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# Comparing the Interpersonal Behavior of Distressed Couples with and Without Depression

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Abstract

Objective

This study compared the interpersonal behavior of distressed couples with depression in one partner ( $n = 23$ ) to distressed couples without depression in either partner ( $n = 38$ ).

## Method

Participants (mean age = 44 years old) were recruited at an urban outpatient mental health center. Couples discussed the three best things in their relationship, and their interactions were coded using Structural Analysis of Social Behavior (Benjamin, 1987).

## Results

Self- and partner-focused hostility were associated with actors' and partners' relationship distress. Actors' hostility towards partners was positively associated with partners' depression status, but negatively associated with partners' depression symptoms. Actors' control behavior was positively associated with their relationship distress. Whereas the behavior of depressed individuals did not differ from a control sample of nondepressed individuals, partners of depressed individuals displayed more partner-focused hostility and submissiveness than controls.

## Conclusions

Results underscore the importance of considering partner effects when conceptualizing depression within distressed relationships.

## Introduction

The link between depression and relationship quality has been established by over three decades of research (for review, see Rehman, Gollan, & Mortimer, **2008**). A meta-analysis of 26 studies indicated that 44% of the variance in depressive symptoms is explained by concurrent relationship dissatisfaction (Whisman, **2001**). In fact, people in distressed marriages experience a 10-fold increased risk of depression, regardless of gender (O'Leary, Christian, & Mendell, **1994**). Evidence suggests the causal relationship between depression and relationship distress is bidirectional (Davila, Bradbury, Cohan, & Tochluk, **1997**). However, much remains unknown about the associations between interpersonal behavior, relationship distress, and depression in couples. This study seeks to advance our knowledge by directly comparing the interpersonal behavior of distressed couples with and without depression.

### Interpersonal Theories of Depression in Couples

Several theories suggest ways in which the interpersonal behavior of depressed individuals and their partners may differ from that of nondepressed couples. The *interactional theory of depression* (Coyne, **1976b**) postulates that depressed individuals and their partners engage in repetitive interactional sequences marked by interpersonal hostility, control, and distance. First, the depressed person reacts to an insecure situation by exhibiting distress and passivity, which shifts the interactional burden onto his or her partner (Coyne, **1976a**) and exerts aversive control over the partner's behavior (Nelson & Beach, **1990**; Schmalting & Jacobson, **1990**). This evokes the partner's guilt, inhibition, and heightened negative emotion (Coyne, **1976a**), and in response, the partner complies by attempting to give reassurance. However, when the depressed person fails to accept this support by making continued requests for reassurance, the partner communicates mounting hostility and impatience. To reduce the growing aversiveness of the situation, the partner copes by avoiding, ignoring, or rejecting the depressed person. This rejection is accurately perceived by the depressed individual, creating even more symptomatic distress (Leff & Vaughn, **1985**) and reinforcing the pattern, leading to rigid, repetitive sequences that become stable over time.

*Integrative interpersonal theory* extends Coyne's (1976b) theorizing by focusing on two behaviors associated with depression: reassurance seeking and negative feedback seeking (Joiner, Alfano, & Metalsky, 1993; Joiner & Metalsky, 1995). *Reassurance seeking* entails asking for confirmation that one is valued, loved, and worthy (Joiner, Metalsky, Katz, & Beach, 1999). *Negative feedback seeking* refers to soliciting disapproval, criticism, and disparagement (Joiner, 1995). These behaviors are associated with increased hostility and stress within the relationship (for reviews, see Pettit & Joiner, 2006; Timmons & Joiner, 2008).

#### *Observational Research on Depression in Couples*

Observational research comparing couples with depression to those without has confirmed several global differences in interpersonal behavior suggested by the interactional theory of depression and integrative interpersonal theory. Compared with nondepressed couples, couples with a depressed partner display more negative behavior (hostility) and less positive behavior (warmth and friendliness; Gotlib & Whiffen, 1989; McCabe & Gotlib, 1993; Ruscher & Gotlib, 1988). During conflict tasks, depressed women enact more depressive behavior and less problem-solving behavior, and both partners disclose less frequently than nondepressed couples (Biglan et al., 1985). Unfortunately, however, these studies have focused almost exclusively on couples' conflict interactions, leaving other discussion topics unexplored (Davila et al., 1997; Rehman et al., 2008). It is unclear whether distressed couples with depression differ from those without when interacting under conditions designed to promote positive affect and intimacy, rather than negative affect and disagreement.

Previous studies also have focused largely on differences in couples' affiliation-related behavior while neglecting control-related behavior. However, the interactional theory of depression and integrative interpersonal theory suggest that, in addition to increased hostility, couples with and without depression are likely to differ in interdependence behavior. Because the depressed person's reassurance seeking and negative feedback seeking exerts aversive control over the partner's behavior (Nelson & Beach, 1990; Schmaling & Jacobson, 1990), the partner complies (submits) by giving reassurance. When the depressed person fails to accept this support, the partner in turn communicates growing levels of hostility. An important next step is to test whether these control- and submission-related interpersonal behaviors distinguish couples with depression.

#### The Complex Interplay Between Depression and Relationship Distress

Because depression and relationship distress are so strongly associated, most studies have statistically controlled for relationship distress (e.g., Johnson & Jacob, 1997; Schudlich, Papp, & Cummings, 2004), rather than directly comparing depressed / distressed versus nondepressed / distressed couples. Moreover, because previous work has tended to rely on self-report measures of depression (e.g., Cohan & Bradbury, 1997; Fletcher & Thomas, 2000), rather than confirming the presence of depressive disorders via standardized diagnostic clinical interviews, it is unclear whether the interpersonal differences observed in couples with depression are associated with depression symptomatology, the presence of depressive disorders, or both. These two ways of measuring depression, although related, do not fully overlap (e.g., depression symptoms and clinical ratings of depression disorders share an average correlation of .60 in nonpsychiatric samples; Beck, Steer, & Garbin, 1988).

We are aware of only four studies that have (a) directly compared the interpersonal behavior of depressed / distressed couples versus nondepressed / distressed couples and (b) measured depression

using diagnostic criteria. Three studies showed that wives' depressive behavior (for example, negative self-evaluations, dysphoric affect, physical or psychological complaints, negative statements about the future, slow speech, monotone vocal cues) during discussions about problems in the relationship discriminated between depressed / distressed and nondepressed / distressed groups (Jackman-Cram, Dobson, & Martin, **2006**; Nelson & Beach, **1990**; Schmalting & Jacobson, **1990**). One study found that while interactions of depressed / distressed couples were more negative, incongruent, and asymmetrical, no other interpersonal differences distinguished these groups, and no differences were detected when partners of those with and without depression were compared (Hautzinger, Linden, & Hoffman, **1982**).

The failure to identify extensive interactional differences between depressed / distressed couples and nondepressed / distressed couples has sparked debate regarding whether the presence of relationship distress, rather than depression, is the key component associated with couples' interpersonal behavior. Schmalting and Jacobson (**1990**), reflecting on their study's failure to find widespread behavior differences distinguishing distressed couples with depression from distressed couples without depression, speculated that "marital distress rather than the presence of depression per se may be responsible for the dysfunctional interactional patterns observed in depressed couples" (p. 229).

### Interpersonal Theory as a Framework for Evaluating Couples' Behavior

One possible explanation why specific behaviors differentiating depression in the context of relationship distress have not yet been identified is that previous studies have lacked comprehensive, theory-driven assessments of interpersonal behavior, applied at the degree of resolution necessary to detect differences. We propose that interpersonal theory, building on the seminal contributions of Harry Stack Sullivan (**1953, 1954**) and Timothy Leary and his colleagues (Freedman, Leary, Ossorio, & Coffey, **1951**; Leary, **1957**), has the potential to provide such a conceptual framework. Interpersonal theory operationally defines adaptive and maladaptive behavior patterns with the specificity necessary for clinical assessment and treatment planning (Benjamin, **1994**; Kiesler, **1996**). Although theorists have long argued that the systematic and thorough description of interpersonal behavior is critical to the treatment of psychopathology, including depression (e.g., Adams, **1964**; McLemore & Benjamin, **1979**), researchers have not utilized the theory's measurement tools, particularly the interpersonal circumplex, in studies of depression in couples.

The *interpersonal circumplex* is a simple yet comprehensive model of adult interpersonal behavior initially developed by Leary and colleagues (Freedman et al., **1951**). The circumplex arranges the array of interpersonal behavior into a circular continuum constructed using two orthogonal constructs: *control* (a bipolar dimension ranging from dominance to submission) and *affiliation* (a bipolar dimension ranging from hostility to friendliness). Using these two orthogonal dimensions, interpersonal behavior can be mapped onto a circle and measured on a dimensional (not simply categorical) basis, as similar interpersonal behaviors are represented spatially next to each other with fuzzy boundaries between them.

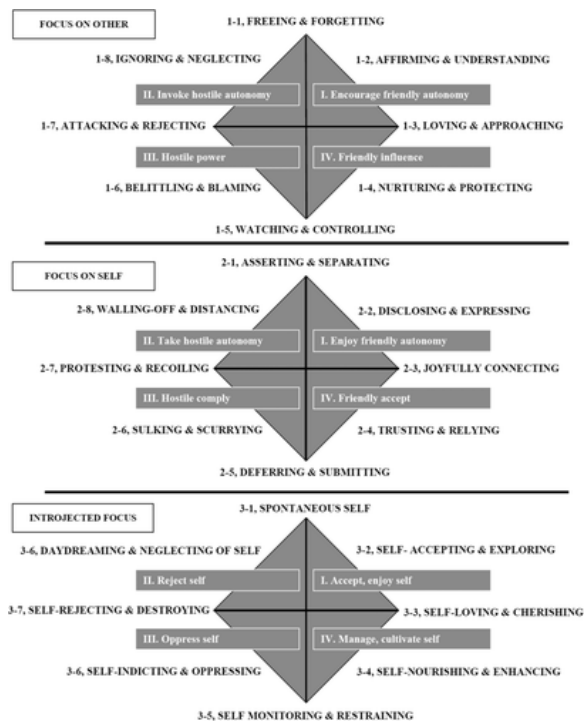
Structural Analysis of Social Behavior (SASB; Benjamin, **1979, 1987, 2000**) is a tool for operationalizing interaction that integrates Leary's model with Schaefer's (**1965**) model of parent-child behavior. Schaefer (**1965**) highlighted two important additional constructs: the focus of behavior, and the degree

of enmeshment versus differentiation present. By integrating these concepts, SASB's circumplex employs three dimensions: (a) behavioral focus, (b) affiliation, and (c) interdependence.

*Behavioral focus* differentiates behavior into three distinct domains: *Focus on Other*, describing behavior done to, for, or about another person (e.g., “he controls her” or “she attacks him”); *Focus on Self*; or behavior done to, for, or about the self in relation to the other person (e.g., “she submits to him” or “he recoils from her”); and *Focus turned Inward*, or intrapersonal behavior directed towards the self (e.g., “he rejects himself” or “she accepts herself”).

SASB's *affiliation dimension* classifies interpersonal behavior on a bipolar continuum ranging from hostility to friendliness. It is used to categorize behavior ranging from extremes of hate (attack, recoil) to love (active love, reactive love).

Finally, in contrast with two-dimensional interpersonal circumplex models, SASB labels the control construct *interdependence*. It classifies behavior ranging from dominance to autonomy granting (for *Focus on Other* behaviors), and submission to autonomy taking (for *Focus on Self* behaviors; see Figure 1). In this way, the interdependence dimension spans extremes of behavioral enmeshment (control, submission) to differentiation (allowing autonomy, asserting).



**Figure 1** Structural Analysis of Social Behavior, combined quadrant and cluster model from Benjamin, L.S. (2000). SASB User's Manual. Copyright 2000, University of Utah.

*Note.* The two-word, eight-cluster version used for the coding in this study is from Benjamin (1987). The figure combines the two-word SASB cluster model in Benjamin (1987) with the quadrant version in Benjamin (1979). A variation of this combination appeared in Benjamin (1984). Reprinted here with permission.

SASB's ability to fully evaluate interdependence behaviors (i.e., assessing not just control and submission, but also separation and autonomy) is a distinct measurement advantage because previous studies have focused largely on differences in couples' affiliation-related behavior, leaving

interdependence-related behavior unexplored. However, integrative interpersonal theory (Joiner et al., **1993**; Joiner & Metalsky, **1995**) and the interactional theory of depression (Coyne, **1976b**) suggest that couples with depression are likely to differ from those without in both affiliation and interdependence, making each of these domains relevant to the study of depression within the context of distressed relationships.

### Purpose of the Study

This study employs SASB's theoretically driven, observational approach to examine the associations between interpersonal behavior, relationship distress, depression diagnostic status, and depression symptoms within a comparison sample of two distressed couple groups (depressed and nondepressed). To extend previous work on couples and depression beyond the conflict paradigm, we chose to observe interpersonal behavior using a discussion topic designed to facilitate the expression of positive affect and intimacy rather than conflict. Finally, we employed the Actor-Partner Interdependence Model (APIM; Cook & Kenny, **2005**; Kenny, Kashy, & Cook, **1999**) to test both actor and partner effects of relationship distress, depression diagnosis, and depression symptoms on interpersonal behavior. *Actor effects* occur when an individual's data predict his or her own outcomes, and *partner effects* exist when a partner's data predict an individual's outcomes. We employed multiple measures of depression to evaluate the predictive validity of depression measured categorically (via the presence of depressive disorders) versus dimensionally (via symptom reports).

Beyond couple-level differences, we were interested in evaluating whether depressed individuals, their partners, or both differed from nondepressed individuals with respect to their interpersonal behavior. Finally, although gender was not an explicit focus of this study, we explored sex differences given the extensive evidence of gender differences in depression (for review, see Piccinelli & Wilkinson, **2000**).

### Hypotheses

We evaluated four formal hypotheses and four exploratory research questions. Together they formalize our logic about how depressed couples may differ from nondepressed couples on the dimensions of affiliation and interdependence, respectively.

#### *Affiliation behavior predicted by relationship distress and depression (H1, H2)*

The first pair of hypotheses tested whether individuals' affiliation-related behavior is associated with their own or their partners' dyadic satisfaction, depression status, or depression symptoms. Examining actor effects, *H1* predicted that individuals' hostility would be positively associated with their own relationship distress, depression status, and depression symptoms. *H2*, testing partner effects, predicted that individuals' hostility would be positively associated with their partners' relationship distress, depression status, and depression symptoms. Given the lack of theoretical and empirical work distinguishing the expression of hostility by behavioral focus, no specific prediction was advanced about whether other-focused hostility (i.e., hostility manifested by directly attacking others) or self-focused hostility (i.e., hostility expressed via fearful recoil or wary expectation of another's attack) would be differentially predicted by actors' or partners' relationship distress or depression.

#### *Interdependence behavior predicted by relationship distress and depression (RQ1, RQ2)*

The first pair of research questions examined whether depressed and nondepressed couples differ in their interdependence-related behaviors, as the interactional theory of depression (Coyne, **1976b**) and

integrative interpersonal theory (Joiner et al., 1993; Joiner & Metalsky, 1995) suggest. *RQ1* asked whether individuals' controlling behavior is associated with their own relationship distress, depression status, and depression symptoms (actor effects). *RQ2* investigated whether individuals' submissive behavior is associated with their partners' relationship distress, depression status, and depression symptoms (partner effects).

*Comparing the affiliation behavior of depressed individuals and their partners to individuals from nondepressed couples (H3, H4)*

At the level of the individual, we were interested in whether the interpersonal behavior of depressed individuals, their partners, or both differed from nondepressed individuals. Therefore, the second pair of hypotheses evaluated whether the affiliation-related behavior of depressed individuals or their partners differs from the behavior of individuals from nondepressed couples. We predicted that, after covarying relationship distress, depressed individuals (*H3*) and their partners (*H4*) would exhibit more hostility compared to individuals from nondepressed couples.

*Comparing the interdependence behavior of depressed individuals and their partners to individuals from nondepressed couples (RQ3, RQ4)*

The final pair of research questions investigated whether the interdependence behavior of depressed individuals or their partners differs from that of nondepressed individuals. *RQ3* investigated whether depressed persons exhibit more controlling behavior compared to individuals from nondepressed couples. *RQ4* explored whether partners of depressed individuals display more submissive behavior compared to individuals from nondepressed couples.

## Method

Data were collected at an outpatient mental health center located in an urban Midwestern setting as part of a larger study of depression, interpersonal behavior, and couple psychotherapy. Couples were offered either (a) 16 sessions of free conjoint psychotherapy for participating in both this study and a follow-up study or (b) \$100 for participating only in the current study.

### Participants

Recruitment efforts were designed to maximize the presence of depression and / or relationship distress using targeted radio, newspaper, and Internet advertisements, plus flyers displayed in community centers, shopping centers, churches, and synagogues. These advertisements ("Are you unhappy in your relationship? Are your relationship problems affecting your health, relationship, or family?") invited people in committed romantic relationships to call the mental health center if they were interested in participating in the study.

Initial calls were answered by a trained research assistant who inquired about the presence of depressive symptoms or relationship distress using a script developed for this study. Couples were ineligible if (a) they had been together less than 6 months; (b) either partner reported imminent suicide potential, psychosis, domestic violence, current substance or alcohol use disorders, or lifetime diagnosis of schizophrenia or bipolar disorder; (c) both members of the couple met criteria for depressive disorders; or (d) depressed individuals began or changed dosage of antidepressant medication less than 8 weeks prior to enrollment in the study. Couples excluded based on these criteria were referred to alternative treatment services.



After prescreening, each member of the couple met with a trained diagnostic interviewer to complete the Structured Clinical Interview for DSM-IV-Clinical Version (SCID; First, Spitzer, Gibbon, & Williams, 1997) to identify the presence of current principal or co-principal major depressive disorder (MDD) or dysthymic disorder (DD). 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, along with its predecessor developed for DSM-III-R, is widely employed in intervention research and displays high inter-rater reliability (Williams, Gibbon, First, & Spitzer, 1992). The SCID takes from 45 to 180 minutes to administer, depending on the degree of pathology present.

SCIDs were conducted by a team of licensed clinical psychologists and advanced graduate students (all interviews conducted by graduate students were supervised by the first and third authors to confirm diagnoses).<sup>1</sup> A principal diagnosis was defined as the disorder currently causing the most distress or impairment in functioning; co-principal diagnoses were defined as two diagnoses causing equal amounts of distress and impairment in functioning.

We defined relationship distress at the couple level, rather than at the individual level, because our theorizing suggested that significant distress in one partner affects couple-level processes. Couples were categorized in the depressed / distressed group if (a) one partner met criteria for current MDD or DD, and (b) the couple's average relationship distress score, as assessed by the 32-item Dyadic Adjustment Scale (DAS; Spanier, 1976, 1988), was  $<100$ . Couples were classified in the nondepressed / distressed group if (a) neither partner met criteria for a current mood disorder, and (b) the couple's average DAS score was  $<100$ . Couples' average DAS scores ranged from 48.75 to 98.50 (mean [ $M$ ] = 79.54, standard deviation [ $SD$ ] = 14.29,  $\alpha = .90$ ).

In response to recruitment efforts, 396 couples made initial phone calls requesting more information, 279 agreed to have study information mailed to them, and 126 couples participated in assessment procedures. Of these, 45 were excluded because they did not meet inclusion criteria and another 20 were excluded due to missing data. Therefore, a total of 61 heterosexual couples comprised the sample.

#### *Depressed / distressed couples*

The subsample of couples experiencing depression and relationship distress included 46 individuals who were members of 23 dyads ( $n = 20$  married couples, 1 cohabiting couple, and 2 dating but noncohabiting couples). They ranged in age from 21 to 69 years old ( $M = 46.83$  years,  $SD = 12.22$  years). Their average relationship length was 12 years ( $SD = 9.11$  years, range = 7 months–39 years). Their racial composition was 82.2% Caucasian, 8.9% Latino/a, 4.4% African American, and 4.4% Asian or Asian American.

In these 23 couples, one partner was diagnosed with either MDD ( $n = 10$  women, 5 men), DD ( $n = 4$  women, 2 men), or both ( $n = 1$  woman, 1 man). Depressed individuals' scores on the Beck Depression Inventory (BDI-IA; Beck & Steer, 1993) indicated moderate to severe symptoms ( $M = 22.33$ ,  $SD = 8.19$ , range 11–39). Thirteen depressed people met criteria for one or more comorbid Axis I anxiety disorders, including social anxiety disorder ( $n = 8$ ), generalized anxiety disorder ( $n = 5$ ), panic disorder ( $n = 2$ ), and specific phobia ( $n = 1$ ).

Partners of depressed individuals' BDI-IA scores averaged 11.68 ( $SD = 7.60$ , range 1–31). Six partners of depressed individuals met criteria for Axis I disorders, including generalized anxiety disorder ( $n = 2$ ), depressive disorder not otherwise specified ( $n = 2$ ), social anxiety disorder ( $n = 1$ ), and comorbid generalized anxiety disorder and social phobia ( $n = 1$ ).

#### *Nondepressed / distressed couples*

The subsample of couples in which neither partner was diagnosed with a current mood disorder contained 76 individuals who were part of 38 couples ( $n = 33$  married couples, 4 cohabiting couples, and 1 dating but noncohabitating couple). Participants ranged in age from 25 to 71 years old ( $M = 42.72$  years,  $SD = 10.7$  years), and their relationships averaged 10.81 years in length ( $SD = 9.68$  years, range = 1–45 years). The subsample was 71.1% Caucasian, 9.2% African American, 7.9% Latino/a, 6.6% Asian or Asian American, 3.9% Native American or Pacific Islander, and 1.3% biracial.

In the nondepressed couple subsample, participants' BDI-IA scores averaged 11.51 ( $SD = 7.93$ , range 1–38); 22 individuals (29%) were diagnosed with current Axis I disorders ( $n = 21$  anxiety disorders,  $n = 1$  adjustment disorder). Of these, four individuals met criteria for two or more comorbid anxiety disorders.

## Procedures and Measures

### *Interaction task*

Couples completed a videotaped, 5-minute discussion task as part of the larger study of interpersonal behavior. This discussion task, designed to elicit expressions of intimacy and positive affect, provided the observational data for the study.

After informed consent was obtained, couples were led into a room outfitted with couches, coffee tables, and concealed cameras and microphones. Couples completed several discussion tasks as part of the larger study, and then a research assistant introduced the intimacy-focused discussion task using the following instructions: "Please identify and discuss the three best things in your relationship." The research assistant then left the room and returned five minutes later to begin the study's debriefing process.

### *SASB*

The SASB coding system (Benjamin, **1987**, **2000**) was used to observe moment-by-moment interpersonal behavior. SASB is built around three dimensions: *behavioral focus*, *affiliation*, and *interdependence*.

The interpersonal *focus* of behavior is measured using three different types: "I focus on you," "I react to your focus on me," and "I focus on myself" (Benjamin, **2006**, p. 20). The three types of behavioral focus are represented spatially on SASB using three separate circumplexes, called *surfaces*; these are named Focus on Other, Focus on Self, and Focus turned Inward (see Figure 1). Surface 1, *Focus on Other*, is transitive, describing behavior done to, for, or about another person (e.g., "he ignores her" or "she protects him"). Surface 2, *Focus on Self*, is intransitive, assessing behavior done to, for, or about the self in relation to the other person (e.g., "she walls off from him" or "he discloses to her"). Surface 3, *Focus turned Inward*, describes intrapersonal transitive action directed towards the self, or what the self is doing to, for, or about the self (e.g., "he neglects himself" or "she nourishes herself"). Surface 3 was not used in this study due to its intrapersonal rather than interpersonal focus.

The *affiliation dimension* ranges from extremes of hate (direct attack of another on Surface 1, fearful recoil from another's attack on Surface 2) to love (active love on Surface 1, reactive love on Surface 2). The *interdependence dimension*, which ranges from extremes of differentiation (give autonomy, be separate) to enmeshment (control, submit), 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 measures the full array of interpersonal behavior and includes mild and extreme displays of affiliation, hostility, control, and autonomy. These behaviors, represented by categories on the SASB model called *clusters*, are characterized by the descriptive labels shown in Figure 1. The coding procedure (described subsequently) yields the frequency of occurrence of the various SASB clusters.

#### *Coding procedure*

Following procedures described in the SASB coding manual (Benjamin & Cushing, 2000), the videotaped discussions were coded by pairs of trained coders using the cluster model depicted in Figure 1. Our 22-member coding team included undergraduate and graduate students, postdoctoral fellows, and licensed clinical psychologists. All coders completed at least 50 hours of formal training under the supervision of the fifth author, who has over 14 years' experience training SASB coders. This training included 1.5 hours of weekly didactic instruction, supplemented with videotaped examples, practice assignments, and reliability checks performed using couples' interactions from the pilot data collection phase coded by the first or fifth authors.

All coders were required to achieve a weighted kappa reliability level of at least .70 compared with the first or fifth author on pilot study material before coding study data. Cohen's weighted kappa equal to or greater than .70 is recommended by Benjamin and Cushing (2000) as a training criterion statistic because it adjusts for varying degrees of inter-judge difference around the SASB model. Weighted kappa is calculated based on unit-by-unit agreement, which is valuable for training purposes.

Following procedures described in the coding manual (Benjamin & Cushing, 2000), coding proceeded in several steps. First, written transcripts of couples' interactions were unitized into segments of verbal behavior called *thought units* (an independent clause or sentence typically containing a subject, verb, and object). Next, pairs of coders, who were blind to couples' depression status, used the videotapes and written transcripts to rate both partners' behavior via verbal and nonverbal cues. Coders began by identifying the focus of each behavior (either Focus on Other or Focus on Self). 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 am feeling happy now," 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 never do anything right," 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 shape up right now, I'm leaving you” would be coded as both Watching and Controlling behavior and Walling Off and Distancing behavior.<sup>1</sup> Coders resolved disagreements through discussion to consensus. Coding took approximately 2 hours for each 5-minute interaction. Under the supervision of the first author, all coders met weekly as a group to minimize drift.

#### *Derivation of SASB dimensional scores from behavioral coding*

As described previously, SASB dimensions range on the horizontal axis from extremes of affiliation (love) to hostility (attack, recoil), and on the vertical axis from extremes of autonomy (free, be separate) to enmeshment (control, submit). To assess how much global affiliation and autonomy were present in an interaction, four bipolar dimensional scores (Other-Focused Affiliation, Other-Focused Autonomy, Self-Focused Affiliation, and Self-Focused Autonomy) were derived from the behavioral coding using procedures defined by the SASB coding manual (Benjamin & Cushing, 2000). First, the frequency of behaviors assigned to each cluster was tallied and divided by the total number of behaviors assigned per surface, to obtain behavioral percentages for each cluster. Second, each cluster's percentage was multiplied by weights corresponding to its underlying combination of affiliation and autonomy on the circumplex (see Figure 1). For example, on Surface 1, the Freeing and Forgetting behavioral cluster indicates maximum autonomy granting and is weighted 7.8 in computing the autonomy score, whereas Loving and Approaching is neutral in autonomy granting and is weighted 0. Finally, these weighted frequencies were summed across all eight behavioral clusters per surface to derive the dimensional scores.

Both Other-Focused Affiliation and Self-Focused Affiliation dimensional scores range from hostility (negative scores) to friendliness (positive scores). Other-Focused Autonomy measures the amount of autonomy granting (positive scores) to control (negative scores) on Surface 1, and Self-Focused Autonomy measures the amount of autonomy-taking (positive scores) to submission (negative scores) on Surface 2. Consistent with previous SASB research, which tends to emphasize the negative poles of the bipolar dimensional scores (i.e., forms of hostility and enmeshment), our framing of the hypotheses and results will focus on hostility, control, and submission.

#### *Coding reliability*

Whereas weighted kappa was used as a unit-by-unit benchmark of reliability for training coders, it indexes a much finer degree of resolution than our analyses employed. Because study data represent a consensus between two coders, reliability was computed using an intraclass correlation (ICC) statistic reflecting the average of two raters (i.e., ICC [1,2] per Shrout & Fleiss, 1979). To estimate reliability, two coders working independently classified the first 50 units of each interaction for 58 of the dyads.<sup>2</sup> SASB dimensional scores showed strong reliability for the behavior of both husbands and wives (ICCs ranged from .82 to .91). Descriptive statistics for the sample's SASB dimensional scores are presented in Table 1.

**Table 1.** Descriptive Statistics for SASB Dimensional Scores

	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
<i>Focus On Other</i>				
Affiliation (Friendly vs. Hostile)	-10.40	38.90	15.10	10.84
Autonomy (Free vs. Control)	- 45.00	28.10	- 7.14	12.81

<i>Focus on Self</i>				
Affiliation (Friendly vs. Hostile)	- 16.30	39.50	13.25	11.93
Autonomy (Separate vs. Submit)	- 32.90	44.00	18.93	13.61

SASB = Structural Analysis of Social Behavior; M = mean; SD = standard deviation.

## Results

### Preliminary Analyses

A first preliminary analysis compared the demographic characteristics of individuals in the depressed and nondepressed couple groups using independent samples *t* tests. Results revealed no differences by couple type in age, relationship length, or relationship distress for men or women (see Table 2).

**Table 2.** Independent Samples *t* Tests Comparing Couple Types on Demographics for Males and Females

<b>Males</b>	<b>Depressed/Distressed</b>	<b>Nondepressed/Distressed</b>	<b><i>t</i> (59)</b>
Age	48.00 (12.77)	43.50 (10.75)	1.48
Relationship Length	12.00 (9.25)	10.79 (9.70)	0.48
Dyadic Adjustment	80.85 (14.87)	85.59 (17.14)	- 1.10
<b>Females</b>	<b>Depressed/Distressed</b>	<b>Nondepressed/Distressed</b>	<b><i>t</i> (59)</b>
Age	45.65 (11.80)	41.95 (10.73)	1.26
Relationship Length	12.00 (9.25)	10.79 (9.70)	0.48
Dyadic Adjustment	70.72 (23.90)	78.03 (16.10)	-1.43

*n* = 61 males or females. Cell entries are means; values in parentheses are standard deviations. Age and relationship length are reported in years.

<sup>a</sup> *p* < .05.

A second preliminary analysis calculated bivariate correlations among the SASB affiliation and interdependence dimensional scores for males, for females, and within couples (see Table 3). Most of the behaviors were strongly positively correlated.

**Table 3.** Bivariate Correlations among Independent and Dependent Variables for Males, for Females, and within Couples

	<b>V1</b>	<b>V2</b>	<b>V3</b>	<b>V4</b>	<b>V5</b>	<b>V6</b>	<b>V7</b>
V1: Focus on Other Affiliation (Friendly vs. Hostile)	<u>.60</u> ***	.19	.39 **	.02	.27*	-.06	-.21
V2: Focus on Other Autonomy (Free vs. Control)	.33 **	<u>.56</u> ***	.40 **	.27 *	.18	-.08	.09
V3: Focus on Self Affiliation (Friendly vs. Hostile)	.52 ***	.47 **	<u>.45</u> ***	.32 *	.45***	.01	-.11
V4: Focus on Self Autonomy (Separate vs. Submit)	-.01	.17	.27 *	<u>.17</u>	.15	-.07	-.12
V5: Dyadic Adjustment Scale	.45**	.27*	.36**	.02	<u>.26</u> *	-.32*	-.24
V6: Beck Depression Inventory	-.06	-.08	-.03	-.03	-.25	<u>.10</u>	.54**
V7: Depression diagnostic status	-.10	-.08	-.03	-.03	-.21	.41**	<u>-.22</u>

*n* = 61 males, females, or dyads. Correlations for males appear above the diagonal; correlations for females appear below the diagonal. Within-couple correlations appear on the diagonal and are underlined. Depression diagnostic status is dichotomous (1 = currently depressed; -1 = not currently depressed).

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

## Substantive Analyses

Multilevel modeling using SPSS version 20.0 was employed for the hypothesis tests to accommodate the dependence in the data (Bryk & Raudenbush, 1992). Models were constructed such that individuals were nested within couples, partners were distinguished by an actor's sex, and an interaction term was computed to evaluate an actor's sex as a moderator of depression (Kenny et al., 2006; pp. 173–175).<sup>3</sup> As recommended by Kenny et al. (2006), the method of estimation was restricted maximum likelihood (pp. 86–87), and the covariance structure was heterogeneous compound symmetry (pp. 174–175). Effect sizes were calculated following recommendations for dyadic data (Kenny et al., 2006, pp. 63–64, 179).

*Affiliation behavior predicted by actors' and partners' relationship distress and depression (H1, H2)*

*H1* predicted that individuals' hostility would be positively associated with their relationship distress, depression status, and depression symptoms. *H2* predicted that individuals' hostility would be positively associated with their partners' relationship distress, depression status, and depression symptoms. To test these hypotheses, two multilevel models employing the APIM (Cook & Kenny, 2005; Kenny et al., 2006) were constructed using SASB Other-Focused Affiliation and Self-Focused Affiliation dimensional scores as dependent variables.

Each model contained eight Level 1 predictors: (a) an actor's sex (1 = male, -1 = female); (b) an actor's and a partner's grand-mean centered DAS scores; (c) an actor's and a partner's depression status (1 = currently depressed, -1 = not currently depressed); (d) an actor's and a partner's grand-mean centered BDI scores; and (e) an interaction term calculated as the product of an actor's sex and grand-mean centered BDI score.<sup>4</sup> Accordingly, the models estimated nine fixed effects (the intercept, plus the slopes for sex, actors' and partners' DAS, actors' and partners' depression status, actors' and partners' BDI, and actors' sex x BDI interaction term) and two random effects (variance in the intercepts and error variance).<sup>5</sup>

Results of multilevel models (see Table 4) revealed partial support for *H1*: Actors' relationship distress was positively associated with both actors' other-focused hostility,  $t(98.42) = 3.67, p < .001, d = .66$ , and self-focused hostility,  $t(109.35) = 3.87, p < .001, d = .70$ . With respect to *H2*, partners' relationship distress,  $t(105.31) = 2.41, p = .018, d = .44$ , and depression status,  $t(82.31) = 2.57, p = .012, d = .47$ , were positively associated with actors' other-focused hostility, while partners' depression symptoms were negatively associated with actors' other-focused hostility,  $t(97.68) = -2.38, p = .019, d = .43$ . Finally, partners' relationship distress was positively associated with actors' self-focused hostility,  $t(107.18) = 2.94, p = .004, d = .53$ .

**Table 4.** Multilevel Models Predicting SASB Dimensional Scores from Actor and Partner Effects

	Focus on Other		Focus on Self	
	Affiliation	Autonomy	Affiliation	Autonomy
	(Friendly vs. Hostile)	(Free vs. Control)	(Friendly vs. Hostile)	(Separate vs. Submit)
Fixed Effects				

Intercept	17.04 (1.42)	-7.00 (1.88)	13.64 (1.47)	19.60 (1.74)
Actor DAS	0.31*** (0.08)	0.23* (0.09)	0.34*** (0.09)	0.07 (0.10)
Partner DAS	0.21* (0.09)	0.05 (0.09)	0.26** (0.09)	0.08 (0.10)
Actor Dep	-0.35 (0.25)	0.12 (0.27)	-0.45 (0.25)	-0.30 (0.27)
Partner Dep	-0.64* (0.25)	-0.15 (0.27)	-0.19 (0.24)	-0.21 (0.26)
Actor BDI	0.05 (0.09)	-0.01 (0.10)	-0.01 (0.10)	0.08 (0.11)
Partner BDI	0.23* (0.10)	0.08 (0.11)	0.14 (0.10)	-0.18 (0.11)
Actor Sex	-0.01 (0.07)	-0.06 (0.08)	0.10 (0.08)	0.23 (0.10)*
Actor Sex*Dep	-0.19 (0.20)	0.09 (0.21)	-0.15 (0.22)	-0.14 (0.24)
Random Parameters				
Women	0.75 (0.14)	0.97 (0.18)	0.84 (0.16)	1.05 (0.20)
Men	0.88 (0.17)	1.03 (0.19)	0.81 (0.15)	0.92 (0.17)

SASB = Structural Analysis of Social Behavior; DAS = Dyadic Adjustment Scale; BDI = Beck Depression Inventory; Dep = depression status.  $N = 122$  scores (2 individuals nested within 61 couples). Intercept values are based on unstandardized slopes. For fixed effects, cell entries are standardized slopes; values in parentheses are standard errors of the standardized slopes. For random parameters, cell entries are standardized covariance estimates; values in parentheses are standard errors of the standardized covariance estimates. DAS and BDI values are grand-mean centered. Depression status was coded such that 1 = depressed individual, -1 = nondepressed individual. Actor's sex was coded such that 1 = males, -1 = females.

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

### *Interdependence behavior predicted by actors' and partners' relationship distress and depression (RQ1, RQ2)*

*RQ1* explored whether individuals' controlling behavior is associated with their relationship distress, depression status, and depression symptoms, while *RQ2* investigated whether individuals' submissive behavior is associated with their partners' relationship distress, depression status, and depression symptoms. To examine these research questions, two multilevel models were constructed using SASB Other-Focused Autonomy and Self-Focused Autonomy dimensional scores as dependent variables. Similar to the models testing *H1* and *H2*, the same eight Level 1 predictors (sex, actors' and partners' DAS, actors' and partners' depression status; actors' and partners' BDI; actors' sex x BDI interaction) were employed (see Table 4). Overall, women were more submissive than men,  $t(66.95) = 2.27$ ,  $p = .027$ ,  $d = .37$ . With respect to *RQ1*, actors' relationship distress was positively associated with their own controlling behavior  $t(98.54) = 2.44$ ,  $p = .016$ ,  $d = .44$ . No partner effects emerged in the tests of *RQ2*.

### *Comparing the affiliation behavior of depressed individuals and their partners to individuals from nondepressed couples (H3, H4)*

We predicted that, after covarying relationship distress, depressed individuals (*H3*) and their partners (*H4*) would exhibit more hostility compared to individuals from nondepressed couples.

To test these hypotheses, a randomly selected, gender-matched sample of individuals from the nondepressed couple group was assigned to serve as the comparison group for the depressed individuals, and their partners were designated to serve as the comparison group for the partners of depressed individuals. Randomization procedures were performed using a random integer generator

system (**Random.org**).<sup>6</sup> One individual from each of the 38 nondepressed couples was randomly assigned to the control group for depressed individuals, using the same gender ratio as contained in the group of depressed individuals (i.e., in 66%, or  $n = 25$  couples, the female partner was randomly selected; in 34%, or  $n = 13$  couples, the male partner was randomly selected). These 38 individuals formed the control group for depressed individuals. Their partners served as the comparison group for the partners of depressed individuals.

To evaluate *H3* and *H4*, two multilevel models were constructed using SASB Other-Focused Affiliation and Self-Focused Affiliation dimensional scores as dependent variables. Each model contained five Level 1 predictors: (a) an actor's sex; (b) an actor's grand-mean centered DAS score; (c) depressed group status (1 = depressed individual, -1 = nondepressed control); (d) partners of depressed group status (1 = partner of depressed individual, -1 = nondepressed partner control); and (e) an interaction term constructed as the product of an actor's sex and depressed group status.<sup>7</sup> The models estimated six fixed effects (the intercept, plus the slopes for sex, actors' relationship distress, depressed group status, partners of depressed group status, and the interaction term) and two random effects (variance in the intercepts and error variance).

Results of multilevel models (see Table 5) revealed one gender main effect: Men showed more self-focused hostility than women,  $t(60.81) = 2.43, p = .018, d = .28$ . Evidence failed to support *H3*: After the statistically significant effects of actors' relationship distress was covaried, depressed individuals showed no difference in hostile behavior (either self- or other-focused) compared with controls from nondepressed couples. However, in tests of *H4* partner effects emerged: Partners of depressed individuals showed more other-directed hostility compared to controls,  $t(87.30) = 2.28, p = .025, d = .26$ .

**Table 5.** Multilevel Models Predicting Differences in SASB Dimensional Scores between Depressed Versus Controls and Partners of Depressed Versus Controls

	Focus on Other		Focus on Self	
	Affiliation	Autonomy	Affiliation	Autonomy
	(Friendly vs. Hostile)	(Free vs. Control)	(Friendly vs. Hostile)	(Separate vs. Submit)
Fixed Effects				
Intercept	2.63 (3.88)	-18.60 (4.83)	-4.27 (4.56)	15.03 (5.70)
Actor DAS	0.25** (0.08)	0.21* (0.08)	0.34*** (0.09)	0.06 (0.10)
Dep group	-0.18 (0.13)	0.03 (0.14)	0.01 (0.13)	-0.01 (0.14)
Partner group	-0.28* (0.12)	-0.01 (0.13)	-0.11 (0.12)	-0.26* (0.13)
Actor Sex	-0.07 (0.06)	-0.04 (0.06)	-0.18* (0.07)	0.11 (0.09)
Sex*Dep group	-0.07 (0.11)	0.05 (0.11)	-0.14 (0.12)	-0.08 (0.13)
Random Parameters				
Women	0.81 (0.15)	0.94 (0.17)	0.82 (0.15)	1.04 (0.19)
Men	0.92 (0.17)	1.03 (0.19)	0.89 (0.17)	0.92 (0.17)

SASB = Structural Analysis of Social Behavior; DAS = Dyadic Adjustment Scale.  $N = 122$  scores (2 individuals nested within 61 couples). Intercept values are based on unstandardized slopes. For fixed effects, cell entries are standardized slopes; values in parentheses are standard errors of the standardized slopes. For random parameters, cell entries are standardized covariance estimates; values in parentheses are standard errors of the standardized covariance estimates. DAS values are grand-mean centered. Dep group = depressed group status, coded such that 1 = depressed individual, -1 = nondepressed control. Partner group = partner of depressed



group status, coded such that 1 = partner of depressed individual, -1 = nondepressed control. Actor's sex was coded such that 1 = males, -1 = females.

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

### *Comparing the interdependence behavior of depressed individuals and their partners to individuals from nondepressed couples (RQ3, RQ4)*

The final pair of research questions investigated whether, after relationship distress is covaried, the interdependence behavior of depressed individuals or their partners differs from that of nondepressed individuals. *RQ3* investigated whether depressed persons exhibit more controlling behavior compared to individuals from nondepressed couples. *RQ4* explored whether partners of depressed individuals display more submissive behavior compared to individuals from nondepressed couples.

To test these research questions, two multilevel models were constructed with the same five Level 1 predictors used to test *H3* and *H4*: (a) an actor's sex; (b) an actor's DAS score; (c) depressed group status; (d) partners of depressed group status; and (e) an actor's sex x depressed group status interaction term. SASB Other-Focused Autonomy and Self-Focused Autonomy dimensional scores were employed as dependent variables.

After covarying the statistically significant effects of relationship distress, tests of *RQ3* failed to find differences in interdependence behavior between depressed individuals and controls from nondepressed couples (see Table 5). However, partner effects emerged with respect to *RQ4*: Partners of depressed individuals showed more submissive behavior than controls,  $t(100.48) = 2.02$ ,  $p = .047$ ,  $d = .33$ .

## Discussion

This study sought to advance our knowledge of the interpersonal context of depression by utilizing a circumplex-based, theoretically derived assessment tool, SASB, to identify couples' interpersonal behaviors that distinguish depression in the context of relationship distress. Given questions regarding whether relationship distress or depression is the key component associated with couples' interpersonal behavior dysfunction (Rehman et al., 2008; Schmaling & Jacobson, 1990), it was important to evaluate the unique contributions of both, while also differentiating the two most common ways of measuring depression (e.g., depression diagnostic status and depression symptoms). By employing observational assessment at a microanalytic level, we detected links between actors' and partners' relationship distress and depression and their affiliation- and interdependence-related behavior.

### Implications of the Findings

Although the discussion task used in this study was designed to elicit intimacy and positive affect, our findings replicated well-established results drawn from couples' conflict interactions indicating that relationship distress is associated with increased interpersonal hostility (see Rehman et al., 2008, for review). Perhaps more importantly, the use of SASB allowed us to differentiate between two types of hostility. In SASB terms, interpersonal hostility can be other-focused or self-focused (Benjamin, 1987). *Other-focused* hostility is directed at one's partner, and includes "action-type" behaviors such as blaming, attacking, and ignoring. *Self-focused* hostility is exhibited in response to the

partner, and includes “reaction-type” behaviors like sulking, recoiling, or walling off. Men showed more reactionary hostility than women, consistent with broad sex differences in aggression found by meta-analyses (Archer, **2004**).

Notably, relationship distress and depression were differentially associated with the two types of interpersonal hostility. Relationship distress (both actors’ and partners’) was positively associated with both types of hostility, consonant with the strong links between relationship discord and hostile interactions (Rehman et al., **2008**). However, with respect to depressive disorders, partners of individuals with depression were more likely to demonstrate hostility directed at the depressed person (i.e., blaming, attacking, and ignoring behaviors), consistent with both the interactional theory of depression (Coyne, **1976b**) and integrative interpersonal theory (Joiner et al., **1993**).

This fine-grained distinction regarding the behavioral focus of hostility carries important implications for theory and treatment of depressive disorders. For example, age-old clinical theory postulates that the root of depression is suppressed anger, or “anger turned inwards.” As Freud (**1917/1995**) wrote, “The [depressed] woman who loudly pities her husband for being tied to such an incapable wife as herself is really accusing her husband of being incapable, in whatever sense she may mean this” (p. 586). Our results suggest a different formulation. In the context of distressed relationships, *partners* of depressed individuals focus their anger outward, i.e., by directing it at the depressed person.

Besides measuring depression diagnostic status via clinical interview, we also measured self-reported depression symptoms because we were interested in evaluating the unique predictive validity of depression measured as disorder versus symptoms. Interestingly, these two ways of indexing depression showed divergent associations with interpersonal hostility. After actors’ and partners’ relationship distress and depression diagnostic status were covaried, individuals directed *less* hostility at partners with more severe depressive symptoms. On the surface, these results appear to contradict our finding that individuals directed *more* hostility at partners suffering from depressive disorders. But, taken together, these effects cohere with the main premise of the interactional theory of depression (Coyne, 197b) and integrative interpersonal theory (Joiner et al., **1993**): Individuals’ repetitive demands for reassurance and negative feedback elicit both interpersonal positivity (when partners provide reassurance in response to depression symptoms) and hostility (when partners’ reassurance does not fully satisfy depressed individuals’ need for support).

Because the unique associations between depression status, depressive symptoms, and couples’ interpersonal behavior have not been evaluated previously, these findings need to be replicated with other samples. However, our preliminary results raise the intriguing possibility that these two ways of indexing depression are uniquely and differentially associated with interpersonal hostility. The effects are comparable in magnitude (.47 for depression status vs. .40 for depression symptoms) and moderately sized (Cohen, **1988**).

Relative to interpersonal hostility, the domain of interdependence has been overlooked in previous work on relationship distress and depression in couples. Using SASB, we differentiated two types of interdependence (Benjamin, **1987**): *autonomy* (behaviors such as allowing the partner to be separate, or taking one’s own independence) and *enmeshment* (controlling or submitting behaviors).

Like hostility, the two types of interdependence were associated with relationship distress and depression in divergent ways. Consistent with studies showing that marital discord is associated with couples' dominant behavior (Smith, Uchino, Berg, & Florsheim, **2011**), individuals' relationship distress was positively associated with their controlling behavior. With respect to depression, as predicted by the interactional theory of depression and integrative interpersonal theory, partners of depressed individuals showed more submissive behavior compared with controls from nondepressed couples. That is, partners of depressed individuals displayed more deferring and submitting behaviors, while also doing less to assert themselves, take separate positions, or develop independence from the depressed person.

Interestingly, studies conducted outside the couple context have found the opposite: Compared with those without mood disorders, depressed individuals generally behave in more submissive ways (Barrett & Barber, **2007**; Constantino et al., **2008**), and tend to elicit more dominant behavior in response (Constantino et al., **2008**; McCullough, **2000**). However, our evidence suggests that, at least within the context of distressed couples, partners of depressed individuals are more submissive than individuals in relationships without depression.

Perhaps the biggest contribution of this study is that it is one of the first to detect *partner effects* distinguishing depressed and nondepressed couples, underscoring the importance of systemic conceptualizations, which emphasize the reciprocal and bidirectional nature of individual and relational pathology (e.g., Breunlin, Pinsof, Russell, & Lebow, **2011**; Snyder & Whisman, **2004**). Surprisingly, depressed people did not differ from randomly selected, gender-matched control participants drawn from the nondepressed couple group in any of the SASB dimensional indices we tested. In contrast, their partners *did* differ from controls by demonstrating more partner-directed hostility and submissiveness. This evidence suggests partners may be central to the interpersonal behavior differences observed between distressed couples with and without depression.

These partner effects also provide compelling evidence to support conjoint treatments for depression in the context of distressed relationships (e.g., Beach, **2001**; Johnson, Hunsley, Greenberg, & Schindler, **1999**). Our results suggest it may be particularly important to investigate the utility of couple psychotherapy interventions that emphasize (a) increasing the warmth and positivity behaviors of partners of individuals with depression and (b) decreasing their submissive behaviors.

### Limitations and Directions for Future Research

Perhaps the most significant limitation of this study is that its cross-sectional design prevented us from testing causal hypotheses about the directions of effects. Because evidence suggests the association between depression and relationship distress is bidirectional (Davila et al., **1997**), longitudinal investigations of the links between interpersonal behavior, relationship distress, and depression are particularly important. Relational processes may drive, sustain, or themselves be caused by depression, so additional studies are needed to tease apart causal and sequential effects.

A second limitation is the study's exclusive focus on relationally distressed couples. Because groups of depressed / nondistressed and nondepressed / nondistressed couples were not included, the effects of depression cannot be completely disentangled from relationship distress. In order to facilitate direct comparisons, we encourage researchers to employ all four relevant comparison groups to fully

differentiate the associations between depression, relationship distress, and interpersonal behavior in couples.

A drawback of our observational method is the potential artificiality of the laboratory setting. We sought to counteract this by constructing our room to be as naturalistic as possible (e.g., cameras and microphones unobtrusively mounted within ceiling light fixtures), but it is unclear how well the interpersonal behavior we observed generalizes to couples' day-to-day interactions. However, our clinical impression was that couples tended to quickly settle into the types of interactions commonplace in therapy sessions.

A final caveat is that our recruitment strategy offered couples conjoint psychotherapy as compensation; these procedures may have excluded individuals whose depression and / or relationship distress was severe enough to constrain participation in a treatment requiring both members of the couple. Practically speaking, however, this means the effect sizes obtained in our study may actually underestimate, rather than overestimate, the magnitude of the differences between distressed couples with and without depression in the population.

These limitations point to three directions for future research. First, our results suggest it would be fruitful for scholars to employ circumplex assessment to investigate how larger and more heterogeneous samples of couples interact in the context of depression and relationship distress. Second, although this study added diversity to the literature by investigating a positively valenced discussion topic, it did not test whether couples' interpersonal behavior varies by topic. We are planning a follow-up study to compare interpersonal behavior in conflict versus intimacy discussions to examine stability across topics. Finally, with regard to intervention, we suggest evaluating pretreatment and posttreatment changes in couples' behavior using interpersonal circumplex tools to study whether such changes are associated with treatment process or outcome.

## Notes

As part of the larger study, reliability was assessed between graduate students' initial diagnoses and supervisors' diagnoses on a subsample of  $n = 48$  participants. Kappas were adequate for both current depression diagnoses (MDD = .65, DD = .66) and lifetime depression diagnoses (MDD = .91, DD = .73).

- 1 For analytic purposes, all behavior assigned to more than one cluster was treated as if each component was a separate behavior.
- 2 The other three couples were coded individually by the fifth author to provide additional training materials for subsequent coding groups; they were excluded from reliability calculations.
- 3 Although the multilevel models reported here distinguished dyads based on gender, tests of the APIM for indistinguishable dyads produced the same results.
- 4 Equations for the multilevel models testing  $H1$ ,  $H2$ ,  $RQ1$ , and  $RQ2$  are as follows: SASB dimensional score =  $b_{0(\text{intercept})} + b_1(\text{sex}) + b_2(\text{actor's DAS}) + b_3(\text{partner's DAS}) + b_4(\text{actor's depression status}) + b_5(\text{partner's depression status}) + b_6(\text{actor's BDI}) + b_7(\text{actor's BDI}) + b_8(\text{actor's sex * depression status}) + e$   
 $b_0 = a_{00} + d_0$
- 5 As shown in Table 3, bivariate correlations between actors' BDI scores and depression status ranged from .41 for women to .54 for men. Multicollinearity between the two depression indices were

tested for each multilevel model. No evidence for multicollinearity emerged using conventional diagnostic indexes (Field, 2005): All tolerance values were  $\leq .80$ ; all variable inflation indexes (VIF) were  $\leq 1.40$ ; the average VIF was  $\leq 1.33$ ; and Durbin-Watson values ranged from 1.34 – 1.99.

6 Randomization documentation is available from the first author by request.

7 Equations for the multilevel models testing *H3*, *H4*, *RQ3*, and *RQ4* are as follows: SASB dimensional score =  $b_0(\text{intercept}) + b_1(\text{sex}) + b_2(\text{actor's DAS}) + b_3(\text{depressed group status}) + b_4(\text{partner of depressed group status}) + b_5(\text{actor's sex} * \text{depressed group status}) + e$   $b_0 = a_{00} + d_0$

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