THE ASSOCIATION BETWEEN DEPRESSION & MARRIAGE QUALITY USING THE CES-D & RMICS2

by

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ABSTRACT

Individuals that experience depressive symptoms are at higher risk for poor marital quality and distress. Some theories suggest that for depressed individuals, stress generated from negative life events can perpetuate their depression further, causing the individual to need more support from their partner. If this need is not met, the depressed individual may feel rejected and lose their sense of belonging with their partner. Both this and stress can induce depressive-like symptoms that form through biological processes. The present study looks to investigate the relationship between depression and marital quality under the conditions of marital conflict discussions. Both partners of a couple (*N*= 72) were asked to complete various questionnaires and a conflict discussion task. Marital Quality is assessed via the conflict discussion tasks that are coded using the Rapid Marital Interaction Coding System- Version 2 (RMICS2). Observational codes from the discussion task were summed to find marital quality for each partner. Depression was measured using a self-report questionnaire, the Center for Epidemiological Studies Depression (CES-D) scale. It was found that individuals that exhibit higher levels of depression are more likely to exhibit lower levels of marital quality than individuals with lower levels of depression. The relationship between depression and marital quality's implications on physical and mental health, COVID-19, and therapeutic approaches are discussed.

INTRODUCTION

Researchers have been interested in marital quality and its impacts for many decades. On the positive side, marriage can be one of the most meaningful and fulfilling relationships an individual can have. However, it can also have considerable negative effects on a person's life if the relationship is in distress. When an individual is in a distressed romantic relationship, they may feel disconnected from their partner both socially and romantically (Jaremka et al., 2022). More significantly, this disconnect can lead the individual to feeling a threat to their belonging which can have a multitude of mental and physical health consequences (Baumeister & Leary, 1995; Jaremka et al., 2022). The most commonly studied negative effect is depression; there have been multiple studies investigating the presence of depression within a marital relationship. These studies consistently find that marital distress and depression are linked. For example, depressed individuals are more likely to view their partners as less understanding, less sympathetic, and less responsive (Carnelley et al., 1994; Davila et al., 1997; Gordon et al., 2013; Pietromonaco et al., 1992), and tend to expect more negative behavior from their partners (Overall & Hammond, 2013) than their non-depressed counterparts.

There are many explanations as to why marital distress and depression are so closely related. For example, interpersonal distress and feeling a strong sense of belonging with your partner both have critical effects on mental health and are strong determinants of relationship quality (Baumeister & Leary, 1995; Morry et al., 2010). In addition, people have a strong need to belong, which can be fulfilled via a high

quality romantic relationship. When that basic need is not being met, it leads to adverse mental and physical health consequences. Understanding the relationship between depression and marriage quality allows for a better approach to resolving and improving marital discord, communication during conflict, and various mental and physical health-related issues that can stem from depression and poor marriage quality. These and other theories linking marital quality and depression are described in more detail below.

Stress Generation & Communication During Conflict

Depression and marital quality might be closely related, in part, because of communication patterns among depressed individuals. Past research has found that depressed individuals are less likely to express adequate communication during conflict discussions (Christensen & Shenk, 1991) and are more likely to be disruptive and combative during problem-solving conversations (Christian et al., 1994). When this behavior is present, couples often feel an increase in interpersonal stress and find their conversations unproductive and ineffective in coming to resolutions. Stress can cause many negative behaviors such as poor problem-solving abilities, cognitive distortions, and poor communication skills, all of which can cause miscommunications and a lack of understanding between partners (Gordon et al., 2013; Hammen, 1991). Beach et al. (1998) has extended this model to explain how depressed people function in their relationships. Specifically, they suggest that depressed individuals generate more stress from interpersonal relationship conflict, which makes their depression worse and increases their negativity, leading to more stress and so on (Beach et al.,

1998). Beach et al. (1998) explains further that this cycle also causes the depressed partner to need more support and reassurance from their partner, overburdening the partner and generating even more stress in the relationship. This causes increases in depression and ultimately decreases relationship quality (Beach et al., 1998).

The stress generation model of depression (Hammen, 1991) offers another explanation as to why depression and marital quality are closely related. Hammen's (1991) model explains that depressed individuals can perpetuate their own stress-inducing events, such as increasing their negative behaviors to receive more support from their partner. This ultimately provokes more stress and increases their depressive symptoms (Hammen, 1991). Often depressed individuals, despite being hostile or combative toward their partner, will turn to their partner for support or comfort (Coyne, 1976; Morry et al., 2010). Coyne's (1976) interpersonal theory of depression supports this idea as it is common for depressed individuals to require increased support and reassurance from their partner. However, over time that need for support can soon become excessive and burdensome to the partner, since the depressed individual may require more support than the partner is able to offer (Coyne, 1976). This leads the depressed individual to increase their negative behaviors in order to obtain more support from their partner, which ultimately leads to the partner alienating and rejecting the depressed individual (Coyne, 1976; Hammen, 1991). The interpersonal theory of depression (Coyne, 1976) and the stress generation model of depression (Hammen, 1991) are both models that depict the cycle in which a depressed individual increases relationship conflict due to their depression, which as a

consequence, increases their depression, need for reassurance, and relationship conflict and reduces the quality of their relationship.

Need to Belong Theory

The Need to Belong Theory (Baumeister & Leary, 1995) offers yet another explanation as to why there is a robust relationship between marital quality and depression. Baumeister & Leary (1995) argue that belonging is a fundamental interpersonal motive for all humans. In other words, humans have a fundamental need to form and uphold a few positive and significant interpersonal relationships to satisfy their need to belong (Baumeister & Leary, 1995). When that need is not met, numerous adverse effects could emerge. According to this theory, two things are needed to satisfy a person's sense of belonging. The first is the need to experience positive, routine interpersonal interactions with others (Baumeister & Leary, 1995). The second is that these interpersonal interactions require a stable and continuous concern for each other's well-being (Baumeister & Leary, 1995). Without both of these being present in a person's life, a person's need to belong will not be fulfilled (Baumeister & Leary, 1995). Thus, individuals that have routine contact with their romantic partner but do not feel like their partner cares for their well-being will not have their sense of belonging satisfied (Baumeister & Leary, 1995). Likewise, individuals that have a strong and intimate relationship with one another but do not have regular contact will also be unsatisfied in their need to belong (Baumeister & Leary, 1995). Weiss (1973, as cited in Baumeister & Leary, 1995) suggested that feelings of loneliness or isolation can arise when one's need to belong is not meeting

the full criteria to be satisfied. For example, Weiss (1973, as cited in Baumeister & Leary, 1995) found that housewives in healthy marital relationships that recently moved to a new area reported increased loneliness due to their husbands being at work all day and their lack of local social relationships. Weiss's (1973, as cited in Baumeister & Leary, 1995) findings back Baumeister & Leary's (1995) belongingness hypothesis that having a close relationship is not sufficient enough to satisfy one's need to belong, there needs to be frequent contact as well. Because the need to belong is a basic human need, having that need go unmet should lead to a wide variety of negative mental and physical health consequences, just like when any other basic need is not met.

In support of this theoretical argument, a wealth of research has shown that people who do not feel like they belong experience a range of negative health consequences. For example, deprivation of close relationships can lead to anxiety, depression, grief, loneliness, increased mental and physical health issues, and stress (Baumeister & Leary, 1995). Another adverse effect of lacking belongingness is the occurrence of physical illness complications. Lynch (1979) found that after looking at a large set of studies related to the U.S. mortality rates, the all-cause mortality rate was significantly higher for individuals who lacked social bonds when compared to married individuals. It was further found that unattached individuals have higher rates of fatal heart attacks, cancer, and other illnesses than individuals that are married (Lynch, 1979). A study conducted by White et al. (2009) investigated the relationship between health status of older adults and the quantity and quality of their social

support network. White et al. (2009) not only concluded that adequate social support is associated with healthy individuals, but further concluded that desired social support is predictive of poor health across gender, education, ethnicity, race, and marital status. Furthermore, Linden et al. (1993) assessed the relation between social support and ambulatory cardiovascular functioning which resulted in finding that high social support was linked to lowered levels of ambulatory systolic blood pressure in women. Thus, having adequate social support is associated with healthier levels of blood pressure in women, demonstrating one of the many positive outcomes of increased social support (Linden et al., 1993). Also, it has been found that women who experience loneliness are at higher risk for coronary heart disease (Thurston & Kubzansky, 2009). Researchers assessed both men and women who had no signs or history of cardiovascular disease and measured their social network support amongst many other related issues (Thurston & Kubzansky, 2009). They followed up nineteen years later to discover that women who had less social support reported more incidents of coronary heart disease (Thurston & Kubzansky, 2009). Likewise, evidence shows that married individuals with cancer are more likely to survive than single individuals (Goodwin et al., 1987). As reviewed earlier, research has also demonstrated that marital distress is related to an increased likelihood of depression (Beach et al., 1998; Baumeister & Leary, 1995; Morry et al., 2010).

Social Signal Transduction Theory of Depression

The social signal transduction theory of depression (Slavich & Irwin, 2014) suggests a biological pathway linking distressed relationships and depression.

According to this theory, if a person is rejected, a severe and potent threat to belonging, they are at very high risk for depression (Slavich & Irwin, 2014). Specifically, individuals that have experienced life events involving social rejection are 21.6% more likely to develop major depressive disorder than individuals who have not experienced incidences of social rejection (Kendler et al., 2003). Slavich & Irwin's (2014) social signal transduction theory of depression establishes a link between social-environmental stressors, such as interpersonal stress and rejection, with the biological processes that lead to depression. These biological processes include the production of *proinflammatory cytokines,* part of the immune system's response to illness and injury, which elicits preliminary symptoms and behaviors of depression (Slavich & Irwin, 2014). Historically, inflammation was thought of as a physiological reaction to physical stressors. However, studies have demonstrated that inflammation can be caused by psychological stress as well (Glaser & Kiecolt-Glaser, 2005; Slavich & Irwin, 2014). This inflammatory reaction from psychological stress initiates symptoms such as social-behavioral withdrawal, fatigue, and negative mood, all of which are aspects of depression. In addition, according to Morry et al. (2010), these same symptoms cause distress in a relationship. Thus, concurring with the social signal transduction theory of depression, interpersonal stressors, or even the perception of stressors, can cause the production of proinflammatory cytokines which can lead to symptoms of depression.

Measuring Conflict Communication in Couples

As reviewed above, empirical research and theoretical work all support the argument that marital quality and depression are closely intertwined. However, most of this work stems from self-report measures of marital quality and marital communication patterns.

Romantic relationship research often involves the need to evaluate and investigate the way couples communicate during times of conflict. Generally, there are two main ways of assessing relationship conflict discussions — surveys and observational methods (Sanford, 2010). Researchers commonly use a self-report method for measuring communication patterns during conflict discussion tasks instead of observational behavior coding (Sandford, 2010). Self-report methods are used because they are easy to implement, inexpensive, generally brief, and require almost no training for research staff (Heyman, 2004; Sanford, 2010). Using self-report data relies on the participant to truthfully depict their relationship and communication abilities with their partner. If a couple is distressed, it is likely that the partners will not express their true feelings about their partner or themselves due to feeling ashamed, embarrassed, or not wanting to admit or recognize their true level of distress with their partner (Sanford, 2010). This can cause bias and inaccurate data that will skew the overall results of the study. Furthermore, Jacobson & Moore (1981) found that when couples are reporting their relationship-related behaviors, there is only about a 50% agreement rate between partners about their relationship. This suggests that either partners are perceiving the relationship differently or that one or both partners are not

being fully accurate or truthful. Likely both are happening simultaneously. This raises concern that self-report measures may not be able to gather information from the partners on an objective level. While many studies opt for self-report measures of couple discussions or communication, this method has many limitations that make accurately measuring these conversions difficult.

The present study avoids these self-report limitations by using observational behavior coding to evaluate and measure a partner's communication patterns during a discussion with their partner. To accomplish this goal, we record a 15–20-minute video of couples discussing an area of conflict in their relationship. The video is viewed by trained behavior coders multiple times in order to code each partner's verbal and nonverbal behaviors. This method is an objective form of data collection that avoids many limitations that self-report measurements cannot (Sanford, 2010). In addition, observational methods can code nonverbal or paraverbal behaviors, such as leaning away from their partner or crossing their arms when they are angry, which can provide important information about communication between partners. Nonverbal and paraverbal behaviors can be indicative to how the partner really feels in real time during a discussion, which self-report measures are not able to capture. Using observational methods of measuring relationship communication eliminates the possibility of personal bias and data distortion due to subjective feelings of their relationship, partner, or themselves. Observational data allows researchers to evaluate consistently across couples and individual partners, as well as slow down the recording to be able to look at the partners' behaviors directly.

Good coding systems should accurately depict the behaviors within that code category because they are standardized via a manual that has been validated through many research studies (Heyman, 2004). We thus use a well-validated coding system, described in more detail below to code the video recordings.

The Present Study

For the present study, we examined the association between depressive symptoms and marital quality, with marital quality being tested under the conditions of dyadic conflict discussions. Unlike previous studies that have used questionnaires to determine marital quality (Barry et al., 2019; Knobloch-Fedders et al., 2013; Marchand & Hock, 2000; Rands et al., 1981), the present study will be using observational coding to determine marital quality. More specifically, the Rapid Marital Interaction Coding System-Version 2 (RMICS2; Heyman et al., 2015) will be used to observationally assess couples' marital quality during a conflict discussion. The raw data used for this study has been taken from a previously unpublished study by Principal Investigator Dr. Lisa Jaremka of the Department of Psychological and Brain Sciences at the University of Delaware. The goal of this study is to determine if partners that exhibit depressive symptoms are more at risk to experience poor marital quality. There have been many prior studies that have looked to understand this relationship. For example, a study conducted by Marchand & Hock (2000) used a correlational analysis between the CES-D (Radloff, 1977) and the Marital Comparison Level Inventory (MCLI; Sabatelli, 1984) to observe the effects between depression and marital quality. For both husbands and wives, their CES-D scores were found to

be significant and negatively correlated with their MCLI scores—suggesting that higher levels of depressive symptomatology are associated with lower levels of marital quality (Marchand & Hock, 2000). Additionally, a study by Barry et al. (2019) indicated that, at least for husbands, the experience of depressive symptoms causes them to distance themselves from their wives which contributed to a decrease in marital quality. With this previous research to guide the present study's hypothesis, it is hypothesized that individuals that exhibit more depressive symptoms will be less satisfied in their marital relationship when compared to individuals with less depressive symptomatology.

METHODS

Participants

The present study uses data from a parent study looking at many factors related to relationship distress. The parent study of these data was drawn from looking at many factors related to relationship distress. The parent study's recruitment and eligibility criteria are listed below. Participants were recruited through local advertising via social media sites and flyers posted at various locations in the surrounding area. The advertisement offered a $320 compensation per partner upon completion of the study. To participate in the study, participants had to be above the age of 30, married for at least three years, and live together for at least two years. Couples were ineligible if they had a serious medical condition (e.g., eating disorder, diabetes), had a phobia of needles or blood, had any allergies to food, were taking

medications that impact one's cardiovascular system, diet, or appetite hormone levels, were a cigarette smoker, or were pregnant.

Descriptive Demographics

In total, 96 participants (48 couples) were recruited and attended both visits of the study, however, 24 of those participants (12 couples) were excluded from the study due to insufficient data or inaccurate completion of the study. Thus, out of the 96 participants, 72 participants (36 couples) were eligible and used for the present study (see Table 1). The average age of participants was 39.01 years old with a range of 30 years old to 58 years old and a standard deviation of 7.68 years. 50% (36/72) of the participants identified as male, 50% (36/72) identified as female, and all couples identified as heterosexual couples. The race proportions of the participant pool were 8.33% (6/72) identified as Asian/Pacific Islander, 19.44% (14/72) identified as Black/African American, 70.83% (51/72) identified as White/Caucasian, and 1.39% (1/72) identified as Other. Of the 72 participants, 4.17% (3/72) identified as Latino/Hispanic, and 95.83% (69/72) identified as non-Latino/non-Hispanic. Each participant was asked how long they have been married to their partner. The average length of marriage (in months) was found to be 120.47 months (about ten years) with a range of 36 months (three years) to 348 months (twenty-nine years) and a standard deviation of *SD*= 84.97 months (about 7 years).

Table 1

Descriptive Demographics

Variable	*M*	*SD*	*n*	%
Age (years)	39.01	7.68	—	—
Length of Marriage (months)	120.47	84.97	—	—
Race				
White/Caucasian	—	—	51	70.83
Black/African American	—	—	14	19.44
Asian/Pacific Islander	—	—	6	8.33
Other	—	—	1	1.39
Ethnicity				
Latino/Hispanic	—	—	3	4.17
Non-Latino/Hispanic	—	—	69	95.83
Gender				
Male	—	—	36	50
Female	—	—	36	50

Note. *N*= 72. *n*= number of participants

Procedure

Couples arrived together at the study location twice, two weeks apart. The entirety of the lab visit included an informed consent survey, a pre-conflict discussion survey, the conflict discussion task, and a post-conflict discussion survey. This same procedure was completed for both lab visits with the exception of the conflict discussion task which was randomly assigned to be completed at only one of the two

visits. During the visits, each partner was placed into separate rooms where they completed the informed consent and the pre-conflict discussion surveys. The pre-conflict discussion survey included various scales and measures for the purpose of the parent study covering concepts such as depression, anxiety, physical health, areas of relationship disagreement, and general well-being. For the purpose of the present study, the measures used from this set of questionnaires were the Relationship Problems Inventory (RPI) and the Center for Epidemiologic Studies Depression (CES-D) scale, described in more detail below. If the conflict discussion task was randomly assigned for that visit, the couple's conflict discussion would then take place. Couples were assigned the topics of disagreement that were to be talked about during their conflict discussion task based on the results from the Relationship Problems Inventory (RPI). The discussions were exactly twenty minutes long and were recorded so the participants' body language and facial expressions could be shown for RMICS2 coding. After the conflict discussion, the participants were placed back in their own individual rooms to complete the post-conflict discussion survey, which included many similar scales to the pre-survey that were not used for the present study. The study was concluded after the post-conflict discussion survey. The conflict discussion videos were sent to independent behavior analysts that were blind to the study's true purpose. These behavior analysts used the Rapid Marital Interaction Coding System-Version 2 (RMICS2), described in more detail below, to code each partner's behavior throughout the conflict discussion video.

Measures

To measure each couple's relationship quality, this study used the Relationships Problems Inventory (RPI) to initiate the conflict discussions and the Rapid Marital Interaction Coding System- Version 2 (RMICS2; Heyman et al., 2015) to code the interactions. The Center for Epidemiologic Studies Depression (CES-D; Radloff, 1977) scale was used to measure participants' current depressive affect and symptomatology.

Relationship Problems Inventory

The Relationship Problems Inventory (RPI) is used to identify areas of disagreement between partners in a relationship. For the present study, the RPI was completed by participants prior to their conflict discussion task. A self-report scale from 0 - 100 (100 being the most disagreement) was used to measure the level of disagreement the participant felt with their partner on certain common relationship issues that were provided to them (e.g., money, in-laws). Then, a trained researcher evaluated the scale's results by identifying areas of disagreement that were high for both partners. The trained researcher then briefed the participants on these common areas of high disagreement and informed them that they were the topics of their conflict discussion task.

Rapid Marital Interaction Coding System- Version 2

The Rapid Marital Interaction Coding System- Version 2 (RMICS2; Heyman et al., 2015) is an observational coding system designed to measure behavior patterns and frequencies of dyadic relationships during times of conflict or distress. The

RMICS2 was derived from the Marital Interaction Coding System (MICS; Hops et al., 1972) which included many more behavior categories, analyzed at an ultra-micro level, and had much more difficult training. The RMICS2 is now more often used because it has less expensive training and is less time-consuming while still delivering high-quality observations (Heyman et al., 2021). For the present study, version two of the RMICS is used (RMICS2). The first version of the RMICS (Heyman & Vivian, 1993) is no longer available and has since been replaced by the second version (RMICS2). The second version condenses the codes down from 11 codes to 7 codes. The codes were condensed into general categories such as positive, negative, neutral, and miscellaneous non-behavior codes. The RMICS2 is fairly new and lacks psychometrics, so for this reason, the first version RMICS's psychometric properties will be defined in this measures section. The process in which the coders go through to code the behaviors of the participants in the videos are the same for both the first and second version. The only difference between the versions is that the codes are condensed. Nonetheless, because condensing codes is considered to be beneficial to non-specific micro-behavior investigations (Heyman et al., 2021) and the very good psychometric properties of the first version RMICS, we feel confident that the second version of the RMICS will provide us with equally accurate results as the first version.

The RMICS has sufficient psychometric properties such as reliability, validity, predictive validity, and generalizability. The RMICS has high reliabilities for the overall coding system as well as for each individual code (Heyman, 2004). In a study conducted by Heyman et al. (2001), researchers used couples from a range of sources

such as clinical settings and community settings, and used samples with both engaged and married couples. The study found high internal consistency with each subgroup source having a Spearman Brown split-half coefficient of above r= .90, signifying that the RMICS individual codes are reliable for a large range of populations (Heyman et al., 2001). Moreover, the RMICS has been used in large studies throughout North America and Europe and discriminates well across gender and level of couple distress (Heyman, 2004, pp. 81-85). There is evidence of good predictive validity as the RMICS variables have been found to improve upon partner aggression for the treatment group at the one-year follow up visit (Heyman et al., 1999). It has been proven to be accurate for assessing behavior during relationship conflict populations ranging in age, race, education level, income, physical health problems, and mental health problems, making it highly generalizable (Heyman, 2004, p.85). However, it is also mentioned that culturally, the RMICS may not be generalizable because of the differing cultural norms others may have regarding relationship meaning and communication (Heyman, 2004, p.91).

The RMICS has behavioral codes that are applied to conflict discussion videos. Usually, these videos are of romantic couples. However, the RMICS has been used in several other studies containing a range of ages, association types (e.g., married, dating, friends, siblings), and populations such as marital clinics, cancer patients, veterans, or drug users (Heyman, 2004). Trained RMICS coders watch the conflict discussions and code a behavior for each individual partner every five seconds for the entire duration of the video. The codes are chosen based on which guidelines of the

coding manual fit the behavior of the participant. These codes include positive, negative (also referred to as hostile), and neutral codes, and are coded based on verbal, nonverbal (body language or facial expressions), and paraverbal (messages expressed through the use of tone, loudness, or talking speed) ways of expression from the partners.

The RMICS2 is made up of seven codes, HH Hostility (high-intensity), HL Hostility (low-intensity), PD (constructive problem discussion), PL Positivity (low-intensity), PH Positivity (high-intensity), DY (dysphoric affect), and OT (other) (Heyman et al., 2015). Of these codes, the core five, HH, HL, PD, PL, and PH are placed on a spectrum called the HH-PH Code Spectrum, which was used as a measure of determining marital quality (see Figure 1) (Heyman et al., 2015).

High-Intensity Hostility (HH). High-intensity hostility (HH) is the most negative of the codes, consisting of exceptionally intense negative expressions toward the other partner. HH is applied when behaviors such as psychological abuse, withdrawal, blaming, intense criticism, or negative assumptions occur. An example of an interaction that warrants this code is "*Nothing is going to make this relationship better because I'm with someone who is too immature and wants to run around with her friends all the damn time*" (Heyman et al., 2015, p. 9). This statement is considered HH blaming because it 'points the finger' at the other partner and holds them accountable for a negative situation in a degrading or verbally abusive manner.

Low-Intensity Hostility (HL). Low-intensity hostility (HL) generally includes the same behaviors as HH but at a less intense degree. For a behavior to be coded as

HL, the behavior/action/statement must be expressed at a medium-negative intensity level with moderately negative use of language. The non-verbal and paraverbal behaviors for this code include sour looks, rolling eyes, throwing hands up in the air as a sign of exasperation, and voice tone conveying anger, frustration or exasperation. An example of an interaction that would be coded as HL is "*I didn't clean up when you asked me to because I wanted to give you a taste of your own medicine"* (Heyman et al., 2015, p. 13). This statement is coded as HL because it expresses that the partner is admitting to intentionally producing an event that is negative towards their partner but does not have malicious intent.

Constructive Problem Discussion (PD). Constructive problem discussion (PD) is when the couple is describing a problem, discussing a solution to increase (positive solution discussion) or decrease (negative solution discussion) a behavior, asking a question, or coming to an agreement. An example of a PD-coded behavior is "*I think we should start saving money"* (Heyman et al., 2015, p. 17). This statement is not derived from a negative or positive tone and focuses on a decision, solution, or agreement. PD codes are generally the most frequent as they are considered a neutral code.

Low-Intensity Positivity (PL). Low-intensity positivity (PL) is during a time of positive affect that includes behaviors or statements that create low-level bonding between partners. PL behaviors include self-disclosure, accepting responsibility, acceptance, absolving others of blame (low-level), and humor. An example of a statement that conveys PL is "*You couldn't help it, your boss held you over.*" (Heyman

et al., 2015, pp. 22-23). This statement is coded PL because it is attempting to absolve the other partner of blame while moderately expressing a positive and understanding affect towards the partner.

High-Intensity Positivity (PH). High-intensity positivity (PH) is the most positive of the RMICS2 codes. PH consists of intense positive affect that creates high-level bonding between partners. The behaviors coded as PH are the same as PL but at a higher intensity and positivity. An example of a PH code is "*Well, it's understandable, you were really stressed out. But don't let it get you down — you have been doing so well for so long*" (Heyman et al., 2015, p. 28). Like the PL example, this statement is absolving the other partner of blame, however, this behavior is coded as PH because the partner is not only absolving the other of blame but is complimenting the partner and acknowledging their struggles in a supportive and compassionate way.

Dysphoric Affect (DY). Dysphoric affect (DY) is defined as expressing depressed or sad emotional states (Heyman et al., 2015, p. 30). There are four conditions that are coded as DY: self-complaints (about physical or psychological problems), degrading self-evaluations, hopelessness/helplessness, and dysphoric (sad) affect (verbally expressing sadness, crying, or tearful). Dysphoric effect does not trump other codes and is often blended in with different code statements. It is not placed on the HH-PH Code Spectrum and was thus not used in our relationship quality composite. A verbal expression of DY is "*I feel like I've lost my personality. I don't know who I am anymore*" (Heyman et al., 2015, p. 32). This statement is coded as DY

because it is a complaint of a psychological state, however, if this statement was expressed with any other emotion besides depressed or sad, the code would be changed to a code on the HH-PH Code Spectrum. DY codes are often non-verbal behaviors and so an example of a non-verbal expression of DY would be *Wife is crying while looking at her partner, subtly shaking her head in disapproval* (Heyman et al., 2015, p. 30). This non-verbal expression includes the wife crying and therefore would be coded as DY unless the partner expresses other behaviors indicative of other codes, then it would be coded from the HH-PH Code Spectrum.

Other (OT). Other (OT) is coded conservatively and is only coded when the couple discusses the actual experiment itself or discusses a topic that is not assigned and not regarding anything related to their lives or relationship. An example of OT would be "*Is that the camera?*" or "*How long has it been? Has it been 10 minutes yet?*", (Heyman et al., 2015, p. 33). If the couple strays from the assigned topic and begins to discuss topics at least somewhat relevant to their lives or relationship then the behavior would be coded as PD, not OT. For example, "*I don't know why they picked this topic; we're pretty much on the same page*" (Heyman et al., 2015, p. 33). This statement would be coded as PD and not OT because while they are discussing the experiment, they mention that they are in agreement regarding the topic which is related to the couple's relationship.

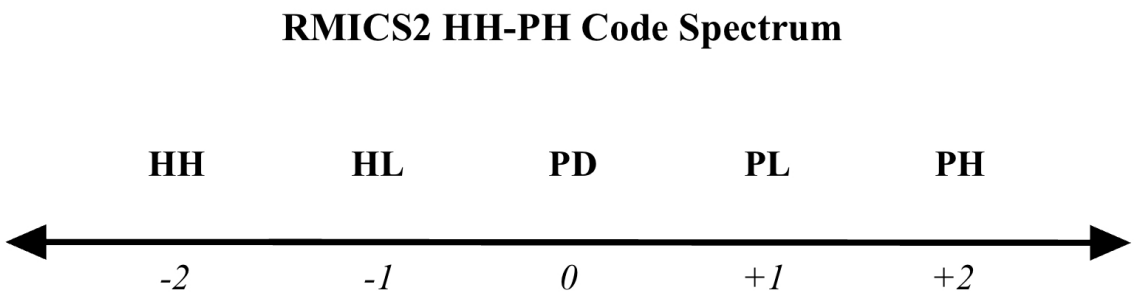
Scoring of the RMICS2

The codes from the HH-PH Code Spectrum were placed on a scale and assigned a number based on their level of hostility or positivity (see Figure 1). HH was

assigned negative (-) 2, HL was assigned negative (-) 1, PD was assigned 0 as it is a neutral behavior code, PL was assigned positive (+) 1, and PH was assigned positive (+) 2. The other behavior codes, DY, N/C (No Code), and OT were removed for this analysis because they are not an element of the HH-PH Code Spectrum. Once all behavior codes were transformed to the assigned number, each participant's code thread was summed. There are 240 codes per participant making the sum of participants' codes range from -480 to +480. For the present study, scores of this measure ranged from -128 to +48 (*SD*= 27.48) with a mean score of *M*= -1.31.

Figure 1

HH-PH Code Spectrum



Note. This figure demonstrates how the RMICS codes of the HH-PH Code Spectrum were quantified to find marital quality for each participant.

Center for Epidemiologic Studies Depression Scale

The Center for Epidemiologic Studies Depression (CES-D; Radloff, 1977) scale is a self-report scale used to measure current symptoms of depression in the general population. This scale differs from other measures of depression because the CES-D focuses on current symptomatology and depressive affect or mood that an individual may exhibit (Radloff, 1977). The CES-D scale was not designed for clinical diagnosis. Instead, it was designed to be used in studies that are looking at the relationship between depression and another variable throughout subgroup populations. The CES-D scale is a twenty-item scale that was created from a pool of items from previously validated scales that are often associated with depression (Devins et al., 1988; Radloff, 1977) (see Table 2 for items). Using previous literature, Radloff (1977) identified the six main components of depressive symptomatology: depressed mood, feelings of guilt or worthlessness, feelings of helplessness and hopelessness, psychomotor decline, loss of appetite, and sleep disturbance. Each of these components is represented across a few items of the scale. Sixteen of the items used cognitive, somatic, affective, and behavioral symptoms to assess depressive affect (Devins et al., 1988). Four of the twenty items are worded in a positive manner and were thus reverse coded before creating the final composite (Devins et al., 1988). Because this scale looks to measure the current symptoms of an individual, the CES-D (CES-D; Radloff, 1977) includes "How often this past week did you…" in front of each item to remind individuals to only reflect on their current symptoms. The CES-D scale offers four possible responses to the scale's items, 0= *Rarely or none of the time*

(less than 1 day); 1= *Some or little of the time (1-2 days)*; 2= *Occasionally or a moderate amount of time (3-4 days)*; and 3= *Most or all of the time (5-7 days)* (CES-D; Radloff, 1977) (see Table 2). After reverse coding the four positive-mood items, the total responses are summed. Total scores can range from 0 to 60, with 60 being the highest in distress and depressive affect, and 0 being the lowest. A benchmark cut-off score of 16 is considered to be expressing depressive symptoms (Radloff, 1977). This benchmark cut-off score is used lightly, often the scores are assessed on a continuous scale rather than viewing participant scores as depressed or not depressed.

The CES-D has been used in many studies across many population subgroups. The CES-D scale's psychometric properties have been well established globally through multiple formats using a wide range of populations (Radloff, 1977). The scale has been translated into many languages and is seen as one of the gold standards for measuring depression. Radloff (1977) conducted three separate field tests among the general population and one field test using psychiatric patients at a care facility in order to gather information on the scale's reliability and validity. The results from these studies demonstrated good repeatability, good test-retest reliability, and good epidemiological uses of the scale (Radloff, 1977). Radloff's (1977) study showed that the scale had high internal consistency and reliability with a coefficient alpha range of .84 to .90 across all four field tests. Additionally, Devins et al., (1988) stated that the scale's test-retest reliability ranges from 0.4 to 0.7 when applied to various time

Table 2

Center for Epidemiologic Studies Depression (CES-D) Scale

Item	During the Past Week			
	0	1	2	3
1. I was bothered by things that usually don't bother me.	□	□	□	□
2. I did not feel like eating; my appetite was poor.	□	□	□	□
3. I felt that I could not shake off the blues even with help from my family or friends.	□	□	□	□
4. I felt I was just as good as other people. *	□	□	□	□
5. I had trouble keeping my mind on what I was doing.	□	□	□	□
6. I felt depressed.	□	□	□	□
7. I felt that everything I did was an effort.	□	□	□	□
8. I felt hopeful about the future. *	□	□	□	□
9. I thought my life had been a failure.	□	□	□	□
10. I felt fearful.	□	□	□	□
11. My sleep was restless.	□	□	□	□
12. I was happy. *	□	□	□	□
13. I talked less than usual.	□	□	□	□
14. I felt lonely.	□	□	□	□
15. People were unfriendly.	□	□	□	□
16. I enjoyed life. *	□	□	□	□
17. I had crying spells.	□	□	□	□
18. I felt sad.	□	□	□	□
19. I felt that people dislike me.	□	□	□	□
20. I could not get "going".	□	□	□	□

Note. *= reverse coded item. 0= *Rarely or none of the time (less than 1 day);* 1= *Some or a little of the time (1-2 days);* 2= *Occasionally or a moderate amount of time (3-4 days);* 3= *Most or all of the time (5-7 days).* Retrieved from: Radloff, L. (1977). "The CES-D Scale: A Self Report Depression Scale for Research in the General." Applied

psychological measurement 1(3): 385-401.

https://www.sralab.org/sites/default/files/2017-07/cesdscale.pdf

intervals anywhere from two weeks to one year. There is an excellent correlation between the CES-D and the Hamilton Rating Scale for Depression (HAM-D; Hamilton, 1960) suggesting good concurrent validity ($r > 0.60$) (Caracciolo & Giaquinto, 2002).

Scoring of the CES-D

A CES-D item reliability was tested in the present study using an inter-item correlation matrix. It was conducted as a preliminary measure and found a strong Cronbach's Alpha of $\alpha = 0.87$ which compares well to previous literature. For example, Devins et al.'s (2007) study measuring depressive symptoms in various illness populations also had a Cronbach's Alpha of $\alpha = 0.87$. Furthermore, Radloff's (1977) study concurs with the present study as they found an inter-item correlation coefficient alpha of 0.85 to 0.90. As stated earlier, the CES-D includes twenty questions and uses a four-point scale ranging from 0= *Rarely or None of the time (less than 1 day)* to 3= *Most or All of the time (5-7 days)* (CES-D; Radloff, 1977). Questions four, eight, twelve, and sixteen were reverse-coded as they are positively oriented questions (see Table 2 for items). Once the reverse coding was completed, each participant's score was summed and could range from zero to sixty. As mentioned prior, the CES-D scale states that scores above 16 are considered to be evidence of depressive affect. Participants completed the CES-D during both visits

though only a single score was taken which was from the visit where the couple completed the conflict discussion task. The range of scores from the participants in the present study are 0 to 24 (*SD*= 6.06) with an average score of *M*= 7.93.

Covariates

We measured potential confounds to include as covariates in the analyses. The covariates include age, gender, length of marriage, and number of children that the couple have together, all assessed via self-report.

Data Analysis

In JASP, the RMICS2 marital quality scores and the CES-D scores were analyzed in a correlation matrix.

First, a correlation matrix was constructed in SPSS between all possible pairs of covariances to ensure the covariates were not highly correlated with each other. After conducting this data check, we conducted two sets of primary analyses. The first was a correlation between each person's marital quality score and their depressive symptoms score. The second was a linear regression that examined the relationship between marital quality and depressive symptoms after accounting for all of the covariates.

RESULTS

Preliminary Results

The present study's covariate variables include age, gender, length of marriage, and how many children they have with their current partner. We tested the correlation between all possible pairs of covariates using a covariate correlation (see Table 3).

They were found to be only weakly to moderately correlated. The correlation coefficient between Age and Length of Marriage as well as Children with Current Spouse and Length of Marriage were found to be significant, however, the significance is not enough to be an issue for our analysis.

Table 3

Covariate Correlation Matrix

	Length of Marriage	Gender	Age	Children with Current Spouse
Length of Marriage				
Pearson Correlation	1	.000	.623**	.568**
Sig. (2-tailed)	—	1.000	<.001	<.001
N	72	72	72	72
Gender				
Pearson Correlation	.000	1	.115	.047
Sig. (2-tailed)	1.000	—	.337	.693
N	72	72	72	72
Age				
Pearson Correlation	.623**	.115	1	.217
Sig. (2-tailed)	<.001	.337	—	.067
N	72	72	72	72
Children with Current Spouse				
Pearson Correlation	.558**	.047	.217	1
Sig. (2-tailed)	<.001	.693	.067	—
N	72	72	72	72

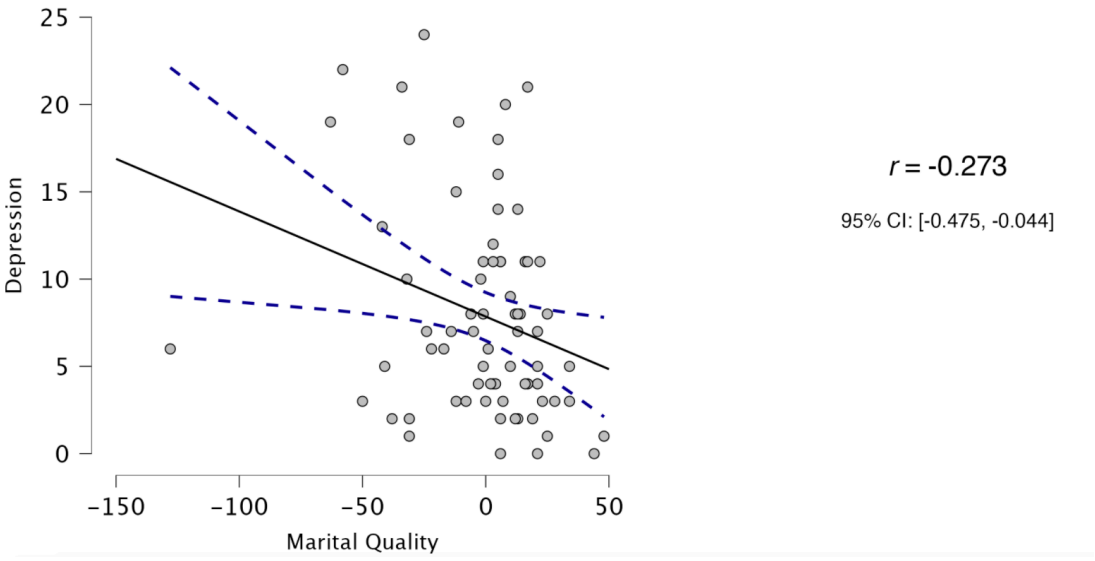
Note. ** Correlation is significant at the 0.01 level (2-tailed).

Primary Results

The correlation between marital quality and depressive symptoms was significant, r (70) = -0.27, $p < .05$ (95% CI: -0.475, -0.044). The higher a participant scored on the CES-D, the lower their RMICS2 score was. In other words, people who exhibited more depressive symptoms were in lower quality marriages, as indexed by less positive and more negative behavior during a conflict discussion, than those that exhibited less depressive symptoms (see Figure 2).

Figure 2

Correlation between Marital Quality & Depression



Next, a linear regression was conducted that included the covariates we selected ahead of time. When accounting for these covariates, the RMICS2's

standardized coefficient beta was found to be -.28 showing that the covariates had little to no impact on the target variable correlation (see Table 4).

Table 4

Covariate Linear Regression Coefficients

Model	Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	6.707	4.731	–	1.418	.161
Marriage Quality Score (RMICS)	-.062	.027	-.283	-2.332	.023
Length of Marriage	-.009	.013	-.122	-.658	.513
Gender	.107	1.441	.009	.075	.941
Age	.014	.126	.018	.114	.910
Children with Current Spouse	.707	.755	.138	.936	.352

Note. Dependent Variable: Depression Score (CES-D).

DISCUSSION

The present study looked to investigate whether partners with depression also experience poor marital quality. Results showed that individuals that experience depressive symptoms are more likely to experience worse marital quality than less depressed individuals.

Prior research has demonstrated that marital quality is related to depression, such that people in distressed marriages are also likely to be depressed (Beach et al., 1998; Baumeister & Leary, 1995; Morry et al., 2010; Pietromonaco et al., 2022). However, most of this work measures marital quality via self-report, which has limitations. For example, Barry et al. (2019) used the Perceived Relationship Quality Components Inventory (PRQC; Fletcher et al., 2000) to measure relationship satisfaction, as well as paired it with other self-report methods of measuring couple communication and depression. Likewise, Rands et al. (1981) use multiple self-report questionnaires to obtain data regarding both marital satisfaction and conflict resolution. Using multiple self-report surveys leaves an ample amount of room for self-report bias, and therefore, is not considered the best method of obtaining marital quality data. In this study, we overcame those limitations by using an observational, more objective measure of marital quality. We hypothesized that individuals who reported elevated levels of depression would experience lower levels of marital quality when compared to individuals with lower levels of depression.

Consistent with hypotheses, we found that individuals who experience higher levels of depressive symptoms are more likely to experience decreased levels of

marital quality than individuals who experience lower levels of depressive symptoms. The results were the same whether we examined a correlation between both variables, or whether we examined the relationship after accounting for covariates we selected ahead of time. Thus, the present study found results that are consistent with other studies examining the relationship between depression and marital quality using self-report methods rather than observational methods (Barry et al., 2019; Benazon, 2000; Davila et al., 2003; Rands et al., 1981).

These findings support multiple theories that explain why marital quality and depression should be related. For example, the stress generation model explains that those who suffer from depression will often partake in negative behaviors that generate more stress for themselves and their loved ones in order to receive more support for their depression (Hammen, 1991). Similarly, the need to belong theory is based on the idea that belonging with others is a fundamental need of survival for humans (Baumeister & Leary, 1995). The criteria that Baumeister & Leary (1995) established in order to satisfy the need to belong requires both frequent and stable positive interactions with another individual that also equally shares the same amount of concern for the other. The social signal transduction theory of depression explains how stress inducing life events or rejection can trigger a biological process that can initiate symptoms often associated with depression (Slavich & Irwin, 2014). Our study, showing that marital quality assessed via observational coding, supports these theories.

Limitations

While the present study's results are significant, there were some limitations to take into consideration. To start, the RMICS2 is relatively new and thus lacks detailed studies examining its psychometric properties. However, given how closely the RMICS2 matches the RMICS, we are confident it provides usable data. The CES-D scale is self-report, which leaves room for some bias or inaccurate responses despite the very good psychometric properties seen from previous studies. Another limitation is that this study does not support causal conclusions between the two target variables.

As stated earlier, the range of the present study's scores for the RMICS2 is -128 to +48 and the CES-D score range is 0 to 24. This small range in scores is not surprising as our population was generally non-specific, and the study did not restrict the participant pool to just distressed/ non-distressed or depressed/non-depressed couples. The sample for this study was community-based making it unlikely that a large number of our participants would be at an extreme level of distressed/ non-distressed or depressed/non-depressed. Perhaps, if our participant sample range was more extreme our correlation would be stronger, however this is not considered a large limiting factor.

Additionally, this study, while not excluding it, did not include any homosexual couples. For this reason, we can only conclude the findings for heterosexual couples.

Implications & Future Research

Together, the theories referred to throughout this study create a comprehensive understanding of the varying ways depressive symptoms can cause poor marital quality. With this understanding, future research can work towards more ways to implement martial counseling in therapy with depressed patients. This could help avoid the impact that depression can have on reducing marital quality which, in turn, can increase their depression further. It would also be helpful to investigate and establish ways to identify the negative behaviors explained by these interpersonal theories to work towards a therapeutic approach to eliminate these behaviors and decrease the risk of marital dissatisfaction. Understanding the communication between partners in a relationship is imperative for a high-quality marriage. O'Leary et al. (1992, as cited in Heyman, 2001) explains that the primary issue in marital therapy is the high levels of hostility expressed from partners. Reducing this hostility, or at least learning to identify it, can reduce marital issues and increase marital quality for the couple. It is not only important for the partners in a relationship to understand their own communication, but it is also extremely important for clinicians to be familiar with the normative behaviors that are exhibited by distressed couples. In doing that, marital therapy may be able to expand and better identify specific observed behaviors that may be contributing to their marital distress.

As already discussed, external stressors can threaten relationship quality and stability. In light of the recent events regarding COVID-19, the study of depression and its impact on marital quality could be extended further to understand how external

stressors such as lockdown and isolation play a part in the production and perpetuation of depression and marital distress. Pietromonaco & Overall's (2020) COVID-19 framework explains how the stressors that arose during the pandemic heightened and intensified the preexisting stressors a couple may have had, which, in turn, lowered marital quality and magnified the stress further in the relationship. Seeing how depressions plays in this theoretic framework would be insightful in understanding how the pandemic impacted stress generation in terms of depression. Furthermore, if future studies included which observational behaviors were exhibited throughout the framework designed by Pietromonaco & Overall (2020), researchers and clinicians could broaden their understanding of how observable behaviors and stress generation interact.

As an undergraduate student with limited statistical experience, it is understood that typically, couples are analyzed together, not just as individuals. However, due to my inexperience with partner statistics, a simpler analysis was done than what is typically used. For the future, I would like to add a more complex statistical analysis that would further analyze how one's partner may lead to another partner's depressive or marital quality levels which would be looked at as individual interactions between partners in a couple.

CONCLUSION

Many studies have led to the conclusion that marital quality and depression are associated with each other. Studies on this topic have used a wide variety of measures from observational coding to self-report, paired with many varying measures of

depression. The effects of marital distress have shown to impact many essential aspects of an individual, such as physical health, mental health, and stress. Many of these negative effects are derived from the unsatisfied need to belong, stress generation, or biological processes in an individual's body. This study looked to further this understanding in terms of depression using observationally coded dyadic conflict discussions. It was determined that there is, in fact, a significant relationship between depression and marital quality using the RMICS2 and the CES-D which adds to marital relationship research and furthers the understanding of the measures used.

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