all SASB clusters; the average profile correlation between observed and predicted values was $r$ = .98 for each partner and for each conflict task (range: 0.69–1.0). Mean levels of observed and predicted values for demand, withdraw, and submit behaviors showed very few changes. Absolute values of the observed differences were very small; all predicted values fell within 6.5% of the initial proportions. This high degree of consistency suggests that couples' behavioral sequences are likely to be very stable across time.

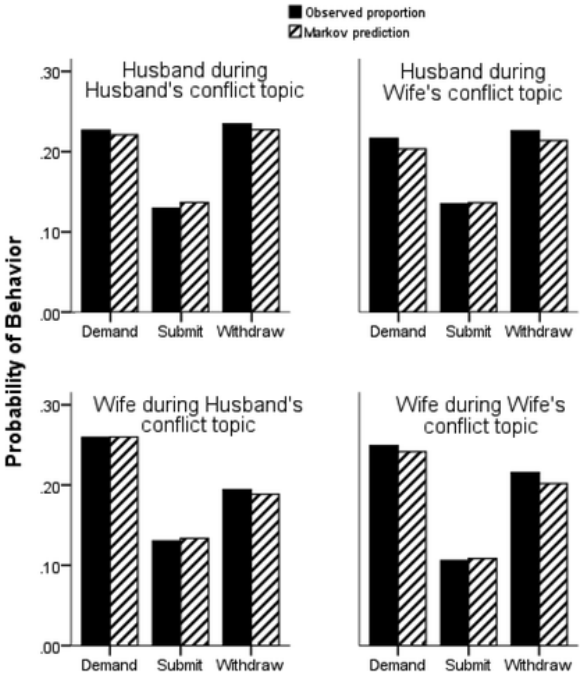


*Figure 2. Mean proportion of behavior observed and predicted using Markov chain analyses by each partner and conflict topic.*

# Discussion

Using a clinical sample of couples, we evaluated two sequences thought to be related to depression and relationship distress, demand/withdraw and demand/submit, by observing behavior at the level of moment-by-moment interaction. We sought to improve on previous work by evaluating sequences at varying levels of specificity; establishing the stability of behavioral sequences; and testing their unique associations with actors' and partners' relationship quality and depression.

## Implications of the Findings

When demand, withdraw, and submit behaviors were examined in aggregate, after actors' and partners' depression were covaried, all showed the predicted negative associations with relationship quality. This replicates previous results linking demand and withdraw behaviors to relationship distress (e.g., Christensen, Eldridge, Catta-Preta, Lim, & Santagata, 2006; Eldridge et al., 2007; Papp et al., 2009). However, a close examination of actor and partner effects indicates that the relational impact of these behaviors differs depending on whether a person is enacting or receiving the behavior.

Our evidence suggests enacting demanding behavior and receiving submissive behavior from one's partner is negatively associated with relationship quality. This implies that relationship distress is marked by struggles for power and control (Knobloch-Fedders, Knobloch, Durbin, Rosen, & Critchfield, in press; Smith, Uchino, Berg, & Florsheim, 2012). Alternatively, it may be that even accepted, but asymmetrical, power differences lead to distress for one or both partners (Zietlow & VanLear, 1991).

Interestingly, withdrawal showed a very different set of associations. Relationship satisfaction was positively associated with enacting withdrawal, but negatively associated with receiving withdrawal from one's partner. Interpersonally, withdrawal can be conceptualized as a way to avoid or end conflict, and as such may be an attempt to minimize the physiological or psychological impact of the conflict's negativity (Levenson & Gottman, 1983; Taylor, 1991). Thus, withdrawal is negatively reinforcing for the partner who withdraws but aversive to the person requesting change because it inhibits conflict resolution (Papp et al., 2009).

With respect to depression, after covarying actors' and partners' relationship quality, demand behavior was positively associated with depression symptoms for women, but negatively associated with depression symptoms for men. It may be that depression symptoms are related to the extent to which one's behavior violates socially constructed gender norms for dominance (Archer, 2004; Eagly & Wood, 1999) or that depression symptoms are manifested differently by gender. For example, depressed women may be more likely to convey their distress overtly via demanding change, while depressed men may be more likely to inhibit expressions of distress and relationship-based needs.

When we compared our tests of the behavioral components measured in aggregate with our sequential analysis, we found some striking contrasts. For example, participants withdrew twice as often as they submitted overall (25% vs. 13% for men and 22% vs. 11% for women; see Table 1). However, as predicted by complementarity theory (Benjamin, 1996), after controlling for base rates of behavior, submission (rather than withdrawal) was more likely to follow demand. This pull of complementarity was particularly striking given that withdraw was operationalized using three SASB clusters of behavior, while submit drew from only two. Given that demand/submit has been relatively unexplored to date, we encourage further study of this sequence among couples with psychological or relational pathology.

Another example of the contrasting results obtained when behaviors were evaluated in sequences versus in aggregate involved gender-linked patterns of demand. When behaviors were analyzed in aggregate, women exhibited more demanding behavior (Baucom et al., 2010; Christensen & Shenk, 1991; Eldridge et al., 2007), while men displayed more submissive behavior. However, sequential analysis revealed that men initiated more demand/withdraw and demand/submit sequences than women. In other words, women were likely to follow men's demands with either withdrawal or submission, but men tended to respond to women's demands using other types of behaviors. These contrasting results point to the importance of studying behaviors in temporal sequences, not simply as behavioral aggregates.

With respect to relationship quality, demand/withdraw and demand/submit sequences were uniquely associated with partners' relationship quality. That is, relationship distress was related to receiving demanding behavior from one's partner, and responding with either withdrawal or submission. In dyadic research, it is rare for partner effects to exist in the absence of actor effects (the "partner-only pattern"; Kenny & Cook, 1999; Kenny & Ledermann, 2010). Notably, this implies that the person facing demands and responding with either withdrawal or submission is more at risk for relationship distress than the partner demanding change.

Although demand/withdraw was not related to depression in the overall sample after covarying relationship distress, men diagnosed with depression *were* more likely to experience female demand/male withdraw sequences. This result converges with the one prior study that also covaried relationship distress and measured

depression as clinical disorder (Baucom et al., 2007). It appears that a certain threshold of men's depression severity (i.e., as indexed by diagnosis) is required to account for unique variance in demand/withdraw over and above that attributable to relationship dysfunction. Clearly, more research with clinical samples is needed to fully explore the associations among gender, depression diagnosis, and demand/withdraw.

Finally, couples' conflict interactions showed a high degree of behavioral stability, as evidenced by the results of our Markov chain analyses. Because couples' demand, withdraw, and submit behaviors showed little expected change from the probabilities defined by their starting conditions, they represent processes that are relatively enduring and self-perpetuating. As such, they are likely to remain stable without intervention. Because of this, they pose distinct treatment challenges, as clinicians work to shift couples toward more flexible, adaptive patterns of behavior involving less hostility and control.

Clinically, observation of couples' demand/withdraw and demand/submit sequences should prompt therapists to explore potential power imbalances, differential preferences for closeness or distance, or issues with equality, fairness, or decision making. Since demand/withdraw is related to lack of fulfillment in other life areas, such as career or family (Nichols & Rohrbaugh, 1997), therapists may also find it useful to explore each partner's satisfaction with their lives outside the relationship.

## Limitations and Directions for Future Research

Several limitations of this study are important to consider. First, our analysis evaluated each talk turn for the presence or absence of demand, withdraw, and submit behaviors, regardless of their overall frequency or intensity. Moreover, because we utilized talk turns to demarcate sequences, one talk turn could simultaneously represent the ending of one sequence and the beginning of another. Because couples' interactions represent continuous streams of behavior, however, any unit of segmentation chosen for sequential analysis is an arbitrary demarcation.

Second, although systemic theories of depression (e.g., Beach & Cassidy, 1991; Coyne, 1976; Joiner, Alfano, & Metalsky, 1993) imply that depressed couples engage in recursive behavioral sequences that presumably develop over long time periods, we measured two-step sequences at the utterance level. The behavioral stability we found underscores the likelihood that these sequences reflect developmental patterns of interaction which play out over longer stretches of time than we were able to assess here.

Third, the exploratory nature of our study led us to evaluate sequences at varying levels of specificity. In doing so, we were able to highlight the differences obtained when behaviors were analyzed in aggregate versus in sequences. However, because the number of analyses we performed may have inflated our experiment-wise error rate, replication is needed to establish the reliability and generalizability of our results. Because our investigation was limited to heterosexual couples, it is particularly important to include same-sex couples in future work. Finally, this study's cross-sectional design prevented us from testing causal hypotheses about the direction of effects. Because evidence points to a bidirectional relationship between depression and relationship distress (Davila, Bradbury, Cohan, & Tochluk, 1997), longitudinal investigations designed to tease apart causal effects are essential.

Several directions for future research are illuminated by this work. First, more observational studies of behavioral sequences are sorely needed. We could find only one other study (Klinetob & Smith, 1996) that investigated demand/withdraw using observational assessment conducted at the utterance level. We believe careful measurement of sequential patterns of behavior is necessary to advance the field.

Second, we encourage other scholars to employ circumplex assessment in clinical research with couples. Grounded in interpersonal theory, circumplex assessment provides sophisticated measurement tools founded in a rich tradition of conceptual and empirical support. With respect to intervention, evaluating pre- and

posttreatment changes in couples' behavior using circumplex tools to study whether such changes are associated with treatment process or outcome is an important next step.

Finally, because our results underscore the complex, reciprocal nature of each partner's influence on the other, learning more about the impact of these behaviors on both actors and partners would be beneficial. Although our study is the first we are aware of to evaluate both actor and partner effects, the differential pattern of effects we found provides a basis for conceptual and empirical advancement in this area.

## Footnotes

1 H2 and H3 evaluate slightly different questions, as the following example illustrates. Consider 20 pairs of male/female talk turns for Couples A, B, and C that result in the same number of total demand/submit sequences but have a different pattern of contingent response. In Couple A, the husband demands in 10 of his 20 talk turns, while his wife submits in 10 of hers. Half of the wife's submit behaviors occur following her husband's demand. Couple A's phi coefficient is zero, indicating no contingent association between the two behaviors. In Couple B, the husband also demands in 10 of his 20 talk turns; his wife submits following five of these but never submits following any other behavior. The phi coefficient for Couple B is .58. Finally, in Couple C, the husband demands in only five of his 20 talk turns, but these five are all followed by submission from his wife, who never submits otherwise. Couple C's phi coefficient is 1.0, indicating a perfect association between husband demand and wife submit. Couples A, B, and C thus have the same total number of demand/submit sequences (five), which is the dependent variable used in H2, but show markedly different strengths of association (i.e., contingency) between demand and submit behaviors (the construct operationalized in H3).

2 Although same-sex couples were invited to participate, only two completed data collection procedures. Because of this, we report results from the sample of heterosexual couples only.

3 SASB contains a third type of behavioral focus, *Focus Turned Inward* or *Introject*, which was not used in this study due to its intrapersonal, rather than interpersonal, focus.

4 For analytic purposes, all behaviors assigned to more than one cluster were treated as if each component was a separate behavior.

5 The other two conflict interactions were excluded from reliability calculations due to missing data from coders' independent coding.

6 Using the demand/withdraw phi coefficient as an illustrative example, the dichotomous variables are demand behavior (present vs. absent) in Partner A's talk turn, and withdraw behavior (present vs. absent) in Partner B's subsequent talk turn.

7 Benjamin (1979a) describes how A and B matrices represent subsets of a larger transition matrix, *T*, which contains all possible transitions between both partners. Since our data are analyzed so that one partner always follows the other in sequence, *T* has zeroes entered for all cells involving transitions from one speaker back to that same speaker on the next turn at talk. In this circumstance, analysis of *T*, more commonly presented in standard texts as the basis for Markov chain analysis, is mathematically equivalent to the separate treatment of AB and BA matrices performed here.

8 Given that the DAS and MSI also tap affective communication, it is possible that they are confounded with demand/withdraw and demand/submit. However, Caughlin and Huston (2002) demonstrated that, although demand/withdraw is correlated with global negativity and positivity, it represents a distinct construct that predicts relationship quality after covarying other, related forms of negative and positive communication behavior. Their results provide rationale for our use of the DAS and MSI as predictors of the behavioral indicators.

9 Additional exploratory analyses were conducted to test whether the strength of association between demand and withdraw, or between demand and submit, predicted relationship quality or depression. To test

this, phi coefficients were substituted as dependent variables in the same multilevel models used to test H2. No significant effects were found for any of the relationship quality or depression indicators.

10 Given the high degree of behavioral stability indicated by the Markov analyses, it was not anticipated that any of the indicators of relationship quality or depression would predict unique variance in change in demand, withdraw, or submit behaviors from initial probabilities to those predicted after 25 iterations of interaction. Confirming this, exploratory analyses were conducted in which Markov vectors raised to the 25th power were substituted as dependent variables in the same multilevel models used to test H2, with Markov vectors representing initial probabilities entered as an additional covariate. Only one effect emerged: Partners' depression symptoms were negatively associated with a predicted increase in actors' demand behavior from initial probabilities, β = .005, $t(208) = 2.29$, $p = .023$.

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