Associations between Dyadic Coping and Interaction Quality:

The Mediating Effect of Couples' Language Use during Real-Time Conversations

by

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ABSTRACT

Stress in romantic relationships is an all-too-common phenomenon that has detrimental effects on relationship well-being. Specifically, stress can increase partners' negative interactions, ultimately decreasing effective communication and overall relationship functioning. Positive dyadic coping (DC) occurs when one partner assists the other in coping with stress (e.g. empathizing or helping the partner problem-solve solutions to their stress), and has been proposed as a method of buffering the deleterious effect of stress on interaction quality. One possible mechanism between the positive associations between DC and interaction quality could be how partners verbally express their support (e.g., more *we*-talk) during discussions about external stress. Using real-time interaction data from 40 heterosexual couples, this project examined whether observed positive and negative DC was associated with greater (or lesser) levels of perceived interaction quality. Further, language use (i.e., pronouns, emotion words, cognition words) was assessed as mediators in the associations between DC and interaction quality. Overall, results suggested that language did not mediate the effect of DC on interaction quality; however, there were several interesting links between DC, language, and interaction quality. Implications of these findings for relationship researchers and mental health clinicians working with couples are discussed.

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Introduction

Stress is present in virtually all romantic relationships, and has been linked to lower levels of relationship satisfaction (Bodenmann, 1997; Randall & Bodenmann, 2009; Randall & Bodenmann, 2017; Tesser & Beach, 1998), and higher levels of relationship conflict and dissolution (Bodenmann et al., 2007; Bolger, DeLongis, Kessler, & Schilling, 1989; Gimbel & Booth, 1994; Gottman & Levenson, 1992; Kiecolt-Glaser, Bane, Glaser, & Malarkey, 2003). Bodenmann's (1995; 2000) stress-divorce model posits that stress reduces the quality of communication between partners, which then negatively impacts relationship functioning. In other words, when partners feel stressed, they may have fewer positive and more negative interactions with each other, which may build up over time and cause relationship distress. Further, the language that partners use during stressful conversations may be an indicator of the quality of these interactions (Ireland, Slatcher, Eastwick, Scissors, Finkel, & Pennebaker, 2011). When partners use more plural, personal pronouns (i.e., *we*-talk) during conversation this may reflect the view that they are a single, cohesive unit. Additionally, when partners use emotion words, which may represent their openness to emotional communication, they may be more likely to perceive the interactions to be positive. In fact, research shows that *we*-talk and use of emotion words are positive correlated with relationship outcomes such as stability and satisfaction (Borelli et al., 2013; Ireland et al., 2011; Slatcher & Pennebaker, 2006). These findings may suggest that the ways in which partners interact verbally could be associated with partners' reported relationship outcomes.

This difference in language use may also reflect differences in coping strategies. Bodenmann (2005) posited that one way partners can mitigate the deleterious effects of

stress is by engaging in dyadic coping (DC). DC refers to the notion that when Partner A experiences stress, he/she can communicate it to their partner (Partner B), and Partner B can then determine whether to help Partner A cope with the stress positively or negatively. When couples display high levels of positive DC, and low levels of negative DC, relationship functioning, as measured by satisfaction and conflict-resolution abilities, is also higher (Bodenmann, 2005; Papp & Witt, 2010), suggesting that positive DC may be an effective way to combat stress. As DC helps to attenuate stress, it may result in more positive language use (e.g., more *we*-talk) between partners, which in turn would have positive effects on relationship outcomes such as greater levels of satisfaction. However, it may be more important to investigate interaction quality as it precedes general relationship quality and is more immediately impacted by couples' use of DC and language. Thus, the goal of the present study was to examine the mediating effect of language use (i.e., the words and phrases partners use during real-time stress conversations) on the association between DC and interaction quality. Although DC has been found effective in reducing stress' detrimental effects on relationship satisfaction (Bodenmann, 2005), little research has examined couples' communication as a possible mediating link between DC and interaction quality. Specifically, it is not yet clear whether the language that partners use with each other can mediate the association between DC and interaction quality. By utilizing real-time interaction data from romantic couples, the current research provided insight on the moment-to-moment micro-communication dynamics between partners during discussions about stress.

Review of Literature

Models of Couples' Stress

Traditionally, stress has been conceptualized as a construct that primarily impacts the individual (e.g., Holmes & Rahe, 1967; Lazarus & Folkman, 1984; Selye, 1974), meaning stress affects only the impacted individual and not others associated with this individual (e.g., friends, romantic partner, or family members). Extending upon the individual, family system theory (Bowen, 1966) would suggest that each individual is a member of a system, and as such, stress experienced by one person can have an effect on others in the system (i.e., one's romantic partner), especially due to their shared interdependence (Kelley & Thibaut, 1978). Based on this premise, in recent years, more attention has been devoted to studying stress as a dyadic construct (e.g., Bodenmann, 1995, 2005; Karney & Bradbury, 1995). Dyadic stress—stress that affects both partners in an interdependent relationship—has been defined along three main dimensions: origin, intensity, and duration (Randall & Bodenmann, 2009). According to these classifications, stress can be *external* (i.e., originating outside the relationship, such as work and money) as opposed to *internal* (i.e., coming from within the relationship, such as conflicts resulting from difference of opinions or habits), *major* (i.e., having significant impact on the relationship) versus *minor* (i.e., small inconveniences that may annoy partners), and *acute* (i.e., sustained for a short period of time, such as within the past week) in contrast with *chronic* (i.e., stable and ongoing, such as occurring multiple times within the past year). Historically, it was believed that internal stress has the strongest impact on relationship functioning (e.g., Glenn, 1975; Andrews, Abbey, & Halman, 1991); however, recent literature has shed light on this topic and demonstrated that chronic,

minor, and external stress—in other words, daily inconveniences originating from outside the relationship—has a stronger, more detrimental effect on the relationship (Randall & Bodenmann, 2009; Randall & Bodenmann, 2017). Given this, this study utilized linguistic and observational data from real-time conversations wherein partners were discussing sources of stress external to the relationship.

Impact of stress on relationship functioning. Several theoretical models have been proposed to explain how stress can have an effect on relationship functioning (e.g., Bodenmann, 1995; Hill, 1949; Karney & Bradbury, 1995; McCubbin & Patterson, 1983). The ABCX model (Hill, 1949; McCubbin & Patterson, 1983) was created with the intention of understanding stress in family systems and researchers have applied it to studying couples stress as well. The original model by Hill (1949) posited that the partners' stressors and hardships (i.e., major life events; *A*) interact with the couple's capability to meet the demands of the event (*B*), which then interacts with the couple's perception of the event (*C*), to produce significant change in the couple's habits, relationship dynamics, and other factors (i.e., crisis; *X*). Although a major life event has the potential to alter the couple's pattern of functioning, *B* and *C* may act as buffers against this effect. If partners are able to engage in prevention of issues or early intervention, it was hypothesized that the crisis could be averted. Further, if the couple perceives an event as having minimal impact on their functioning, the problem may be dealt with effectively as well. McCubbin and Patterson (1983) expanded upon Hill's (1949) model by including variables that are present after a crisis occurs. These variables include *aA* (pile-up of all pre- and post-crisis stressors), *bB* (resources in meeting demands, including social support), *cC* (the family's definition of the crisis), and *xX*

(adaptation, which can be positive or negative). The original ABCX model and its extension remained influential for many years, mainly in studies examining the effect of stress on parents of children with mental disorders or learning disabilities (e.g., Pakeham, Samios, & Sofronoff, 2005; Saloviita, Italinna, & Leinonen, 2003). Other models have since been developed, which focus on understanding how specific stressors may impact couples' functioning.

Karney and Bradbury's (1995) vulnerability-stress-adaptation (VSA) model posits that relationship quality and stability can be compromised by the interaction between the couples' enduring vulnerabilities (e.g., maladaptive personality characteristics), stressful events (i.e., major life events), and poor adaptive processes (i.e., support or lack thereof from partner). For example, individuals high in neuroticism tend to be less satisfied with their relationships (Karney & Bradbury, 1997) and those who experienced more parental hostility and coercion as children report lower romantic relationship quality as adults (Conger, Cui, Bryant, & Elder, 2000).

The ABCX (Hill, 1949; McCubbin & Patterson, 1983) and VSA (Karney & Bradbury, 1995) models share some conceptual overlaps. First, they are among the first depictions of couples' stress that took variables that are external to the relationship (e.g., work, individual characteristics) into consideration. Additionally, the theories allow researchers to explain between-couple differences (e.g., why some couples last longer than others). For instance, in Hill's (1949) model, stressors can be countered by the couple's available resources; therefore, if one couple has exceptional support from family and friends during times of stress, the partners may stay together longer than those in a couple with poor social support. Further, Karney and Bradbury's (1995) model postulates

that enduring vulnerabilities contribute to relationship discord. As such, partners who are higher in psychological well-being may be more satisfied with their relationship than those who are low. Despite these models' strengths, the ABCX (Hill, 1949; McCubbin & Patterson, 1983) and VSA (Karney & Bradbury, 1995) models are limited in their ability to predict why relationships deteriorate. Specifically, the models primarily consider major life events and overlook the minor everyday stressors that may be present, which are found to contribute more to relationship dysfunction in various ways, including partners' communication (Randall & Bodenmann, 2009). Also, the two models emphasized integration over detail, which suggests some processes, in particular ways to combat stress, are not outlined in depth. Further considerations are required for how coping responses can lead to adaptation or maladaptation in the ABCX model or how stress and vulnerability combine to influence adaptive processes in the VSA model. Taking these limitations into consideration, the stress-divorce model proposed by Bodenmann (1995; 2000) describes the processes in which external stress is associated with interaction quality which in turn may lead to relationship outcomes, and accounts for the possibility of partners coping with stress together.

In Bodenmann's (1995; 2000) stress-divorce model, the role of chronic, minor stress is emphasized. It was hypothesized that stress experienced outside of the relationship (i.e., external stress) affects how partners behave with one another, and ultimately impacts relationship quality via four mediational processes: 1) by decreasing the amount of time partners spend together, thus attenuating the sense of togetherness (Gager & Sanchez, 2003); 2) by decreasing the quality of communication between partners (Ledermann, Bodenmann, Rudaz, & Bradbury, 2010); 3) by increasing the risk

of physical and psychological health problems (Robles, Slatcher, Trombello, & McGinn, 2014; Whisman, 2001) ; and 4) by increasing the expression of problematic personality characteristics (e.g., anxiety, hostility; Caughlin, Huston, & Houts, 2000; Gonzaga, Campos, & Bradbury, 2007).

The second path is of particular importance because communication occurs frequently and is an aspect of the relationship that partners may have direct control over. Thus, the associations between stress, communication, and relationship functioning (e.g, satisfaction, quality) was the focus of this study. Based on the stress-divorce model, if partners are able to help each other reduce stress by coping jointly, they may be able to communicate more effectively and therefore report higher levels of interaction quality. In order for relationships to thrive, partners must learn to deal with stressful experiences effectively (e.g., Bodenmann, 2005); thus, it is critical to understand how couples can cope with stress.

The Systemic-Transactional Model: The Role of Dyadic Coping

Drawing upon Lazarus and Folkman's (1984) transactional model of stress and coping, which posits that individuals appraise stressful events' potential for harm and cope by changing the environment accordingly, the systemic-transactional model (STM) of DC describes how couples cope with stress by reducing stress between partners and enhancing relationship quality by fostering a sense of togetherness and reinforcing the belief that they are a cohesive unit (i.e., *we-ness*). DC involves one partner's communication of stress, which then activates both partners' coping responses, and ultimately, the stress is reduced due to the interaction of their individual coping efforts and focus on improving their relationship. As aforementioned, partners respond to each

other's stress is positive or negative manners. Positive forms of DC include *emotion-focused* (i.e., offering empathic understanding and emotional support) and *problem-focused* (i.e., providing practical advice and helping each other reframe the situation) supportive DC, and *delegated* DC (i.e., one partner takes on responsibilities in order to reduce stress for the other). Simply listening to one another and following up with interested inquiry (e.g., "That sounds stressful. How did that make you feel?") could also be considered positive DC (Bodenmann, 2008). Emotion-focused, problem-focused, and delegated DC take place when only one partner is directly experiencing the stress; on the other hand, *common* DC takes place when the stress impacts both partners directly and they cope jointly.

Couples can also engage in *negative* DC. Negative DC can take the forms of hostile DC (i.e., one partner openly mocks the other or invalidates his/her feelings), ambivalent DC (i.e., when support is unwillingly given), and superficial DC (i.e., the support is insincere). Higher levels of positive DC and lower levels of negative DC have been linked to both higher marital quality (Bodenmann, Pihet, & Kayser, 2005) and reduced stress (Ledermann et al., 2010).

Role of communication. Communication is a major component of DC. The STM (Bodenmann, 2005) posits that in order for DC to take place, partners must first communicate their stress to each other. For instance, following a stressful day at work Partner A may come home and say to Partner B "Honey, something at work is bothering me," or "Can't you see I'm stressed about work, you idiot?" These two statements convey the same messages about stress; however, they can elicit very different responses from Partner B. Then, partners can demonstrate DC via their language use. Following the

above example, Partner B could respond positively with, “Tell me what’s wrong. Maybe we can figure something out together,” or negatively with, “What do you want me to do about it?” Based on Partner B’s response, Partner A can then choose whether to confide in Partner B, and one of the forms of DC discussed above can occur. As this example shows, communication and language play tremendous roles in DC; language may even act as indicators of DC.

Language Use during Couples’ Communication

Verbal communication has been argued to be a significant positive predictor of couples’ relationship satisfaction (Lavner, Karney, & Bradbury, 2016). In addition, analyzing partners’ communication, in particular their word usage (e.g., pronouns), may be a helpful approach in understanding how partners cope with stress in their relationship. Partners’ real-time interactions have been examined in couples for decades to assess partners’ communication (e.g., Buehlman & Gottman, 1992; Carrere & Gottman, 1999; Gottman & Levenson, 1992), but methods of doing so have improved with the recent development of computerized, text-analysis programs (e.g., LIWC; Pennebaker, Booth, & Francis, 2007).

When studying language use, it is important to distinguish between content and function words. *Content words* (e.g., nouns, verbs) are words that contain semantic information. On the other hand, *function words* (e.g., articles, pronouns, auxiliary verbs) are described as the “syntactic backbone of language” (Gonzales, Hancock, & Pennebaker, 2010, p. 3) because while they have little meaning outside the context of a sentence, function words require shared social knowledge to be understood. In the current study, one couple engaged in a conversation about finances (Appendix A). Examples of

content words in this conversation are “money,” “gift,” and “payment” and function words include “the,” “it,” and “to.” The few linguistic studies that examined content words have yielded inconsistent findings (e.g., Sanford & Rowatt, 2004; Slatcher & Pennebaker, 2006). On the other hand, function words have been the main focus of studies examining linguistic cues and have been linked to a number of variables such as relationship stability and quality (Borelli et al., 2013; Gonzales et al, 2010; Ireland et al., 2010). In the present study, pronouns, which are function words, will be examined along with emotion words and cognition words, which are content words. While emotion and cognition words are content words, it may be of use to study them in relation to DC because they directly correspond with the emotion-focused and problem-focused subtypes, respectively.

Pronouns. Pronouns (e.g., I, you, we) have been examined extensively in the literature, specifically in how they are associated with relational outcomes (Rentscher, Rohrbaugh, Shoham, & Mehl, 2013; Rohrbaugh, Shoham, & Skoyen, 2012; Tausczik & Pennebaker, 2011). Some literature shows that greater use of plural, personal pronouns (i.e., *we*-talk) is positively associated with relationship satisfaction (Borelli et al., 2013) and communication quality (Biesen, Schooler, & Smith, 2015). This is consistent with the STM, which posits that we-ness, or the sense of cohesion within a couple, contributes to relationship outcomes such as satisfaction (Bodenmann, 2005). The use of plural, personal pronouns may indicate that couples view themselves as close, intimate units and are likely to confront problems together. On the other hand, there is also evidence that use of singular, personal pronouns (i.e., *I*-talk) is correlated with relationship functioning but in a negative direction; in fact, it has been found to have stronger associations to

relationship satisfaction compared to *we*-talk (Rentscher, Rohrbaugh, Shoham, & Mehl, 2013; Slatcher, Vazire, & Pennebaker, 2008). Further, engaging in *you*-talk, which may be indicative of blame, negatively predicts interaction quality in couples (Biesen et al., 2015). This may suggest that while *we*-talk can have positive effects on relationship satisfaction and other outcomes, *I*- and *you*-talk have stronger, negative effects that undermine that positivity. Consistent with extant literature, in this study, it is predicted that positive DC would be positively associated with *we*-talk, and negatively associated with *I*- and *you*-talk. On the other hand, negative forms of DC are expected to have inverse associations; specifically, negative DC will predict less *we*-talk and more *I*-talk and *you*-talk. Further, it was expected these associations will be stronger for *I*- and *you*-talk. These associations will, in turn, affect the perceived quality of partners' interactions.

Emotion words. Emotion words (e.g., happy, sad, excited, anxious) may help partners communicate emotional empathy to one another. As such, the use of emotion words is thought to positively correlate with relationship satisfaction (Slatcher & Pennebaker, 2006). However, findings regarding the association between use of emotion words and various relationship outcomes have been inconsistent. For instance, Slatcher and Pennebaker (2006) found that use of positive emotion words is associated with relationship stability; on the other hand, one study found that use of emotion words is not significantly correlated with relationship satisfaction (Sanford & Rowatt, 2004). These mixed results may be due to the classification of emotion words into positive (e.g., happy, excited) and negative (e.g., hate, hurt). It is possible that the mere expression of emotions, regardless of the type of emotions (i.e., positive or negative), can improve relationship satisfaction. When one partner communicates any sort of emotion, the other may interpret

it as an invitation to join in processing those emotions. In fact, emotional expression can have beneficial effects on both physical and psychological health (Frisina, Borod, & Lepore, 2004) as well as relationship adjustment (Baddeley & Pennebaker, 2011), regardless of whether the emotions are positive or negative; therefore, the expression of emotion may benefit couples in the dyadic context as well.

Given the mixed results of emotion words on relationship outcomes in the literature (e.g., Sanford & Rowatt, 2004; Slatcher & Pennebaker, 2006), its association with only one type of DC (emotion-focused supportive DC) was tested. It was predicted that when partners demonstrate high levels of emotion-focused DC, they will also use more emotion words, which would then predict interaction quality.

Cognition words. Cognition words indicate the processing and interpretation of information and can be categorized into two groups: causal words (e.g., because, effect, hence) and insight words (e.g., think, now, consider; Tausczik & Pennebaker, 2011). In one study, it was found that participants used more cognition words, specifically causal words, when describing the breakup and post-breakup experiences than the pre-breakup, suggesting that organizing thoughts and drawing causal conclusions may aid in coping efforts (Boals & Klein, 2005). Similarly, when partners support each other using the problem-focused approaches (i.e., rationalization and viewing information in new perspectives), which involve much thinking and logic, they may use more words that indicate cognitive functioning. In this study, displays of problem-focused supportive DC was predicted to be associated with higher use of cognition words, which in turn would be positively associated with interaction quality.

Present Study

External stress has detrimental effects on relationship outcomes (e.g., Bodenmann, Ledermann, & Bradbury, 2007; Randall & Bodenmann, 2009; Story & Repetti, 2006); thus, the types of DC that correspond with external stressors was examined. The present study used real-time interaction data from discussions about external stress from 40 couples to study the mediational effect of couples' language use on the association between observed positive and negative DC and interaction quality. Given the dyadic nature of the data, both actor (Partner A's predictor variable impacts Partner A's outcome variable) and partner (Partner A's predictor variable impacts Partner B's outcome variable) effects were considered. The following hypotheses were tested:

H1: It is hypothesized that Partner A's displays of positive DC (i.e., emotion-focused, problem-focused, active listening and inquiry) will positively predict Partner B's interaction quality (H1a). On the other hand, it is hypothesized that Partner A's observed negative DC will negatively predict Partner B's interaction quality (H1b).

The above hypothesis will occur via several mediational paths based on the linguistic mediators outlined previously:

H2: Individuals who demonstrate greater levels of positive DC will engage in less *I*-talk and *you*-talk and more *we*-talk (i.e., actor effect; H2a), which will then be positively associated with the partners' perceived quality of the interaction (i.e., partner effect; H2b).

H3: Individuals who demonstrate greater levels of emotion-focused supportive DC will use more emotion words (i.e., actor effect; H3a), which will be positively associated with partners' interaction quality (i.e. partner effect; H3b).

H4: Individuals who display higher levels of problem-focused supportive DC will use more cognition words (i.e., actor effect; H4a), which will positively predict partners' interaction quality (i.e., partner effect; H4b).

H5: Individuals who engage in more negative DC will use more *I*-talk and *you*-talk and less *we*-talk (actor effect; H5a), which will then be negatively associated with the partner's rating of the interaction (partner effect; H5b).

Method

Participants

Participants included a community sample of heterosexual, committed couples recruited by advertisements posted on Craig's List, Facebook, and electronic mailing lists in various professional organizations in a Southwestern region of the United States. Participating couples had to fulfill the following criteria: 1) both individuals were over the age of 18; 2) in a romantic relationship for at least 6 weeks; 3) both individuals were willing to participate in the study.

The full sample consisted of 54 couples (N = 108 individuals); however, only 40 couples (n = 80 individuals) completed all portions of the study and were utilized for the present study. The mean age of women was approximately 30 years (SD = 6.7) and the mean age of men was 30.5 years (SD = 6.9). Partners were together, on average, for 5.5 years (SD = 5.3); eighteen were married and 11 had children. The majority of participants identified as White (n = 56), followed by Hispanic (n = 14), Asian American (n = 4),

Native Hawaiian or Pacific Islander (*n* = 2), African American (*n* = 1), and 3 individuals identified as other ethnicities. Most participants reported a terminal college, university, or graduate degree (*n* = 38 women, 30 men).

Procedure

Data for this study were collected in two parts: 1) an initial baseline questionnaire and 2) a laboratory session. Following screening to ensure participants met the eligibility criteria, participants were instructed to complete the questionnaires separately and not discuss answers with their partners. The baseline questionnaire, which was sent to participants electronically, took approximately 1 hour to complete and included various measures of relationship functioning. During the laboratory session, partners were asked to have three video-recorded, 6-minute conversations with each other regarding external stress (i.e., originating outside of the relationship), internal stress (i.e., coming from within the relationship), and a topic that both partners enjoy discussing. For the present study, only the 6-minute conversation about external stress that one partner experienced individually were used based on previous evidence indicating that external stress strongly predicts relationship outcomes (e.g., Bodenmann, Ledermann, & Bradbury, 2007; Randall & Bodenmann, 2009; Randall & Bodenmann, 2017; Story & Repetti, 2006). One partner from each couple spoke about the stressful topic; this role was counterbalanced and alternated between couples based on gender (i.e., the female in the first couple spoke about the topic, the male in the second couple spoke, etc.). Thus, in each couple, one partner was assigned to the speaker role while the other was intended to be the listener. Topics included work (*n* = 16), finances (*n* = 15), school (*n* = 4), children (*n* = 3), in-laws (*n* = 1), and friends (*n* = 1).

Measurements

Observed dyadic coping. Observed DC was assessed using observational coding to obtain partners' real-time coping responses. Bodenmann (2008) devised a German version of a coding system that examined various categories of stress communication and DC in 10-second intervals. For this study, the original coding manual was translated into English (Randall, Borders, Holzapfel, Johnson, & Lau, 2016). Only the DC coding was used in the present study. For each 10-second interval a team of three raters carefully assessed verbal cues from each partner and coded for one of six options: 1 (*problem-focused supportive DC*; e.g., providing factual explanations and problem-solving strategies), 2 (*attentive and interested listening/inquiry*), 3 (*emotion-focused supportive DC;* e.g., appreciation, empathy, encouragement), 4 (*negative DC*; e.g., hostile criticism, insincere support), 88 (*nothing*), or 99 (*missing data*). Categories with greater values take precedence, excluding ratings of 88 and 99. For instance, if a partner engages in both problem-focused and emotion-focused DC in the same timeframe, raters would code for a 3. Observed positive DC ratings were derived by aggregating those of problem-focused DC, listening/inquiry, and emotion-focused DC based on Bodenmann's (2005) original definition. The average Cohen's Kappa values across all external stress conversations in this study for three raters was .82. Percentages were calculated based on the number of times DC was observed throughout the couples' interactions.

Interaction quality. Interaction quality was measured using a questionnaire that was administered to the partners after the stress conversation to evaluate their perceptions of each other's behavior and conversational style. Partners rated 25 items on a 7-point scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Examples of items on this

questionnaire include, “In the previous interaction, my partner communicated warmth rather than coldness,” and, “In the previous interaction, I felt that my partner understood what I was saying.” High mean scores would indicate greater levels of satisfaction with the interaction. For females, the mean score was 5.60 (*SD* = .98) and for males, the mean was 5.75 (*SD* = .86). Cronbach’s alphas for the present sample were .91 for men and .93 for women.

Text analyses. To prepare the data for linguistic analyses, a team of eight undergraduate research assistants blind to the study hypotheses transcribed the couples’ discussions verbatim. Raw transcript data were then subjected to the LIWC computer program (Pennebaker, Booth, & Francis, 2007). LIWC produces percentages of all pronoun types, emotion words, and cognition words (as well as other word categories not used in this study) in the total word count of a given text sample. To ensure accurate percentages, the data was prepared in the following way: 1) raw transcripts were split by speaker and all information other than the actual speech and an identifying marker was removed; and 2) filler words and expressions that contained pronouns that did not carry independent meaning (e.g., “I” in “I mean”) were marked in a way that prevented LIWC from counting them towards this category. These methods have been successfully used in previous studies to assure accurate LIWC counts (e.g., Rohrbaugh et al., 2012). The resulting percentages of pronouns (i.e., “I”; “you”; “we”), emotion words (e.g., “happy,” “sad,” “scared”), and cognition words (e.g., “think,” “because,” “effect”) in total word counts will be used in the analyses.

Analytic Plan

Dyadic data analyses. Dyadic data refer to data that span two individuals in a given system (e.g., family members, romantic partners, counselor and client). These data are interdependent in nature, meaning one individual's variables will likely impact the other's; thus, it is important to control for this interdependence to ensure that significant effects can be attributed to the independent variables (Cook & Kenny, 2005). The Actor-Partner Interdependence Mediation Model (APIMeM; Ledermann, Macho, & Kenny, 2011) is a dyadic data analytic approach that allows for the testing of associations between three pairs of variables (i.e., three variables from one partner and three from the other). The APIMeM simultaneously estimates actor and partner effects between the three sets of variables: *X* (predictors), *Y* (outcomes), and *M* (mediators). Actor effects refer to associations between one's variable and another one of his/her own variable, whereas partner effects are between one's variable and the partner's variable. Further, direct and indirect effects from the standard mediation model are also included, resulting in a total of 12 paths. The model allows us to: 1) account for variability due to the interdependence of partners; 2) assess the impact of one's own predictor as well as the partner's on the outcomes; and 3) measure the residual covariance between the variable pairs (Ledermann et al., 2011). Structural Equation Modeling (SEM) is the suggested method to test the APIMeM as it estimates all model parameters within a single equation (Cook & Kenny, 2005; Ledermann, Macho, & Kenny, 2011); analyses will be carried out using Mplus.

Control variables. Control variables were included to ensure confidence that significant effects were due to the proposed independent variables. Interaction quality

could vary as a function of how long couples have been together (e.g., Levin, Whitener, & Cross, 2006). For instance, if two partners have been in a relationship for a long time, it may be that they have adjusted to each other's communication styles. Further, it is important to account for the total number of words that couples use in their discussion because LIWC calculates percentages of words that fall under each word category; the total word count may change percentages of words, thus potentially providing misleading information about word use (Pennebaker et al., 2003).

Results

Means and standard deviations of the study variables are displayed in Table 1. There were no significant differences between the percentages of females' and males' observed positive DC, $t(39) = -.21$, p = n.s., negative DC, $t(39) = .42$, p = n.s., emotion-focused supportive DC, $t(39) = -.84$, $p = .41$, problem-focused supportive DC, $t(39) = .39$, p = n.s., *I*-talk, $t(39) = -.82$, p = n.s., *you*-talk, $t(39) = 1.57$, p = n.s., *we*-talk, $t(39) = 1.11$, p = n.s., emotion words, $t(39) = .26$, p = n.s., cognitive words, $t(39) = -.30$, p = n.s., and interaction quality, $t(39) = -1.01$, p = n.s. In sum, females and males did not significantly differ on the study variables.

Correlations amongst the study variables show that between-partner correlations were significant for observed positive DC ($r = -.58$, $p < .01$), problem-focused supportive DC ($r = .42$, $p < .01$), *we*-talk ($r = .72$, $p < .01$), and interaction quality ($r = .45$, $p < .01$). Some notable intrapersonal intercorrelations between variables include those between emotion-focused supportive DC and emotion words ($r = .41$, $p < .01$), positive DC and *you*-talk ($r = .42$, $p < .01$), and negative DC and interaction quality ($r = -.36$, $p = .02$) for females and between positive DC and *we*-talk ($r = .33$, $p = .04$) and *I*-talk and interaction

quality (r = -.35, p =.03) for males. For both females and males, intercorrelations between problem-focused supportive DC and *we*-talk (r_f = .47, r_m = .47, ps < .01) and positive DC and *I*-talk (r_f = -.53, r_m = -.44, ps < .01) were significant.

Most of these correlations were consistent with the hypotheses; specifically, there were expected positive associations between emotion-focused supportive DC and use of emotion words, negative DC and interaction quality, and *I*-talk and interaction quality, positive DC and *I*-talk. On the other hand, it was interesting to find that positive DC and *you*-talk were positively correlated for females. It was hypothesized that *you*-talk would be indicative of negativity (e.g., blame) in the conversations about stress; however, this association between positive DC and *you*-talk may suggest that "you" pronouns were used in supportive ways by females. For more information on intercorrelations, see Table 2.

Actor and Partner Effects of DC on Interaction Quality

The first hypothesis examined actor and partner effects of both positive and negative DC on interaction quality (see Figure 1). The fit of all models was poor compared to the normative values recommended by Hu and Bentler (1999); the CFI ranged from .551 to .808, the TLI ranged from .444 to .763, and the RMSEA ranged from .078 to .102. In the models using positive DC and negative DC, female actor effects ($b_{positive}$ = .49, p < .01; $b_{negative}$ = -38, p = .03) were significant, meaning that when females engaged in positive or negative forms of DC, their own interaction quality would be positively or negatively impacted (actor effect), respectively. Likewise, there were male partner effects in the models with positive and negative DC ($b_{positive}$ = .47, p < .01; $b_{negative}$ = -.25, p = .04), which suggests that when males used positive or negative DC,

their female partners' interaction quality would also be positively or negatively affected (partner effect), respectively. Further, females' observed emotion-focused supportive DC was significantly associated with males' interaction quality (b = .25, p = .04). In summary, after controlling for the effect of the partner's DC, word count, and relationship length, certain forms of DC (i.e., positive, emotion-focused, negative) significantly predicted interaction quality; however, these effects vary based on gender.

Language Use as a Mediator in the Association between DC and Interaction Quality

There were a total of 8 mediation models used to test Hypotheses 2 to 5. The fit of the models was evaluated first (see Table 3). All models fitted the data well, with the exception of models in which positive DC is the independent variable. We estimated the bootstrap 95% confidence intervals to assess the significance of indirect effects for all models. Further, the sizes of the indirect actor and partner effects (see Table 4) were compared with those of the respective total effects (see Table 2) for each model.

Positive DC and *I*-talk. The first model examined the mediating effects of *I*-talk on the association between positive DC and interaction quality (see Figure 2). The direct effect between females' positive DC and their own interaction quality was significant (b = .54, p = .05). In addition, the results showed that the female's positive DC was significantly negatively associated with her own overall *I*-talk as well as her own interaction quality (b = -.48, p < .01). In addition, the association between the male's *I*-talk and his own interaction quality is marginally significant in the negative direction (b = -.32, p = .09). With regard to the female actor effect, the total effect was .54 and the overall indirect effect was -.03; thus, the overall indirect effect accounted for -6% of the total effect, which means that the mediational association between females' positive DC,

I-talk, and interaction quality was weak and non-significant. In terms of the male actor effect, the total effect was .10 and the overall indirect effect was -.02; thus, the overall indirect effect accounted for -20% of the total effect, again suggesting that the mediation of males' *I*-talk on the effect of their own positive DC on interaction quality was very weak and non-significant.

Positive DC and *you*-talk. The second model examined the mediating effects of *you*-talk on the association between positive DC and interaction quality (see Figure 3). The direct positive association between females' positive DC and interaction quality was again significant (b = .67, p < .01). In terms of the mediational paths, the female's interaction quality was significantly negatively associated with her own *you*-talk (b = -.30, p = .05). The female's positive DC also marginally significantly predicts the male's *you*-talk in the negative direction (b = -.37, p = .07). With regard to the female actor effect, the total effect was .54 and the overall indirect effect was -.04; thus, the overall indirect effect accounted for -7% of the total effect, which suggests the mediation of females' *you*-talk on the effect of their own positive DC on interaction quality is weak and non-significant. With respect to the female partner effect, the total effect was .25 and the overall indirect effect was -.04; thus, the overall indirect effect accounted for -16% of the total effect, which means the association between females' positive DC and males' interaction quality was best explained by the direct effect than by the mediational effect of *you*-talk.

Positive DC and *we*-talk. The third model examined the mediating effects of *we*-talk on the association between positive DC and interaction quality (see Figure 4). In this model, the female's positive DC directly predicted her own interaction quality as well (b

= .51, p = .01), and this was the only significant association in this model. With regard to the female actor effect, the total effect was .54 and the overall indirect effect was .03; thus, the overall indirect effect accounted for 6% of the total effect, which means the mediational association between females' positive DC, *we*-talk, and interaction quality was weak and non-significant.

Emotion-focused DC and emotion words. The fourth model examined the mediating effects of emotion words on the association between emotion-focused DC and interaction quality (see Figure 5). There were no direct actor or partner effects. However, the positive association between the female's use of emotion words and the male's interaction quality was significant (b = .43, p = .04). With regard to the female partner effect, the total effect was .07 and the overall indirect effect was .00; thus, the overall indirect effect accounted for 0% of the total effect, which means using emotion words as mediator did not contribute to the overall effect of emotion-focused DC on interaction quality.

Problem-focused supportive DC and cognition words. The fifth model examined the mediating effects of cognitive words on the association between problem-focused DC and interaction quality (see Figure 6). Again, there were no significant actor or partner effects between DC and interaction quality directly. Only the positive association between male's use of cognitive words and female's interaction quality was significant (b = .43, p = .04). With regard to the male partner effect, the total effect was -.17 and the overall indirect effect was .00; thus, the overall indirect effect accounted for 0% of the total effect, again suggesting that cognition words did not mediate the association between problem-focused DC and interaction quality.

Negative DC and *I*-talk. The sixth model examined the mediating effects of *I*-talk on the association between negative DC and interaction quality (see Figure 7). None of the associations in the model were significant; however, the female's negative DC marginally predicts her own interaction quality (b = -.35, p = .08). With regard to the female actor effect, the total effect was -.39 and the overall indirect effect was .01; thus, the overall indirect effect accounted for -3% of the total effect, suggesting that using *I*-talk as mediator counteracted the negative direct effect of females' negative DC on interaction quality.

Negative DC and *you*-talk. The seventh model examined the mediating effects of *you*-talk on the association between negative DC and interaction quality (see Figure 8). Like the previous model, the direct negative actor effect of females' negative DC on interaction quality was significant (b = -.37, p = .08). With regard to the female actor effect, the total effect was -.39 and the overall indirect effect was -.02; thus, the overall indirect effect accounted for 5% of the total effect, which means the mediational association between females' negative DC, *you*-talk, and interaction quality was weak and non-significant.

Negative DC and *we*-talk. Finally, the eighth model examined the mediating effects of *we*-talk on the association between negative DC and interaction quality (see Figure 9). In this model, the female's negative DC significantly and directly predicts her own interaction quality in the negative direction (b = -.40, p = .05). With regard to the female actor effect, the total effect was -.39 and the overall indirect effect was .01; thus, the overall indirect effect accounted for -3% of the total effect, suggesting that the

association between females' negative DC and interaction quality was best explained by the direct effect than by the indirect effect of *we*-talk.

In summary, no significant mediation effects were found. However, there were significant associations between individual variables. Across all of the models, females' positive and negative DC tended to be directly associated with their own interaction quality. In a couple of the models, females' positive DC even predicted their own linguistic variables (i.e, *I*-talk, *you*-talk). Further, females' use of emotion words positively predicted males' interaction quality while males' use of cognition words positively predicted females' interaction quality.

Discussion

Language use that communicates support (e.g., more *we*-talk, use of emotion words) is important when discussing stressful topics with one's partner because it could lead to joint coping processes and greater perceived quality of partners' interactions. Low levels of coping and quality of interaction during stressful encounters between partners could lead to relationship distress and discord over time (Bodenmann, 1995; 2000); given this, it is critical to understand the moment-to-moment language use during these stress conversations. The goal of the present study was to use real-time interaction dyadic data from 40 romantic partners engaging in discussions about external stress to examine the mediating effect of language use on the association between dyadic coping (positive and negative) and interaction quality, as defined by how partners felt supported and understood during the stress conversations. Said differently, the present study examined whether partners' observed dyadic coping behaviors impacted the perceived quality of their interactions via their use of pronouns, emotion words, and cognition words. By

understanding the micro-communication processes involved in real-time dyadic coping between partners, insight could be gained regarding how couples could achieve higher interaction quality by using effective language.

Partner Effects of DC on Interaction Quality

The first hypothesis examined whether there would be significant partner effects between the various types of DC and interaction quality, following the conversation, such that Partner A's engagement in DC impacted Partner B's perception of the level of support he/she received. The results partially supported this hypothesis; males' observed positive and negative DC significantly predicted their female partners' perceived interaction quality in the hypothesized directions. In addition, females' observed emotion-focused DC was positively associated with males' ratings of interaction quality. These findings are consistent with extant literature examining DC and general relationship well-being (e.g., satisfaction, quality). For instance, Papp and Witt (2011) found that individuals' reported DC was significantly associated with their partners' relationship quality and observed negativity during conflict (i.e., negative affect expressed through facial expression, tone of voice, and other non-verbal cues). Their study was similar to the current research in that they also examined actor and partner effects of DC on relationship outcomes and implemented a behavioral coding component. Although not hypothesized, it was also found that females' observed positive and negative DC was also positively and negatively associated with their own interaction quality. Perhaps when women engage in positive DC, they may feel that they played a role in reducing some of their partners' stress and may therefore be more satisfied with the conversations. On the other hand, females who did not help their partners cope may

have been dissatisfied with the relationship before the conversation took place, and because the external stress was not resolved, they may perceive the quality of the interaction as low. In the same study described above, Papp and Witt (2011) also found similar patterns in that females' reported DC predicted their own relationship satisfaction and negativity during conflict. Further, Donato and colleagues (2015) found that partners' reported change in own DC predicted their own relationship satisfaction over the course of 12 months, which supports the notion that DC could have actor effects on relationship outcomes even though the current study did not measure change. Taken together, the current findings suggest that DC appears to be important to how partners perceive their relationship following stressful conversations. This is consistent with the literature on the STM, which has shown that DC is positive associated with relationship quality (Bodenmann, 2005; Bodenmann et al., 2006; Bodenmann et al., 2011). It may also be beneficial to continue exploring gender differences in the experience of stress, coping, and relationship outcomes, as it seems that females' perceived interaction quality is more easily impacted. As suggested by Bodenmann and colleagues (2006), who reported that for women, their own and their partners' DC were significantly associated with marital quality, while for men, only their own DC was significantly associated with marital quality, it is possible that DC may be more important for relationship well-being for women than for men. DC may have a stronger effect on relationship outcomes for women because they tend to experience more stress than men (Matud, 2004; Ptacek, Smith, & Dodge, 1994).

Pronouns as Mediator in the Association between Positive DC and Interaction Quality

The second research question assessed whether observed positive DC would predict interaction quality via the use of pronouns (e.g., “I,” “you,” “we”). It was hypothesized that observed positive DC would be positively associated with *we*-talk, which would then positively predict perceived interaction quality. Further, positive DC should be negatively associated with *I*-talk and *you*-talk, which would in turn negatively predict interaction quality. While female’s positive DC was significantly negatively associated with their own *I*-talk, *I*-talk did not predict interaction quality for either themselves or their partners. This means that when females used more positive DC, they also said fewer first-person, singular pronouns (i.e., “I,” “me,” “my”; see Appendix B for example), but this did not necessarily cause them or their male partners to perceive the quality of the conversation as more positive. Similarly, there was a significant negative association between female’s *you*-talk and interaction quality but none between their positive DC and *you*-talk. For all three models examining *I*-talk, *you*-talk, and *we*-talk as mediators, there were still significant direct effects between observed positive DC and interaction quality for females (i.e., when females used positive DC, their own perceived interaction quality was higher), even when the indirect effects were controlled for.

In summary, findings suggest that positive DC did not affect interaction quality via the use of pronouns; however, parts of the hypothesis were supported in that females who engaged in more positive DC tended to use fewer “I” words, and *you*-talk negatively affected interaction quality. This is consistent with prior literature on language use and relationship health. Simmons, Gordon, and Chambles (2005) found that in couples in

which one partner was diagnosed with an anxiety disorder, partners who used more second-person pronouns said more negative messages (as coded by raters) during problem-solving discussions. The use of "you" pronouns was also found to be associated with lower levels of relationship satisfaction (Williams-Baucom et al., 2010). Although contrary to the hypothesis, these findings make sense in the context of this study. First, individuals who engage in positive DC would be expected to use less *I*-talk because their focus would be directed towards their partners in order to address their partners' stress; thus, they may be using more "you" words. For instance, in attempting to cope with one's partner, one may use language like, "Have *you* tried doing this?" or "*You* must be feeling so stressed." However, this study did not find significant associations between observed positive DC and *you*-talk, perhaps because of the various use of second-person pronouns (i.e., "you").

It was hypothesized that *you*-talk would suggest blame and criticism (Biesen et al., 2015); however, *you*-talk could also communication advice giving and support provision when examining DC. There may have been a combination of positive and negative uses of "you" in the couples' conversations, which may have convoluted the results. One of the most unexpected findings based on this hypothesis was that the model utilizing *we*-talk as the mediator yielded virtually no significant associations between observed positive DC, *we*-talk, and perceived interaction quality. This could be explained by the nature of the couples' discussions about *external* stress, meaning that in some conversations, the stress only directly impacted one partner in each couple (e.g., work, school). In this context, it would be appropriate to expect Partner A to focus more on his/her own experience of stress and Partner B to emphasize what he/she could do to help

alleviate Partner A's stress; thus, they may be more likely to use singular pronouns (e.g., "I," "you") than plural pronouns (e.g., "we"). Previous studies that have indicated negative associations between *I*-talk/*you*-talk and relationship outcomes and positive associations between *we*-talk and relationship outcomes (e.g., Rentscher, Soriano, Rohrbaugh, Shoham, & Mehl, 2015) examined *internal* stress, or stress that directly affects both partners (e.g., finances, health conditions). This suggests that there may be instances in which the use of "we" can be more conducive to partners' perception of we-ness and joint coping efforts than others, such as in activities in which partners participate together (Aron, Norman, Aron, McKenna, & Heyman, 2000). Further, Slatcher et al. (2008) suggested that the use of "we" in problem-solving discussions is unrelated to relationship quality whereas the use of "we" when describing the relationship or the future of the couple may be linked to relationship quality. The current findings are helpful in establishing consideration for context and language use in future studies.

Emotion Words as Mediator in the Association between Emotion-focused DC and Interaction Quality

The third research question investigated whether observed emotion-focused supportive DC would significantly predict interaction quality with emotion words as a mediating variable. It was hypothesized that emotion-focused DC would be positively associated with use of emotion words, which would then be positively associated with interaction quality. Results showed a significant positive association between females' use of emotion words and male's interaction quality, such that the more females used emotion words, the better males perceived their interactions with their partners. This may suggest that males may respond more positively to discussions where the emotions are

emphasized (Shamir & Travis, 2002) or that they appreciate when women reveal their emotions because it could communicate trust and intimacy (Hook, Gerstein, Detterich, & Gridley, 2003). Given that there were no significant associations between females' emotion-focused DC and males' interaction quality, the latter explanation may be more plausible. When women speak about their emotions, men may interpret that as greater trust and closeness within the relationship and subsequently perceive greater quality of interaction.

None of the mediational paths in this model were significant, which was unexpected. This could be attributed to how emotion words were measured in this study. Due to mixed findings in the literature regarding positive and negative emotion words (e.g., Sanford & Rowatt, 2004; Slatcher & Pennebaker, 2006), it was decided that emotion words would be examined as a general, neutral word category. However, doing so could have left the distinct meanings behind positive and negative words unaccounted for. Positive emotion words may communicate genuine support whereas negative emotion words could mean emotional validation or even make matters more stressful. Separating emotion words into positive (e.g., happy, excited, joy) and negative (e.g., sad, angry, scary) may have been effective for this study given the different meanings that these two categories of words could carry. Another explanation could be that emotion words in general may not have accurately reflected emotion-focused DC. Although part of emotion-focused DC involves validating partners' emotional experiences, a larger component of it requires partners to through the use of appreciate, empathy, and encouragement without explicitly stating any emotions (Bodenmann, 1995; 2005).

Cognition Words as Mediator in the Association between Problem-focused DC and Interaction Quality

The fourth research tested the mediational role of cognitive words on the association between observed problem-focused supportive DC and interaction quality. It was hypothesized that problem-focused DC would be positively associated with use of cognition words, which would in turn positively predict interaction quality. The results indicated that males' use of cognitive words (e.g., "think," "cause," "effect") significantly predicted interaction quality; however, results did not show that male's observed problem-focused DC was linked to their use of cognition words. Boals and Klein (2005) suggested that cognition words reflect active search for meaning and understanding; thus, our findings may indicate that partners engaged in advice giving without fully considering how helpful their feedback would actually be.

While it was found that the use of cognition words did not mediate the association between problem-focused DC and interaction quality, the analyses did produce an interesting finding, especially when paired with the results from the previous hypothesis examining emotions. These results may suggest that females tend to focus on emotions more whereas males take on a more logical approach to resolving conflict, or that females may respond more positively to practical advice while males appreciate the emotional support from females (e.g., Feldman, 2003; Taylor, Klein, Lewis, Gruenewald, Gurung, & Updegraff, 2000).

Pronouns as Mediator in the Association between Negative DC and Interaction Quality

Similar to the second research question, the fifth and final research question assessed the associations between observed negative DC, use of pronouns, and perceived interaction quality. It was hypothesized that negative DC would positively predict use of "I" and "you" words and negatively predict use of "we" words, which would in turn be negatively and positively associated with interaction quality. Overall, there were few associations between negative DC, pronouns, and interaction quality. Opposite patterns were expected (i.e., negative DC would negatively impact interaction quality via more *I*-talk and *you*-talk and less *we*-talk). Most of the effects (both direct and indirect) examined in the models were non-significant, suggesting that there were no associations between negative DC, interaction quality, and pronoun use. This may suggest that when partners do not cope effectively together, they may not engage in use of pronouns and instead say phrases like, "Whatever," or, "That is ridiculous," to invalidate their partners' stress. Another explanation for these results could be that the use of negative DC was not prevalent in this study (see Table 1). However, females' negative DC marginally predicted their own interaction quality in two of the models, and this effect was significant in the model using *we*-talk as the mediator. These results are interesting because it has been found that males' DC is usually predictive of their own and the females' relationship outcomes (e.g., marital quality; Bodenman et al., 2006). However, these studies generally examined global relationship outcomes rather than more immediate outcomes such as interaction quality. It is possible that females' perceptions of their relationships may be more impacted by their own negative DC moments following

stressful conversations but as time passes, males' negative DC has a greater effect. Further, it is important to consider that females may engage in negative DC because they were dissatisfied with the relationship previous to the conversations in this study. This may cause them to have a biased view of the interaction and perceive it as negative as well.

Limitations

This study is not withstanding limitations. First, there may have been sample bias due to the majority of participants identifying as non-Hispanic White and being highly educated (i.e., most received at least a college degree). Achieving high levels of education may impact the way partners speak as well as their expectations of effective interactions. For instance, Karney and Bradbury (2005) found that couples who earn higher incomes experience more communication issues compared to other socioeconomic classes. Further, couples who are low in socioeconomic status may experience greater levels of external stress due to financial strain and other factors; thus, stress levels may be lower in the current sample. In addition, this study recruited from a population of self-selecting, heterosexual couples. Both partners had to agree to participate, so it was likely that partners were at least moderately satisfied with their relationships in order to complete a research study together. Overall, the lack of representation with respect to this sample may affect how generalizable the results are to all romantic couples facing stress. For instance, couples who are not native to the United States may encounter immigration stress (Falconier, Nussbeck, & Bodenmann, 2013; Falconier, Randall, & Bodenmann, 2016) and same-sex couples may experience stress due to discrimination from a

heteronormative environment (Meyer, 1995; Randall, Tao, Totenhagen, Walsh & Cooper, in press; Totenhagen, Randall, Cooper, Tao, & Walsh, in press).

Another limitation of this study is with respect how the variables were measured. This study used observed DC as the independent variable as it has been shown to be associated with various aspects of relationship wellbeing (Falconier, Jackson, Hilpert, & Bodenmann, 2015). By having raters code for observable behavior, it was thought that real-time dyadic coping responses of partners could be accurately accessed; however, the dyadic coding manual (Bodenmann, 2008; Randall, Borders, Holzapfel, Johnson, & Lau, 2016) has not yet been validated, and there were components that may have accurately captured dyadic coping. For example, one of the coding options was "active listening" or "inquiry" in which raters coded for when partners appears to be engaged in what the other partner is discussing or provides some form of encourager. It can be difficult to determine whether the partners who received this type of (passive) response actually felt that the support was adequate or that their partners were coping with them. Further, the proportion of instances of DC throughout the entire conversation were calculated in order to match how language was measured (i.e., via LIWC); however, the use of aggregate variables may not represent the true transactional nature of DC. As couples engage in discussions about stress, moment-to-moment conversational cues could occur and cause the partners to respond to each other (Mohr & Spekman, 1994; Sanders, Halford, & Behrens, 1999); thus, using cumulative variables rather than examining the variables at each time point may remove some of the meaningful information about the stress and coping processes during real-time conversations. Moreover, it could be argued that the mediation models we assessed were not true mediation models for a similar reason. In

order for mediation to take place, there needs to be a temporal sequence, meaning the independent variable would be measured first, then mediators, and finally dependent variables. In this study, DC and language were measured concurrently due to the way those variables were obtained.

There may also be some concerns regarding the conversational piece of this study. As discussed in the Method section, one partner in each couple would take on the stress or speaker role while the other partner would assume the support or listener position. Further, this assignment was counterbalanced in that the female in the first couple was the speaker, then the male in the second couple was the speaker, etc. However, many of the partners' stressors overlapped (e.g., school, work) so it was unclear for them which roles they were supposed to take on and this caused them to exchange roles several times throughout the conversations. Specifically, there were moments during which the assigned listener would speak about his/her stress and the assigned speaker coped with his/her partner. Thus, it was difficult to determine who supported whom during which time points, which could have affected the results because the distinguishable variable used in the analyses was the assigned speaker or listener role.

Future Directions

Future research examining coping and micro-communication dynamics may wish to recruit a more diverse sample in terms of ethnicity, education background, and sexual orientation. Doing so could create more variability in variables such as partners' stress levels, dyadic coping, language use, interaction quality, and overall relationship outcomes, which may lead to more externally valid results, such that the findings could be more generalizable and provide a more in-depth knowledge about how stress and

coping processes occur for other couples. In addition, it may be interesting to consider couples' conversations about internal stressors, which originate from within the relationship due to conflicts arising from differences in opinions, habits, amongst other items. These stressors may impact couples on a more personal level, so it would be reasonable to expect that stress communication and dyadic coping dynamics to differ in these discussions.

One of the advantages of using real-time data is the ability to assess moment-to-moment changes in affect, behavior, and cognition (Iida, Shrout, Laurenceau, & Bolger, 2012; Laurenceau & Bolger, 2005). Further research could use statistical analyses that are appropriate in testing for fluctuations between various time points, such as the cross-lagged model (Kenny, Kashy, & Cook, 2006). The cross-lagged model hypothesizes that Partner's A predictor variable (in the case of the present research, dyadic coping) at Time 1 could impact Partner B's outcome variable at Time 2 (i.e., language use). This analytical procedure could be especially helpful in the context of DC because of the transactional nature of this phenomenon and would allow researchers to closely examine the micro-communication dynamics between partners. If this technique were utilized, results may suggest that certain behaviors could lead to specific language being used and vice versa.

The transactional or interactive aspect of couples' coping raises another interesting point. Prior to data analyses, it was assumed that one partner's stress communication leads to the other partner's dyadic coping, which then elicits more stress communication from the first partner (Bodenmann, 1995; 2005). However, it is possible that a partner's dyadic coping behavior could provoke dyadic coping behaviors from the

other partner too. For instance, Partner A may say, “I am stressed about work,” which may cause Partner B to respond with, “I understand that things have been unfair at work but I am here for you,” which, in turn, could lead to Partner A saying, “I am so glad to have you.” This last statement by Partner A may act as emotional encouragement for Partner B, although Partner A was the one originally taking on the stress role. A potential area of interest to investigate in the future may be the communication patterns between partners and its association with relationship outcomes.

The micro-communication component also illustrates that perhaps examining the conversations in 10-second intervals may not be the best approach to code for DC engagement in partners. The partners’ verbal communication varied in length, which caused some of the coding to be inaccurate. In addition, certain categories take precedent over others. For example, if one partner demonstrated negative DC for even just a split second, raters would code that and override any positive DC that may have occurred previous in the same timeframe. In the future, it may be more effective to analyze the statements specifically while still maintaining the temporal component of the conversations (Badr, Milbury, Majeed, Carmac, Ahmad, & Gritz, 2016; Bone et al., 2013; Nguyen & Rose, 2011).

Another direction future projects could take is to further examine the coding and sequence of stress communication and DC. As discussed above, there were uncertainties about the way DC was measured in this study so it could be beneficial to improve upon this in the future. Specifically, it may be worthwhile to thoroughly review the coding manual (Bodenmann, 2008) and make modifications that may be more appropriate for the external stress conversations utilized in the current research. This may include clarifying

whether use of sarcasm should be considered negative DC or use of humor in emotion-focused DC and the role of active listening in DC, to name a couple of examples.

Implications for Mental Health Professionals

The results of this study may have implications for mental health professionals working with couples. Coping-Oriented Couples Therapy (Bodenmann, 2004) is an empirically validated treatment approach that emphasizes stress communication and mutual support in couples. Clinicians who practice this model coach partners in effective communication and could provide constructive feedback based on the findings about language use from this study, which may lead to better treatment outcomes for distressed couples. Even for practitioners who do not engage in relationship counseling, the results could be beneficial by raising awareness of the practitioners' own language use. Oftentimes, clinicians may help clients cope as they express their stress, and paying attention to specific word use may ensure that clinicians are responding in therapeutic ways.

Conclusion

This research project combined the use of real-time interaction data from romantic couples' discussions about external stress and complex statistical procedures to obtain a more in-depth perspective of couples' micro-communication stress and coping processes. Specifically, this study examined whether partners' coping behaviors would trigger use of particular words in each other and whether this could lead to higher levels of perceived interaction quality. Although results did not suggest a significant mediation of language use on the association between DC and interaction quality, this study showed that there were some significant associations between the variables of interest. Findings

suggested that females' observed positive and negative DC were associated with their own *I*-talk and *you*-talk and that females' use of emotion words and males' use of cognition words had effects on their partners' interaction quality.

Partners could take note of these findings as a way of improving communication by becoming more cognizant of their language use, which could occur via psychoeducation or skills training. The current study showed that words can carry positive and negative meaning and that micro-communication cues could impact the overall quality of interactions; thus, partners could monitor their specific word use and this may draw attention to how they interact with and respond to one another.

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APPENDIX A

TABLES

Table 1

Frequency of DC and Language Use (in Percentages of Conversations)

Variables	Female	Male
PosDC	52.57	54.38
EmoDC	2.71	3.96
ProbDC	11.53	10.69
NegDC	2.71	2.08
I-talk	6.60	7.06
You-talk	3.88	3.08
We-talk	2.01	1.80
EmoW	6.14	5.97
CogW	14.84	14.98

Note. PosDC = Positive DC; NegDC = Negative DC; EmoDC = Emotion-focused DC; ProbDC = Problem-focused DC; EmoW = Emotion words; CogW = Cognition words; IQ = Interaction Quality.

Table 2

Correlations for Study Variables

Variables	1	2	3	4	5	6	7	8	9	10
1. PosDC	-.58**	-.30†	.28†	.28†	-.53**	.42**	-.20	.37*	-.34*	.22
2. NegDC	-.14	-.05	-.12	.04	.22	.13	-.00	-.21	-.14	-.36*
3. EmoDC	.36*	-.12	.06	.19	.00	-.06	.06	.41**	.02	.13
4. ProbDC	.61**	-.10	.19	.42**	-.20	.19	.47**	-.16	-.25	.13
5. I-talk	-.44**	-.11	-.11	-.22	-.12	-.53**	.04	-.05	.24	-.12
6. You-talk	.30	-.01	.41**	.14	-.30	.03	-.30†	-.07	-.03	-.21
7. We-talk	.33*	.26	.11	.47**	-.51**	-.10	.72**	.00	-.33*	.22
8. EmoW	.09	.17	.02	-.13	-.15	.12	.20	.12	-.14	.21
9. CogW	-.06	.24	.12	.20	.04	.06	.06	-.19	.16	-.10
10. IQ	.09	-.11	-.03	-.06	-.35*	.08	.22	.11	.11	.45**

Note. PosDC = Positive DC; NegDC = Negative DC; EmoDC = Emotion-focused DC; ProbDC = Problem-focused DC; EmoW = Emotion words; CogW = Cognition words; IQ = Interaction Quality. This table presents the bivariate correlations for women (above the diagonal), for men (below the diagonal), and between women and men (on the diagonal)

†$p < .10$; *$p < .05$; **$p < .01$.

Table 3

Model Fit with Interaction Quality as Dependent Variable

		Model Fit					
IV	Mediator	χ^2	*p*	CFI	TLI	RMSEA	SRMR
PosDC	I-talk	41.61	.00	.051	-3.113	.385	.233
PosDC	You-talk	41.61	.00	.136	-2.744	.385	.218
PosDC	We-talk	41.61	.00	.211	-2.420	.385	.208
NegDC	I-talk	4.12	.66	1.000	1.315	.000	.063
NegDC	You-talk	3.89	.69	1.000	1.480	.000	.046
NegDC	We-talk	4.12	.66	1.000	1.176	.000	.060
EmoDC	EmoW	6.29	.39	.990	.955	.035	.070
ProbDC	CogW	3.89	.69	1.000	1.480	.000	.046

Note. IV = Independent Variable; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual; PosDC = Positive DC; NegDC = Negative DC; EmoDC = Emotion-focused DC; ProbDC = Problem-focused DC; EmoW = Emotion words; CogW = Cognition words.

Table 4

Indirect Actor and Partner Effects of DC on Interaction Quality, with Language Use as the Mediator Variable

			Actor	
IV	Mediator	Effect	Female	Male
Positive DC	I-talk	Actor-Actor IE	-.03	-.02
		Partner-Partner IE	.03	.13
		Actor-Partner IE	.05	.08
		Partner-Actor IE	.05	.01
Positive DC	You-talk	Actor-Actor IE	-.04	.00
		Partner-Partner IE	-.09	.08
		Actor-Partner IE	-.04	.02
		Partner-Actor IE	.00	.09
Positive DC	We-talk	Actor-Actor IE	.01	.06
		Partner-Partner IE	.02	.01
		Actor-Partner IE	.00	.02
		Partner-Actor IE	.04	.03
Negative DC	I-talk	Actor-Actor IE	-.01	.00
		Partner-Partner IE	.02	-.03
		Actor-Partner IE	-.03	-.02
		Partner-Actor IE	-.04	.00
Negative DC	You-talk	Actor-Actor IE	-.02	-.01
		Partner-Partner IE	.00	-.02
		Actor-Partner IE	-.02	-.02
		Partner-Actor IE	.01	.01
Negative DC	We-talk	Actor-Actor IE	.00	.00
		Partner-Partner IE	.01	.02
		Actor-Partner IE	.00	.03
		Partner-Actor IE	.01	.00

Table 4 Continued

IV	Mediator	Effect	Actor	
			Female	Male
Emotion-focused DC	Emotion Words	Actor-Actor IE	.12	.00
		Partner-Partner IE	-.01	.02
		Actor-Partner IE	.00	.00
		Partner-Actor IE	.15	.01
Problem-focused DC	Cognition Words	Actor-Actor IE	.04	.00
		Partner-Partner IE	-.03	.03
		Actor-Partner IE	.00	.06
		Partner-Actor IE	-.01	.08

Note. This table displays standardized coefficients. The significance of indirect effects was assessed using the bootstrapped 95% confidence interval. The actor-actor indirect effect (IE) represents a mediational path involving two actor effects (i.e., actor independent variable on actor mediator and actor mediator on actor dependent variable). Similarly, the partner-partner IE involves two partner effects, the actor-partner IE involves an actor effect followed by a partner effect, and the partner-actor IE involves a partner effected followed by an actor effect.

APPENDIX B

FIGURES

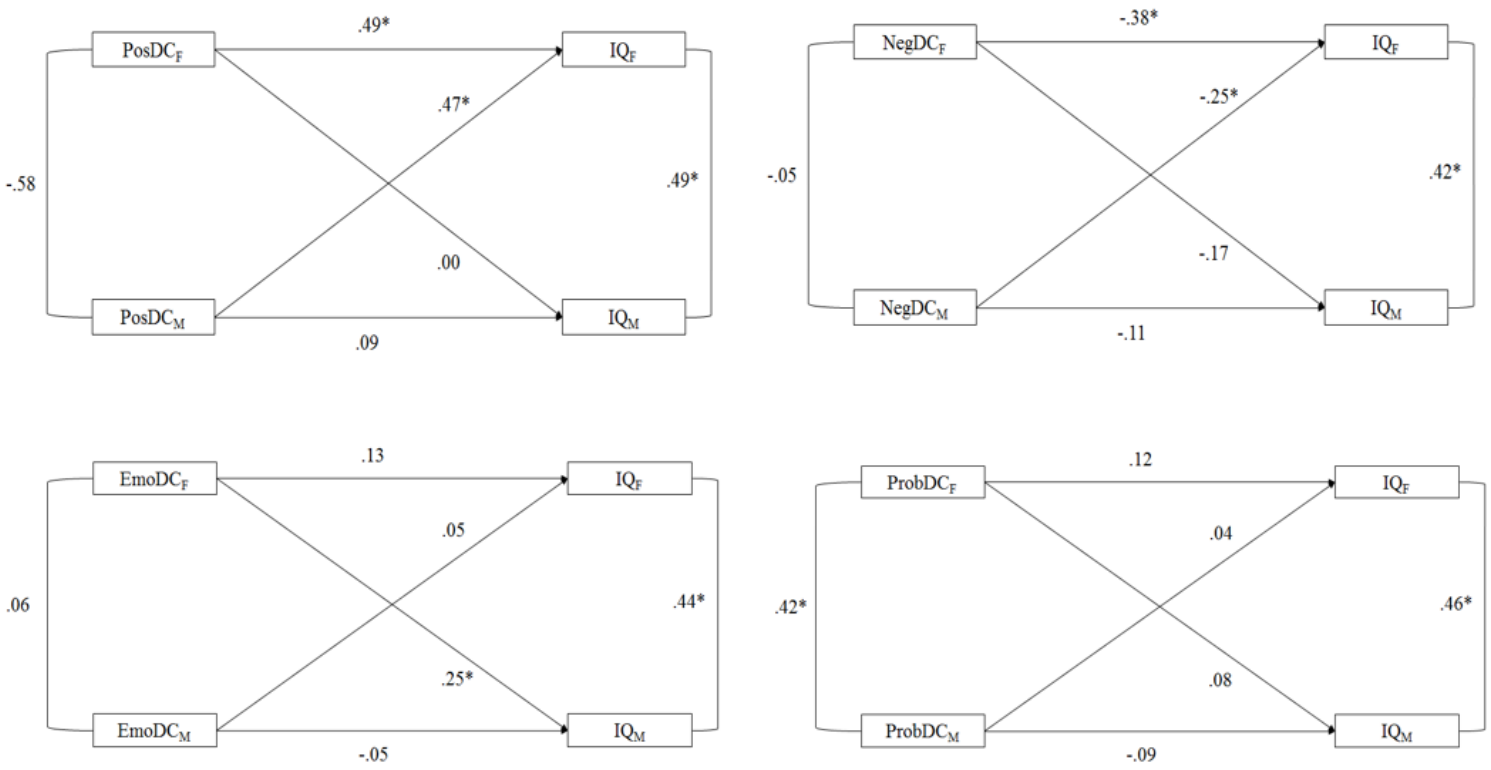

Figure 1. Actor-partner interdependence model of Positive DC (PosDC), Negative DC (NegDC), Emotion-focused DC (EmoDC), and Problem-focused DC (ProbDC) predicting interaction quality (IQ). Subscripts of variables denote whether the variable belongs to the female partner (F) or male partner (M). The figure displays standardized coefficients.

*$p < .05$.

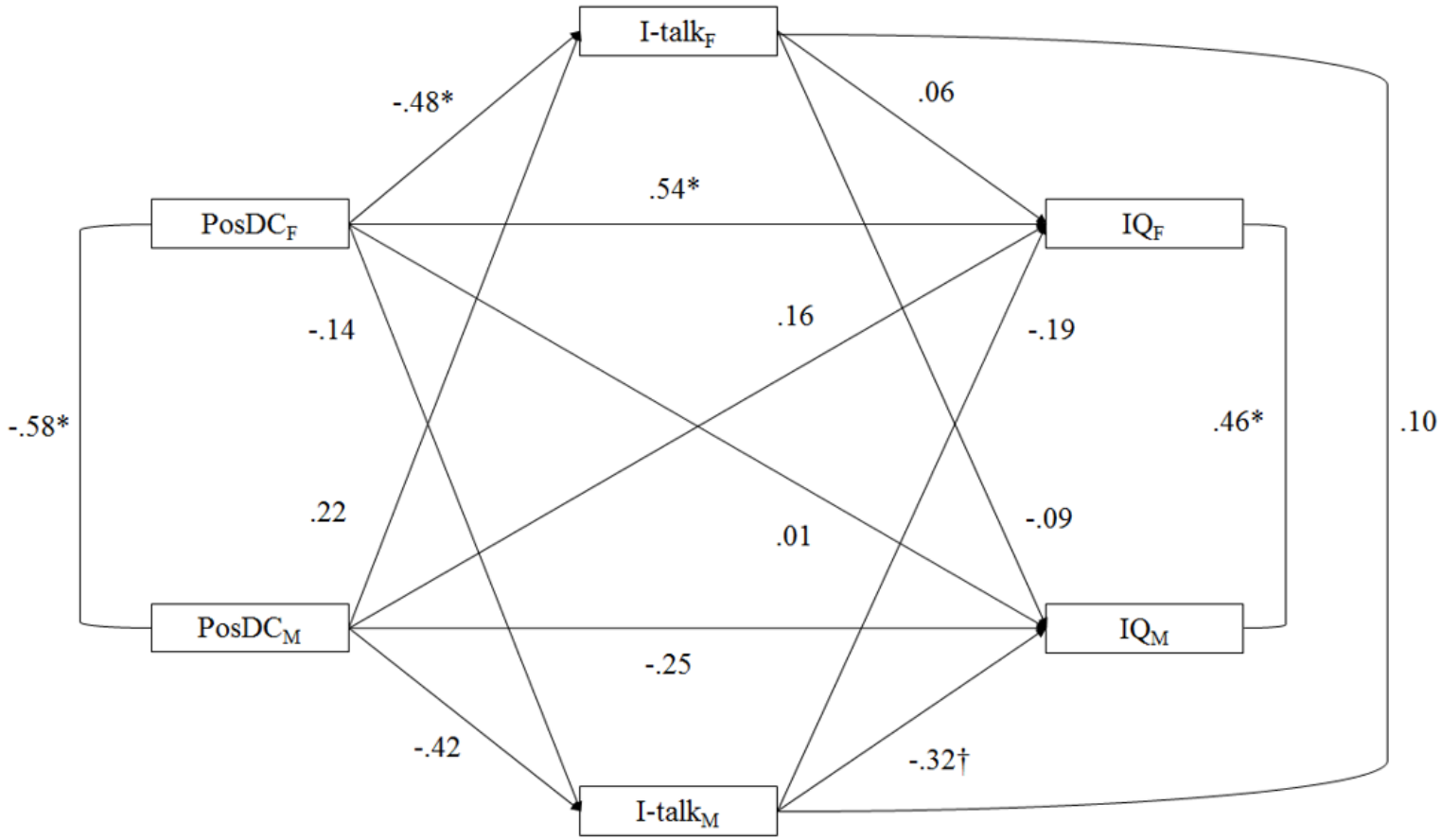

Figure 2. Actor-partner interdependence mediation model of positive DC (PosDC) predicting interaction quality (IQ), with I-talk as the mediator variable. The figure displays standardized coefficients.

*$p < .05$.

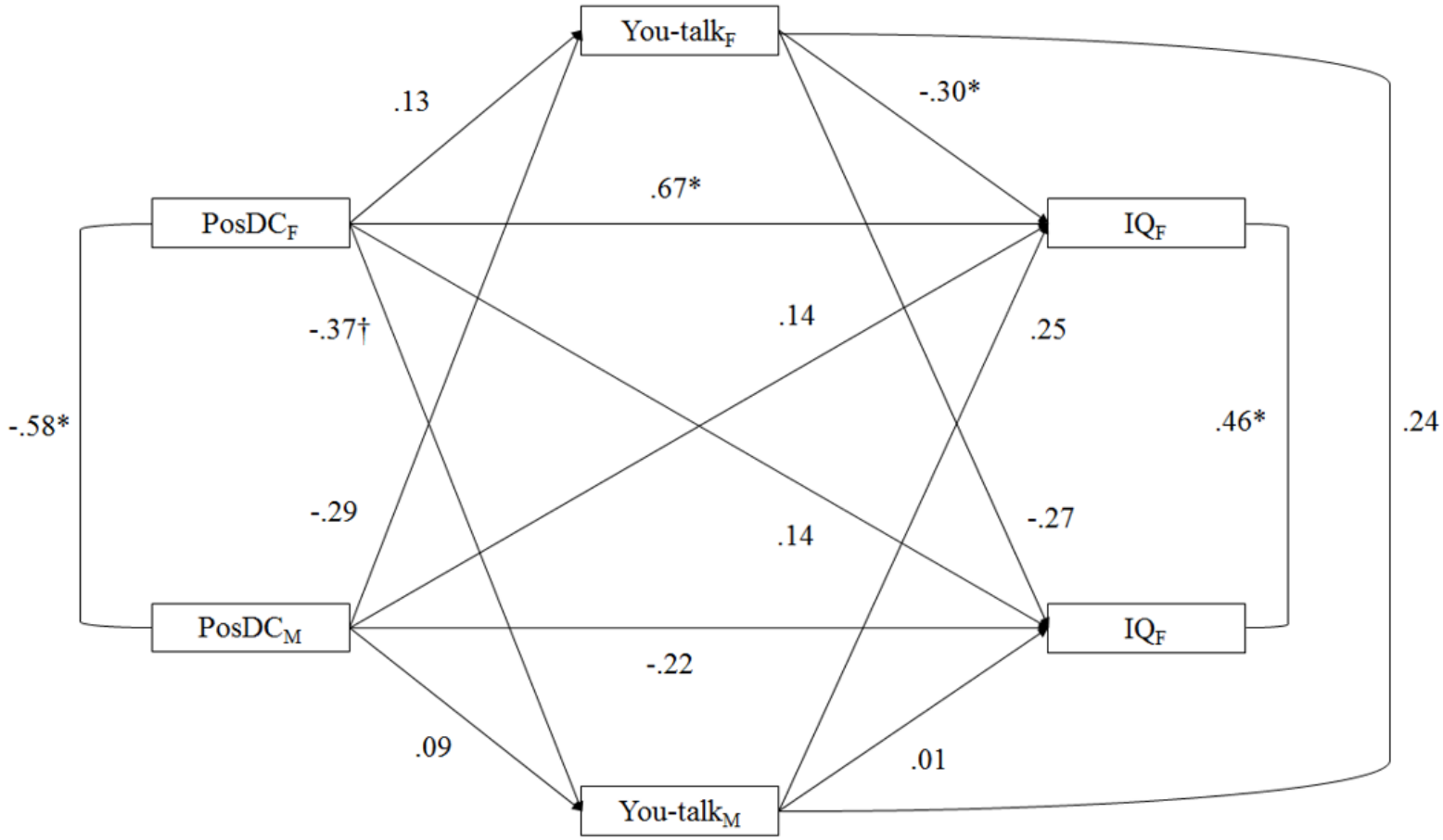

Figure 3. Actor-partner interdependence mediation model of positive DC (PosDC) predicting interaction quality (IQ), with you-talk as the mediator variable. The figure displays standardized coefficients.

†$p < .10$; *$p < .05$.

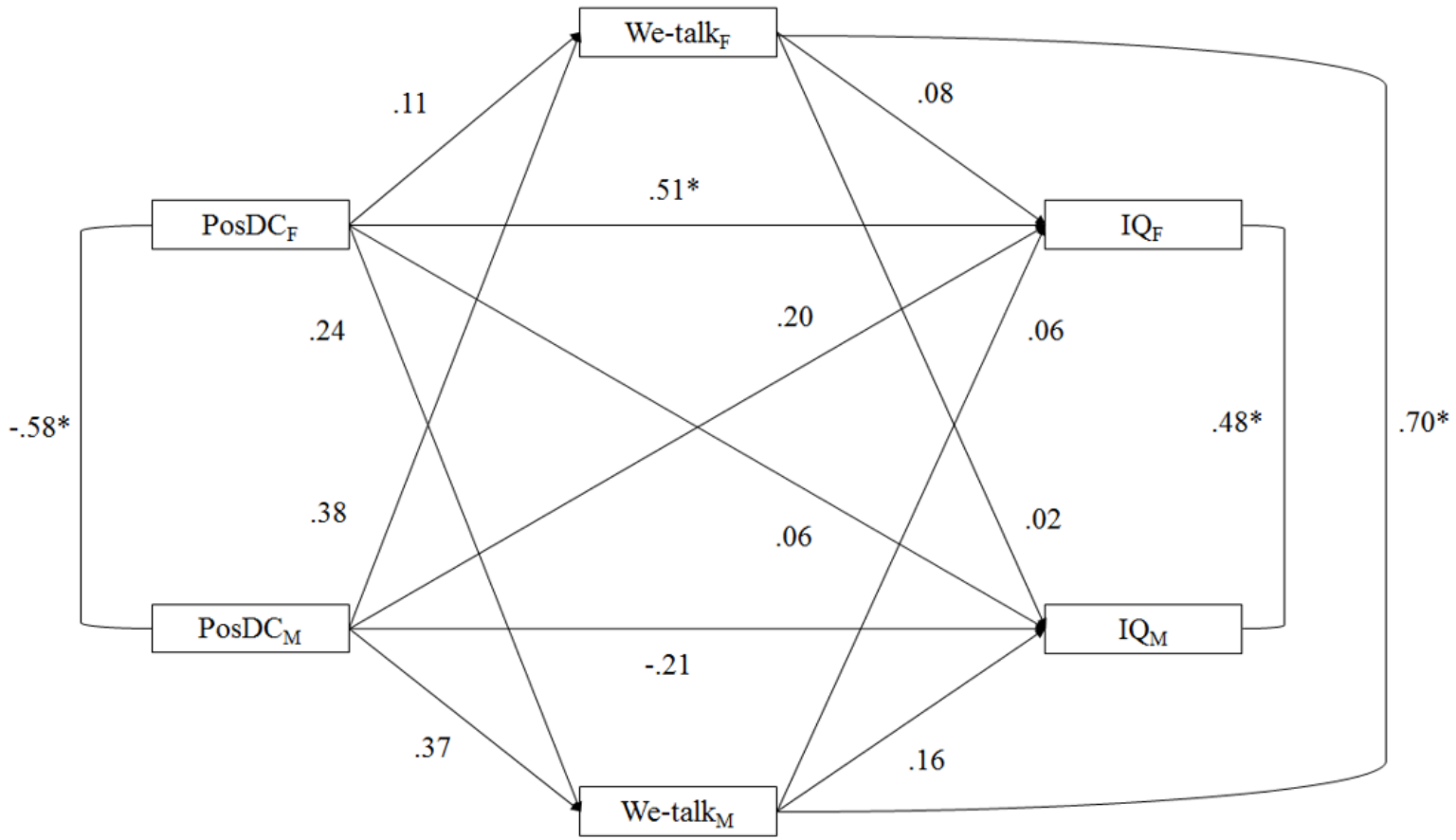

Figure 4. Actor-partner interdependence mediation model of positive DC (PosDC) predicting interaction quality (IQ), with we-talk as the mediator variable. The figure displays standardized coefficients.

*$p < .05$.

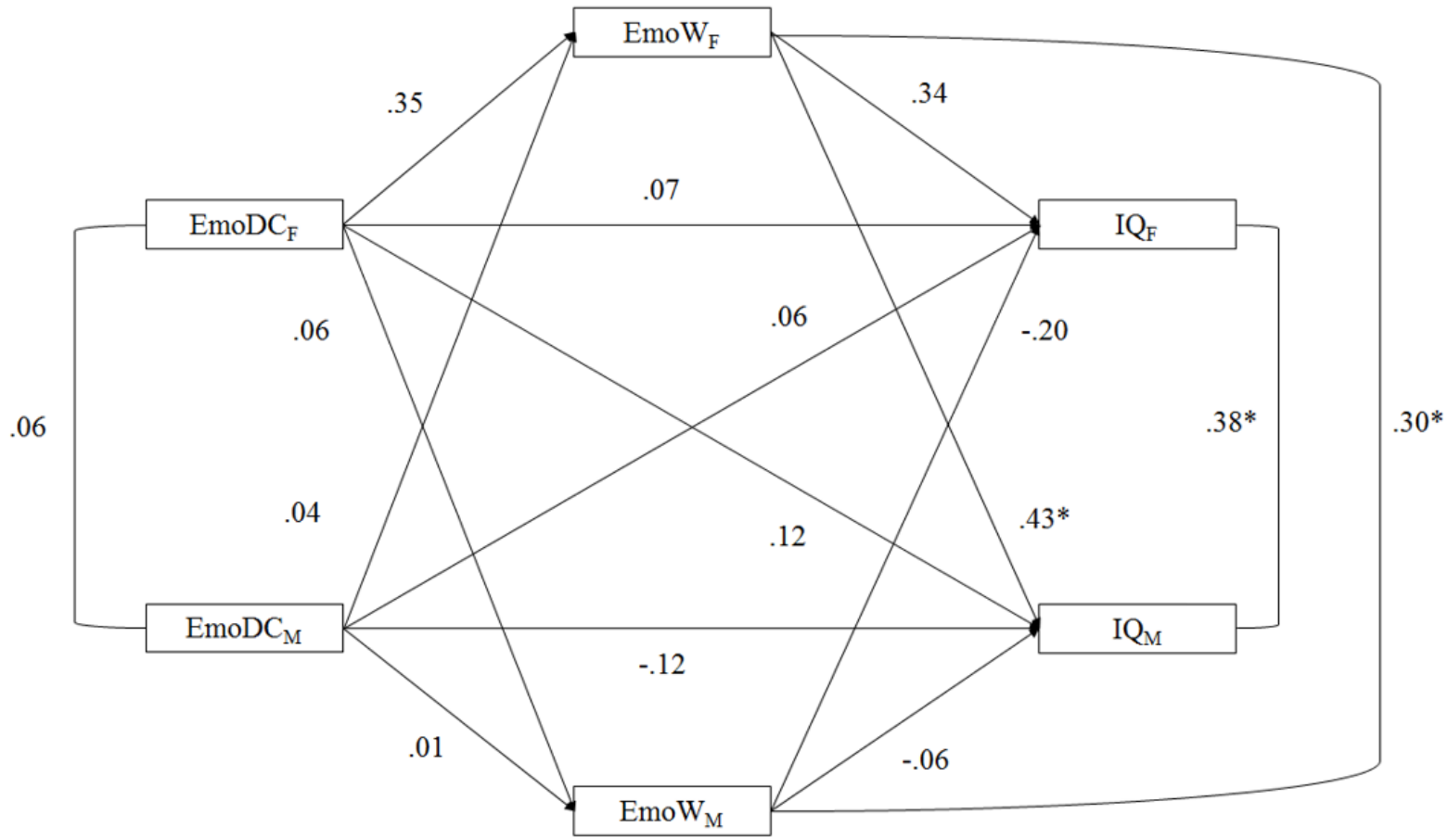

Figure 5. Actor-partner interdependence mediation model of emotion-focused supportive DC (EmoDC) predicting interaction quality (IQ), with emotion words (EmoW) as the mediator variable. The figure displays standardized coefficients.

*$p < .05$.

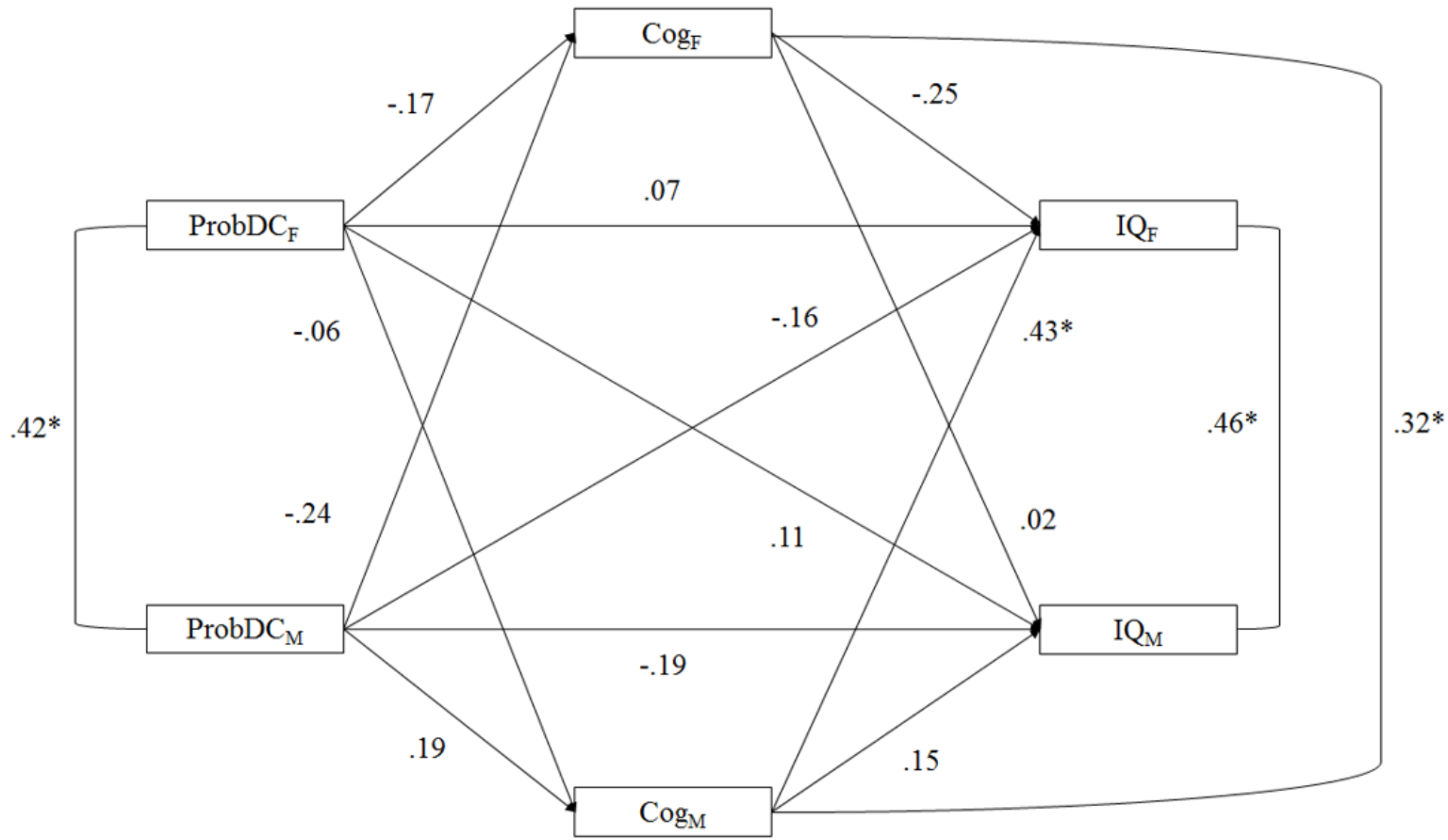

Figure 6. Actor-partner interdependence mediation model of problem-focused supportive DC (ProbDC) predicting interaction quality (IQ), with cognitive words (CogW) as the mediator variable. The figure displays standardized coefficients.

*$p < .05$.

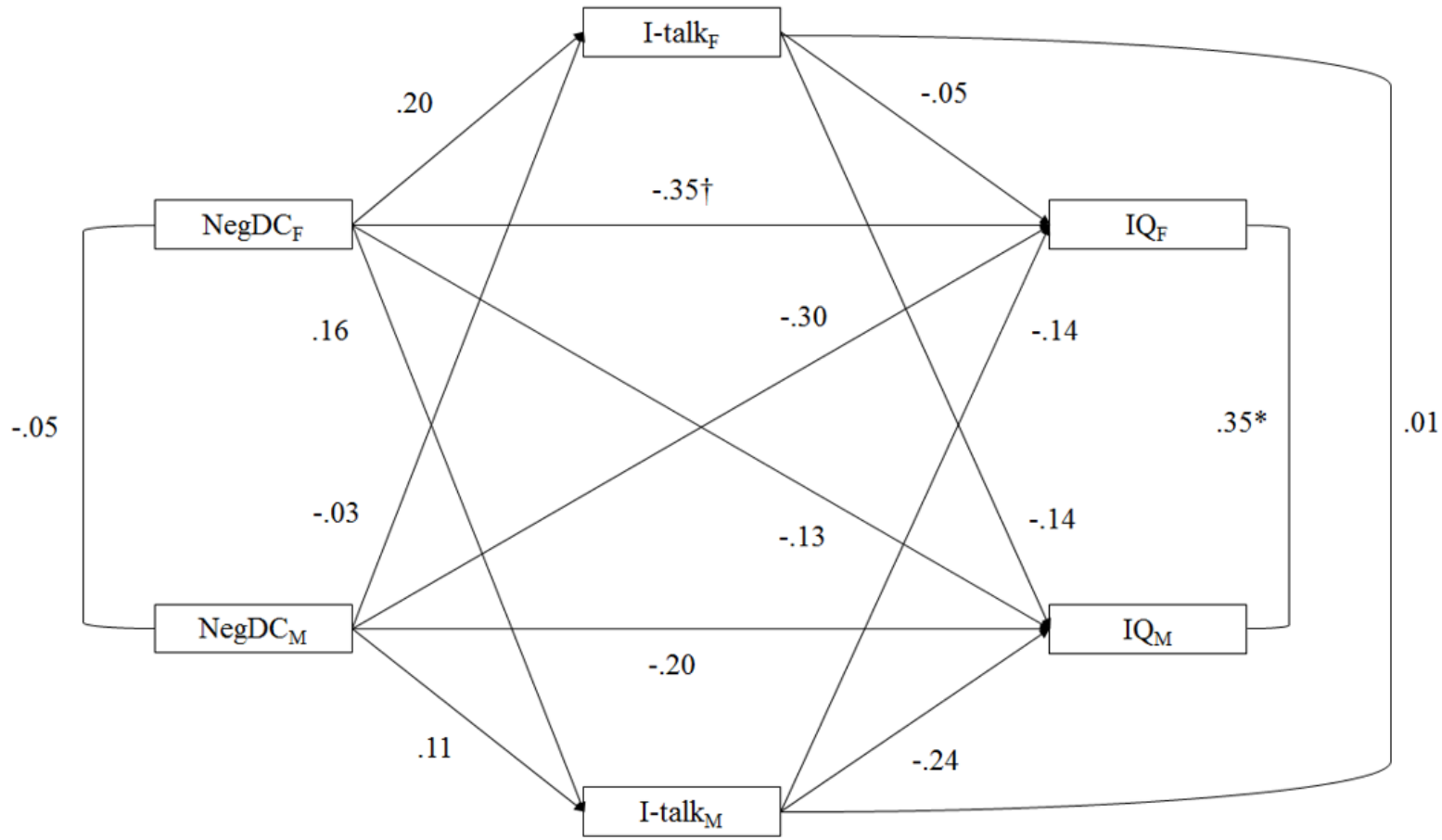

Figure 7. Actor-partner interdependence mediation model of negative DC (NegDC) predicting interaction quality (IQ), with I-talk as the mediator variable. Subscripts of variables denote whether the variable belongs to the female partner (F) or male partner (M). The figure displays standardized coefficients.

†$p < .10$; *$p < .05$.

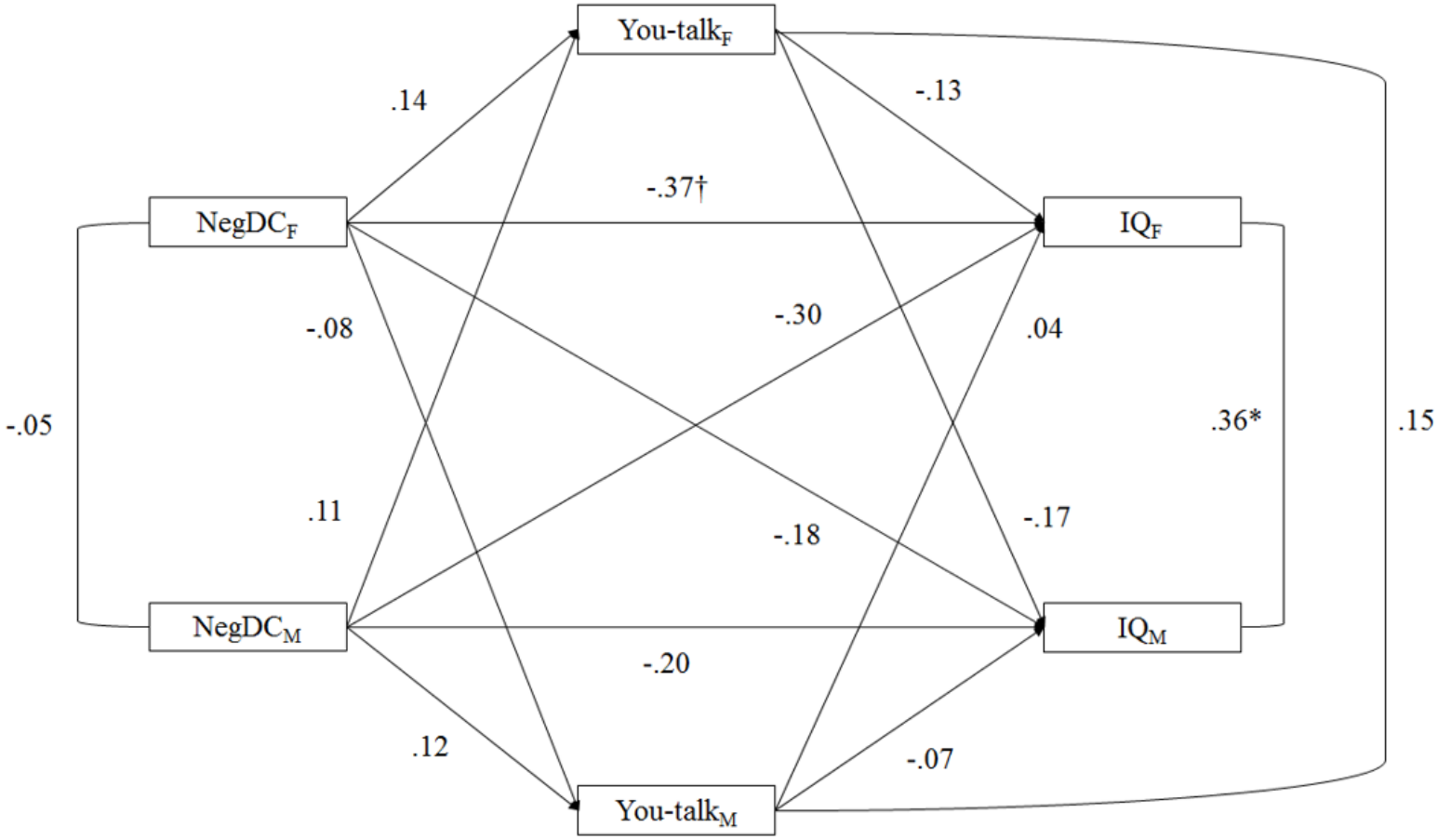

Figure 8. Actor-partner interdependence mediation model of negative DC (NegDC) predicting interaction quality (IQ), with you-talk as the mediator variable. The figure displays standardized coefficients.

†$p < .10$; *$p < .05$.

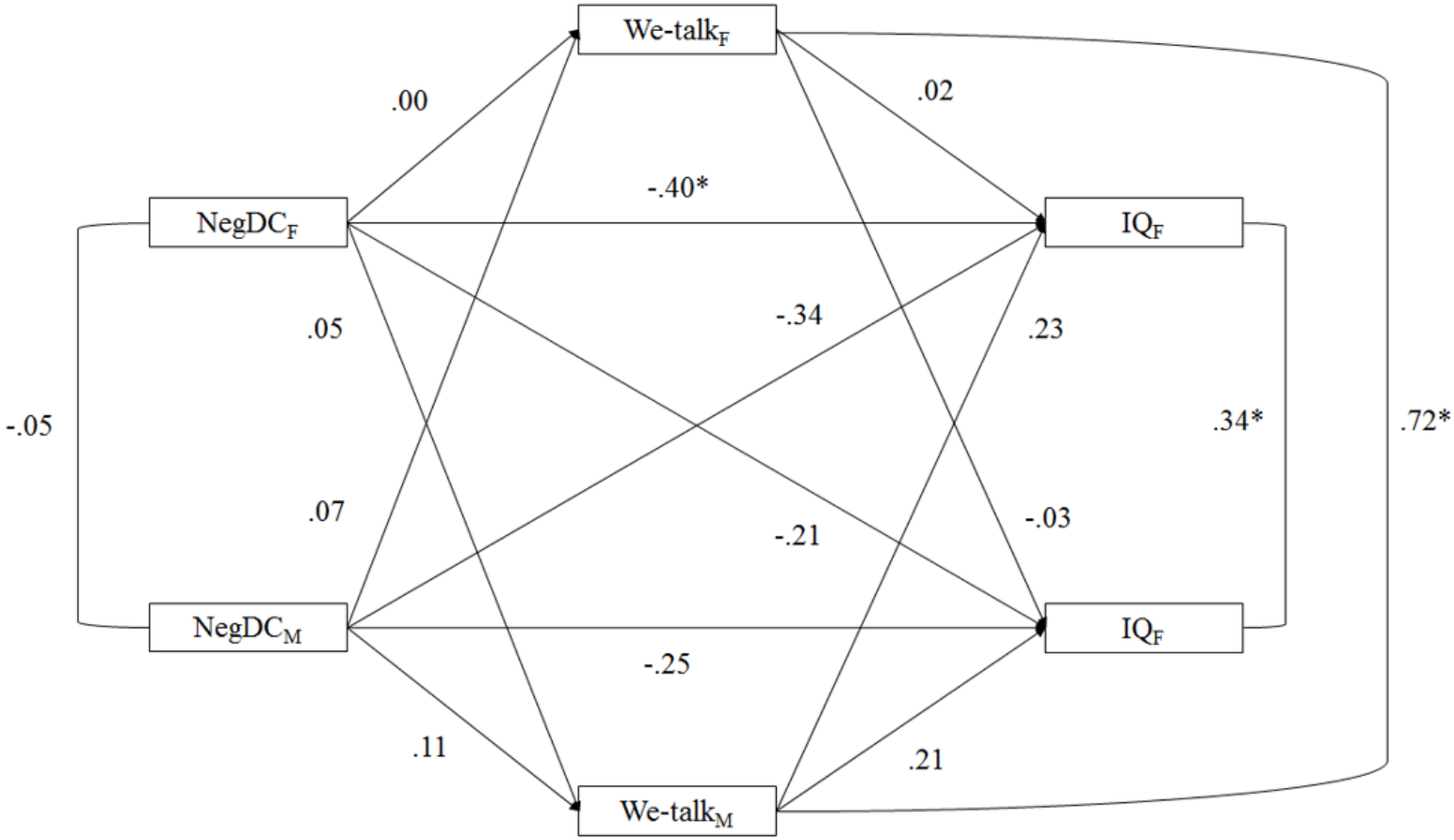

Figure 9. Actor-partner interdependence mediation model of negative DC (NegDC) predicting interaction quality (IQ), with we-talk as the mediator variable. The figure displays standardized coefficients.

*$p < .05$.

APPENDIX C

EXCERPT FROM ONE COUPLE'S CONVERSATION ABOUT FINANCIAL STRESS

Partner A: "money is very stressful because I'm a poor student and I can't afford anything ha ha ha and with the wedding coming up I have to buy people gifts and its expensive"

Partner B: "yeah but how's that any different from the last four years"

Partner A: "because we have to buy people I have to buy people christmas presents and then I have to buy everybody a gift for the wedding and I have your family too and I have to buy hostess gifts for the shower and for the rehearsal dinner"

Partner B: "umm"

Partner B: "have to?"

Partner B: "well"

Partner B: "umm"

Partner B: "why don't you just do a gesture like"

Partner A: "well they're spending so much money to host all of these things for me and and I think that not like doing whoops"

APPENDIX D

COMPARISON OF FEMALES' USE OF "I" PRONOUNS IN STRESS COMMUNICATION (FEMALE 1) AND ENGAGEMENT IN POSITVE DC (FEMALE 2)

Female 1: "Money is very stressful because **I'm** a poor student and **I** can't afford anything and with the wedding coming up **I** have to buy people gifts and it's expensive"

Male 1: "Yeah but how is that any different from the last four years?"

Female 1: "Because **I** have to buy people Christmas presents and then **I** have to buy everybody a gift for the wedding and **I** have your family too and **I** have to buy hostess gifts for the shower and for the rehearsal dinner."

Male 1: "Have to? Why don't you just do a gesture like?"

Female 1: "Well, they're spending so much money to host all of these things for **me** and **I** think **I'm** going to make them something. **I** still have to spend money to buy the things **I** have to make."

Male 1: "Well, we have markers, don't we?"

Male 2: "Yeah, or like I don't know, because I don't necessarily plan on being there for like five years but I don't necessarily don't either. Depends on like what happens really"

Female 2: "Well, you don't know. Maybe you're going to super love it and it's going to be the best thing ever and you'll like move up the ladder to president of the company."

Male 2: "Yeah."

Female 2: "**I** feel like you should be honest like you know, it's not like, '**I** went to college for loan processing or whatever but—See? Already doing good."

APPENDIX E

IRB APPROVAL DOCUMENTS

APPROVAL:CONTINUATION

Ashley Randall

CLS - Counseling and Counseling Psychology

480/727-5312 Ashley.K.Randall@asu.edu

Dear Ashley Randall:

On 7/10/2015 the ASU IRB reviewed the following protocol:

Type of Review:	Continuing Review
Title:	Couples' Co-regulation Processes During Real-Time Interactions: An Examination of Behavior and Emotion
Investigator:	Ashley Randall
IRB ID:	STUDY00001364
Category of review:	(4) Noninvasive procedures, (7)(b) Social science methods, (7)(a) Behavioral research
Funding:	Name: ISSR: Social Science Research, Institute for
Grant Title:	None
Grant ID:	None
Documents Reviewed:	• Couples Coreg_Revised Consent, Category: Consent Form; Referral Information.pdf, Category: Participant materials (specific directions for them); • Student RA CITI, Category: Other (to reflect anything not captured above); Couples Coreg Debrief.pdf, Category: Other (to reflect anything not captured above); • Student RA CITI, Category: Other (to reflect anything not captured above); • Student RA CITI, Category: Other (to reflect anything not captured above); • Couples Coreg_Screening Questionnaire.pdf, Category: Screening forms; Couples Coreg Baseline Measures.pdf, Category: Measures

	(Survey questions/Interview questions/interview guides/
	focus group questions); • Student RA CITI, Category: Other (to reflect anything not captured above); • Student RA CITI, Category: Other (to reflect anything not captured above); • ISSR Budget and Timeline_Randall, Duran & Hilpert_Revised.docx, Category: Sponsor Attachment; • Couples Coreg Lab Measures.pdf, Category: Measures (Survey questions/Interview questions/interview guides/focus group questions); • Student RA CITI, Category: Other (to reflect anything not captured above); • MindIntheEyesMaterial.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Couples Coreg Application.docx, Category: IRB Protocol; • Student RA CITI, Category: Other (to reflect anything not captured above); • Couples Coreg_Participant Master List.pdf, Category: Recruitment Materials; • Couples Coreg_Recruitment Emails_Revised.pdf, Category: Recruitment Materials; • Student RA CITI, Category: Other (to reflect anything not captured above); • Couples Coreg_Video Consent.pdf, Category: Consent Form; • Student RA CITI, Category: Other (to reflect anything not captured above); • Couples Coreg_FB & Social Media Recruitment.pdf, Category: Recruitment Materials; • Couples Coreg_Recruitment Flyer.pdf, Category: Recruitment Materials;

The IRB approved the protocol from 7/10/2015 to 7/27/2016 inclusive. Three weeks before 7/27/2016 you are to submit a completed Continuing Review application and required attachments to request continuing approval or closure.

If continuing review approval is not granted before the expiration date of 7/27/2016 approval of this protocol expires on that date. When consent is appropriate, you must use final, watermarked versions available under the “Documents” tab in ERA-IRB.

In conducting this protocol you are required to follow the requirements listed in the

INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator