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“I Understand, Honey”: Perceived Spousal Empathy’s Moderating Influence
on the Links Between Depression and Marital Satisfaction
and Marital Satisfaction and Physical Health

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A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of
Master of Science

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ABSTRACT

“I Understand, Honey”: Perceived Spousal Empathy’s Moderating Influence on the Links Between Depression and Marital Satisfaction and Marital Satisfaction and Physical Health

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An adapted version of the Vulnerability-Stress-Adaptation model was used as a theoretical guide for this study, which proposes that adaptive processes exist and can moderate relationships between enduring vulnerabilities and different outcomes. Relationships of interest include the negative link between depression and marital satisfaction and the positive link between marital satisfaction and physical health. An adaptive process of interest is empathy, due to its well-researched positive impact on mental, relational, and physical health. This study examined whether perceived spousal empathy (i.e., the empathy perceived by one spouse coming from their spouse) had any moderating effects on the previously mentioned links. A clinical sample of 34 relationally distressed heterosexual couples was included in the study. Depression unexpectedly had a positive relationship with marital satisfaction and physical health. Marital satisfaction had no significant relationship with physical health. Perceived spousal empathy had no moderating effects. The clinical implications of the results are discussed.

Keywords: empathy, depression, marital satisfaction, physical health, moderating effects

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“I Understand, Honey”: Perceived Spousal Empathy’s Moderating Influence
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and Marital Satisfaction and Physical Health

Marital satisfaction has consistently been linked to general and specific health outcomes, both positive and negative (Kiecolt-Glaser & Wilson, 2017). This is of particular interest to clinical researchers because good general physical health can reduce overall mortality, increase life expectancy, and reduce risks for major physical (e.g., heart disease, diabetes, cancer) and mental health problems (Chekroud et al., 2018; Lee et al., 2012; U.S. Department of Health & Human Services [HHS], 2017). Typically, distress in a marriage can increase health risks, while happiness in a marriage can do the opposite (Kiecolt-Glaser & Wilson, 2017; Robles et al., 2014). One reason marriage can influence health is that “research overwhelmingly suggests evidence for concordant mental and physical health, as well as health behaviors among couples” (Meyler et al., 2007, p. 1). Simply put, spouses can positively or negatively influence each other’s mental and physical health by mirroring each other’s tendencies.

Just as marital satisfaction can influence spouses’ physical health for good or bad, mental health can do the same for marital satisfaction (Davila, 2001; Kiecolt-Glaser & Wilson, 2017). With 16.2 million U.S. adults estimated to have experienced at least one major depressive episode in 2016 (6.7% of the U.S. adult population; National Institute of Mental Health [NIMH], 2017), depression has become an increasingly concerning major mental health concern. Since depression has a well-established negative relationship with marital satisfaction (Kronmüller et al., 2011; Whisman & Baucom, 2012), it is important for marriage and family therapists and the general population to know how to disrupt this negative influence in pragmatic, relational ways.

In other words, research should establish what couples could do to buffer against the negative influence depression has on marital satisfaction and, by extension, physical health.

Empathy is a natural topic of interest when looking at these variables because it also has a well-researched connection to improved mental and physical health (Hansen et al., 2018; Konrath & Brown, 2013), and warmer, more genuine relationships (Sinclair et al., 2017). Even so, past research has noted potential sex differences in empathy and how it is perceived by men and women (Thompson & Voyer, 2014; Taccaceli et al., 2018). As such, this study will examine the potential buffering or moderating influence of perceived empathy on the relationships between 1) depression and marital satisfaction (see Figure 1) and 2) marital satisfaction and physical health (see Figure 2) by sex.

Karney and Bradbury (1995) called these buffers *adaptive processes* in their Vulnerability-Stress-Adaptation (VSA) model. They proposed that marital satisfaction varies between couples due to the interplay of three variables: enduring vulnerabilities, stressful events, and adaptive processes. Theoretically, two couples experiencing the same enduring vulnerabilities and stressful events could have different outcomes depending on the adaptive processes (i.e., buffers) they engage in, with the more effective adaptive process leading to higher marital satisfaction. I will use an adapted version Karney and Bradbury's VSA model by examining marital satisfaction as a mediator in the relationship between depression and physical health and then by examining perceived empathy as an adaptive process between these relationships.

Literature Review

Theoretical Framework

Karney and Bradbury's (1995) VSA model provides a lens through which perceived empathy as a moderator in marital processes can be viewed. The VSA model suggests that stressful events (e.g., financial crisis) and enduring vulnerabilities (e.g., history of depression) can affect how spouses adapt. Adaptive processes, in turn, influence marital satisfaction and stability. While some stressful events happen randomly (e.g., losing a job due to current economy), others come from the enduring vulnerabilities themselves (e.g., losing a job due to being unable to manage depressive symptoms). In cases where the couples adapt poorly, these maladaptations can perpetuate the stressful events (e.g., becoming frustrated with the depressive spouse's behavior). On the other hand, couples who adapt well could potentially alleviate the stress of their situation (e.g., accessing resources to decrease spouse's depression). In summary, the VSA model suggests that the best outcomes usually occur when there is a combination of good adaptations and few challenges, while the worst outcomes usually occur when there is a combination of bad adaptations and many challenges (see Karney & Bradbury, 1995, for more).

Conceptually, tenets of the VSA model suggest that marital partners' adaptive processes may intervene on previously established negative effects of vulnerabilities or stressful events. Whereas depressive symptoms are consistently negatively linked to marital satisfaction (e.g., Whisman & Baucom, 2012), it is possible that a spouse's perceived empathy acts as an effective adaptive process and buffers the negative effects of depression. Similarly, despite established links between marital satisfaction and physical health (e.g., Kiecolt-Glaser & Wilson, 2017), spousal empathy may be an adaptive response, thereby moderating the effects of marital satisfaction. On the other hand, expressed emotion—i.e., criticism, or the opposite of empathy—

could be considered a maladaptive process that would worsen the situation (Kronmüller et al., 2011). I will focus on testing the moderating effect that perceived empathy, as an adaptive process, might have on the relationships between depressive symptoms (enduring vulnerability) and marital satisfaction (see Figure 1) and marital satisfaction and physical health (see Figure 2).

Marital Satisfaction and Physical Health

The relationship between marital satisfaction and physical health has been well-researched with robust findings. Generally, married people enjoy better physical health than unmarried people (Kiecolt-Glaser & Newton, 2001), and this good health is promoted when marital satisfaction is high even in middle and later adulthood (Choi et al., 2016). Further exploring the relationship between marital relationships and physical health, Robles et al. (2014) performed a meta-analytic review of 126 articles describing the associations between marital quality and physical health in more than 72,000 individuals from several countries (e.g., Brazil, China, Germany, the United Kingdom, the United States). They found that, in general, marital quality was positively associated with physical health, and spouses experiencing greater marital quality generally had lower cardiovascular reactivity when in conflict in addition to having a lower risk of mortality. In another study consisting of 19,246 married individuals younger than 90 years old, Whisman et al. (2018) also found that the odds of dying for spouses describing their marriage as “very” or “pretty happy” were, on average, only .80 times the odds of dying for spouses describing their marriage as “not too happy” (p. 1043).

However, as mentioned, spouses tend to influence each other’s health over time for good and for bad, which can be partially explained through changes in health habits and physiological influences (Kiecolt-Glaser & Newton, 2001; Kiecolt-Glaser & Wilson, 2017; Meyler et al., 2007). Kiecolt-Glaser and Newton (2001) reviewed 64 articles related to marriage and health,

and one of the findings was that low marital satisfaction directly increased health risks involving cardiovascular, endocrine, and immune functioning. Bookwala (2005) poignantly summarized the negative effects possible between marital relationships and physical health as follows: “After controlling for sociodemographic variables (age, gender, and education), symptoms of depression, and all other indicators of marital quality, more negative spousal behaviors predicted more physical symptoms, more chronic health problems, more disability, and poorer perceived health” (p. 99). Given how marital satisfaction could influence physical health, it is important to examine predictors of marital satisfaction. One such predictor outlined in the literature is depression.

Depression and Marital Satisfaction

Researchers have studied depression as an enduring vulnerability and its relationship to marital satisfaction more than any other psychiatric disorder (Whisman & Baucom, 2012). This could be because of the importance of families in society (see Callan, 2014) and the far-reaching effects of depression. The NIMH (2017) reported that depression, which it defined as a significant loss of interest and change in daily functioning (e.g., problems with sleep, eating, concentration), was one of the most common disorders in the U.S., but studies showed that fewer than half of depressed individuals seek treatment, and even so, not all who receive treatment receive all the treatment recommended for depression (Birnbaum et al., 2010; Kessler et al., 2008). This is alarming because of the economic burden (i.e., workplace, direct medical, and suicide-related costs) that depression has on society. Greenberg et al. (2015) estimated that the economic burden of individuals with major depressive disorder in the U.S. was \$210.5 billion in 2010, which represented a 21.5% increase since 2005. And Dieleman et al. (2016) found that of the \$2.1 trillion spent in the U.S. for personal health care in 2013, depressive disorders ranked as

the sixth most costly health condition with an estimated \$71.1 billion spent directly on depressive disorder treatment.

In community sample studies, researchers have found actor and partner effects where higher depression scores were significantly associated with lower marital satisfaction scores (Whisman et al., 2004) and relational quality scores (Bradford et al., 2014). In their 10-year prospective study with a clinical sample of 50 inpatients diagnosed with major depressive disorder, Kronmüller et al. (2011) found that those with higher number of relapses and longer time suffering from major depression had significantly lower marital satisfaction. Luckily, a cost-effective method of treating depression is through marital and family therapy (Crane et al., 2013), which alludes to the potential bidirectionality in the association between depression and marital satisfaction (see Davila, 2001; Najman et al., 2014; Whisman & Uebelacker, 2009). Indeed, Kronmüller et al. (2011) also found that the low satisfaction marriages at the end of the study had significant discrepancies in their appraisal of their marriage from the beginning of the study. In addition, they found that 52.17% of marriages where high levels of expressed emotion (e.g., criticism) were present were either unhappy or separated, which differed significantly from the 18.75% of marriages that reported the same but with low levels of expressed emotion. In summary, lack of mutual understanding of the relationship and spouses reacting with criticism towards their depressed spouses were predictive of low marital satisfaction. Thus, as the VSA model suggests, I will look specifically at depression as an enduring vulnerability and its influence on marital satisfaction as a proximal outcome, while including an examination of couple processes (e.g., perceived empathy) as a potential moderator of the effects of depression.

Empathy

Uebelacker et al. (2003) highlighted the importance of adaptive processes in their study of depression, marital satisfaction, and perceptions of spousal interactions. While they expectedly found a negative association between depression and marital satisfaction, Uebelacker et al. emphasized that perceptions of how spouses interact with each other were associated with marital satisfaction and depressive symptoms. Thus, spousal perceptions and interactions would be important prevention and intervention points for depression and marital satisfaction. In line with this idea of perception and adaptive processes being important, Reis (2007) suggested that perceived partner responsiveness is an important concept to study for integrating and synthesizing different research findings. Reis defined perceived partner responsiveness as the belief that one's partner is aware and supportive of oneself. This includes concepts such as positive partner affirmation, a sense of belonging, and empathy.

Looking at empathy specifically, Decety and Jackson (2004) described it as the ability to share (affective component) and understand (cognitive component) another person's emotional experience. Empathy is a form of connection between people that helps improve and strengthen relationships (Konrath & Brown, 2013). However, empathizing with others and how that empathy is perceived are separate concepts. For example, Cohen et al. (2012) studied 156 heterosexual couples and found that what influenced their relationship satisfaction the most was the wives' perception of their husbands' attempts to empathize rather than their husbands' empathic accuracy. In short, "feeling supported is more important than being supported" (Reis, 2007, p. 11). Another study, this one done by Fang et al. (2015) in southern Taiwan, looked at something similar to the present study. They studied a non-clinical sample of 151 women who survived breast-cancer and their perceptions of empathy from their partners to see how the

perceived empathy moderated the relationship between depressive symptoms and body image.

They found a significant negative association between empathy and depressive symptoms as well as a significant moderating effect, such that the relationship between depressive symptoms and body image was weaker with higher perceived empathy.

In their literature review, Konrath and Brown (2013) stated multiple health benefits of empathy. For example, individuals who volunteer for other-oriented reasons (e.g., empathy and compassion) generally experience a decreased risk of mortality compared to those who volunteer for self-oriented reasons (e.g., to make oneself feel good). They also reported that those who score high in empathy experience lower stress, anxiety, and even depressive symptoms. Konrath and Brown explained that some of these health benefits could be due to the negative association between empathy and health risk behaviors (e.g., drinking and smoking). From a neuroscientific perspective, Singer and Klimecki (2014) explained that if viewing another's suffering leads to self-oriented distress—as evidenced by brain activation of neural networks associated with experiencing pain first-hand—then this distress results in negative feelings and withdrawal, which, if experienced chronically, likely gives rise to negative health outcomes. However, if viewing another's suffering leads to empathic, other-oriented responses—as evidenced by brain activation of neural networks associated with positive affect—then the individual experiences positive feelings and has more prosocial motivation and behavior, which are themselves associated with increased happiness, health, and self-esteem and decreased feelings of loneliness and depressive symptoms (Konrath & Brown, 2013).

Taking these results into consideration, empathy evidently serves as an adaptive process that can lessen the effects of depressive symptoms, increase relational satisfaction, and even reduce health risks. The importance of differentiating between perceived and expressed empathy

is also noteworthy. For example, if a husband believes that he expresses empathy well, but his wife does not perceive any of his empathic gestures as such, then his expressed empathy might not influence their relationship as much as it could have had the wife perceived it as empathic. As such, I will focus on perceived spousal empathy (PSE), which I define as the empathy perceived by the spouse being empathized with.

Sex Differences

Beyond PSE, the literature further delineates the potential empathic differences between men and women. Various studies have established sex differences finding that women, on average, reported higher levels of empathy than men (Thompson & Voyer, 2014), even across age (Longobardi et al., 2019). Tracy and Giummarra (2017) went so far as to say that women have superior trait empathy than men. To test whether differences in empathy existed between men and women, Toccaceli et al. (2018) discovered evidence to support these claims in their study which included a sample of about 1,700 twins spanning 18 to 65 years of age. They found that women generally scored higher than men in total empathy scores, which included cognitive and affective empathy. Trying to explain the reasons behind these differences, they reported finding additive genetic factors that explained about 50% of variance in women's empathy, which was significantly higher than the variance explained by genetic factors for men's empathy (about 5% to 10%). Thompson and Voyer (2014), while not studying empathy specifically, shed further light on these sex differences. In their multilevel meta-analysis, their results showed a small advantage for women in recognizing emotions, especially in recognizing negative emotions more easily than men. These results are relevant because empathy inherently involves recognizing another's emotional experience (see Decety & Jackson, 2004).

However, the validity of these findings—whether sex differences in empathy exist—is questioned by the field. Thompson and Voyer, in their same study, pointed out that the sex differences they found varied depending on the assessment tools used (e.g., observational assessments and survey assessments), which is a claim supported by other researchers (Baez et al., 2017; Eisenberg & Lennon, 1983; Martínez-Velázquez et al., 2020). Another example comes from Baez et al.’s study where they found that women generally reported higher empathic concern for others compared to men. “Critically, however, none of the effect sizes reached values that could be even considered small, reducing the relevance of these sex differences” (p. 10). Furthermore, these sex differences went away when empathy was assessed through more automatic responses (e.g., physiological methods Eisenberg & Lennon, 1983; eye-movement recordings Martínez-Velázquez et al., 2020). The studies that used self-report measures to look at research participants’ empathy levels tended to show statistically significant sex differences with women reporting higher empathy levels than men. These findings could be because people tend to assume gender-role stereotypes when taking these self-report empathy measures (Baez et al., 2017). Given these mixed findings, it is yet unclear whether men and women differ in levels of empathy, and by extension, whether the role of empathy in a relationship differs by sex. Thus, this study explores whether empathy moderates previously established associations differently for men and women.

Current Study

The VSA model suggests that depression can influence marital satisfaction, which in turn influences physical health. However, perceived empathy can moderate these relationships as an adaptive process. Because earlier research suggests that depression negatively links to marital satisfaction and marital satisfaction positively links to physical health, I will test these ideas as

hypotheses (H). And because no other study has examined the potential moderating effects of perceived spousal empathy on these two relationships using the VSA model as a theoretical guide, these ideas will be tested as research questions (RQ). For all analyses, I will examine differences by sex. In short, the following is being tested for men and women, comparatively:

H: Marital satisfaction will mediate the relationship between depressive symptoms and physical health, such that depressive symptoms will be negatively associated with marital satisfaction and negatively associated with physical health, and marital satisfaction will be positively associated with physical health.

RQ1: Does perceived spousal empathy moderate the hypothesized negative association between depressive symptoms and marital satisfaction? (See Figure 1.)

RQ2: Does perceived spousal empathy moderate the hypothesized positive association between marital satisfaction and physical health? (See Figure 2.)

Methods

Sample

The sample participants were gathered through non-random sampling methods. Participants included a clinical, therapy-attending sample (n=29) and a matched comparison, non-therapy sample (n=5). The clinical, therapy sample included couples who were given information about the study at intake and subsequently expressed interest in participating in the research study through the Brigham Young University (BYU) Comprehensive Clinic; the matched comparison sample included couples who expressed interest in participating after seeing recruiting flyers in the community. All who were interested in participating were e-mailed an eligibility survey. To be eligible for this study, participants had to meet the following inclusion criteria: a) English-speaking; b) married for a year or longer; c) experience clinically significant

relational distress, which was determined by a score less than 13.5 on the Couple-Satisfaction Index (CSI-4; Funk & Rogge, 2007) by either spouse; d) free from substance abuse, addiction, or severe mental disorders; e) able to have an fMRI scan; and f) able to participate with their spouse. Every participant was compensated with a digital copy of their MRI scan results and \$100-\$250 depending on their level of involvement in the study.

Client participants included 34 heterosexual couples, with all couples being married for the duration of the study. The average age was 30.38 years ($SD=5.95$; range=21-49) for females and 31.85 years ($SD=5.61$; range=24-59) for males, with the sample being 82% White ($n=56$), 6% Hispanic ($n=4$), 1% Asian ($n=1$), and 10% Biracial ($n=7$). Couples had an average of 2.2 children ($SD=1.73$, range=0-6) and a median family income between \$45,001 to \$55,000. Education levels of client participants included 7% who completed high school or had a GED ($n=5$), 7% who received an associate degree ($n=5$), 34% who received a bachelor's degree ($n=23$), 6% who had a vocational or technical degree ($n=4$), 32% who completed some college ($n=22$), 12% who had a master's or professional degree ($n=8$), and 1% who had a doctorate degree ($n=1$). Table 1 shows the sociodemographic characteristics of the participants by sex.

Data Collection

The data used in this study comes from the Changing Hearts and Minds in Relationships (CHAMPS) project being conducted at BYU. The CHAMPS project is much broader than the scope of this study and includes multiple measures and surveys. This study used only the pre-test data from the surveys that the participants had to fill out upon beginning the study.

Measures

Depression

Depression scores were gathered using the Major Depression Inventory (MDI) self-report questionnaire (Bech et al., 2001). This measure was used over other measures due to its ability to diagnose depression using the DSM-V and ICD-10 criteria (Bech et al., 2001), and its high internal and external validity (Olsen et al., 2003). The MDI consists of 11 questions that gauge an individual's level of depression of either mild (scores between 20 and 24), moderate (scores between 25 and 29), or severe depression (scores of 30 or more), with a possible range of continuous scores going from 0 to 50. Some example questions include "have you felt low in spirits or sad," "have you lost interest in your daily activities," and "have you suffered from reduced appetite." The 11 questions use a 6-point Likert scale ranging from 0 = *at no time* to 5 = *all the time*. Cronbach's alpha was $\alpha = 0.87$ and $\alpha = 0.88$ for the men and women in this sample, respectively.

Marital Satisfaction

Marital satisfaction scores were gathered using the Couple-Satisfaction Index (CSI-16; (Funk & Rogge, 2007)). This measure was used over others because of its high convergent and construct validity (Funk & Rogge, 2007). The CSI-16 consists of 16 questions that gauge an individual's level of satisfaction in their relationship ranging continuously from 0 to 81, with scores below 51.5 indicating clinical distress. Some example questions include "how often do you think that things between you and your partner are going well," "how well does your partner meet your needs," and "how satisfied are you with your relationship." Of the 16 questions, 15 of them use 6-point Likert scales (e.g., 0 = *never* to 5 = *all the time*; 0 = *not at all* to 5 = *completely*)

and one uses a 7-point Likert scale (0 = *extremely unhappy* to 6 = *perfect*). Cronbach's alpha was $\alpha = 0.90$ and $\alpha = 0.87$ for the men and women in this sample, respectively.

Health

Health scores were gathered using the 12-item Short-Form Health Survey (SF-12; Ware et al., 1996) and scored according to Ware et al.'s specified scoring algorithm. This measure also had high reliability and validity (Ware et al., 1996). The SF-12 consists of 12 questions that gauge an individual's general health ranging continuously from a scale of 0 to 100. Higher scores mean better health, and lower scores mean worse health, with a score of 50 representing average health. Example questions include "how much did pain interfere with your normal work"; "how much of the time has your physical health or emotional problems interfered with your social activities"; and "does your health now limit you in these activities [e.g., moving a table, pushing a vacuum, climbing several flights of stairs]." Response possibilities varied from yes-no questions to Likert scales (e.g., 1 = *extremely* to 5 = *not at all*; 1 = *all the time* to 5 = *none of the time*). Cronbach's alpha was $\alpha = 0.69$ and $\alpha = 0.73$ for the men and women in this sample, respectively.

Perceived Spousal Empathy

Perceived spousal empathy scores were gathered using the three-question empathy survey portion of the longer RELATE questionnaire (Busby et al., 2001; Busby & Gardner, 2008) that asks about perceived empathy, all dealing with the cognitive component of empathy. This measure also had high reliability and validity (Busby & Gardner, 2008). The final score is an average of the three questions ranging continuously between 1 and 5, with 1 showing the lowest levels of empathy and 5 showing the highest levels of empathy. The questions included "my partner understands my feelings"; "my partner is able to listen to me in an understanding way";

and “in most matters, my partner understands what I’m trying to say.” The responses ranged from 1 = *never* to 5 = *very often*. Cronbach’s alpha was $\alpha = 0.83$ and $\alpha = 0.88$ for the men and women in this sample, respectively.

Analytic Strategy

Because I am examining differences between men and women across models, I conducted a series of multiple group analyses to test the hypothesis and answer the research questions, with men and women representing separate groups. Because data from couples are non-independent, they require being modeled in a way that either accounts for their non-independence or separately, by sex. Due to small sample size, I was unable to model the data in a way that accounted for their dependence; thus, I chose to fit the models as multiple groups (for husbands and wives separately). Further, given the small sample size, I used Bayes estimation, using default (uninformed) priors, which estimates likely distributions for each parameter. I used 100,000 iterations, with 4 chains. To compare between men and women, I systematically constrained parameters to be equal and used the Deviance Information Criterion (DIC) and Bayesian Information Criterion (BIC), where lower values indicate better model fit, to determine whether equality constraints could be retained without worsening model fit. The first model (testing H) was a mediation model, where health was regressed on marital satisfaction and depression, and marital satisfaction was regressed on depression. The models that followed, testing the role of empathy as a moderator in RQ1 and RQ2, included interaction terms of Perceived Empathy x Depression and Perceived Empathy x Marital Satisfaction, respectively. Mplus 8.4 was used for all analyses. Figures 1 and 2 show the main and moderating effects that were tested. Table 2 shows the intercorrelations table for all the main effects by sex.

Results

Mediation Model

H: Marital satisfaction will mediate the relationship between depressive symptoms and physical health.

In the initial model, allowing men and women's parameters to be freely estimated showed good model fit (PPP-value = .43) with acceptable parameter trace and distribution plots. Addition of constraints for men and women's regression paths only slightly improved model fit (Δ DIC = 5.71 and Δ BIC = 12.56) yet showed that results were equivalent for men and women. The final model showed good model fit (PPP-value = .56) with acceptable trace and distribution plots. Results indicated that depression was positively associated with physical health ($\beta = .76$ [.21], 95% CI: .35, 1.17) and marital satisfaction ($\beta = .40$ [.19], 95% CI: .04, .77). Marital satisfaction was not related to physical health ($\beta = .02$ [.14], 95% CI -0.26, .30); therefore, marital satisfaction did not mediate the relationship between depression and health.

Moderation Models

RQ1: Does perceived empathy moderate the association between depression and marital satisfaction?

After adding the main effect of perceived empathy and the interaction between perceived empathy and depression, the model showed very poor fit (PPP-value = .12), with somewhat poor convergence shown in the parameter trace and distribution plots. Adding constraints for men's and women's parameters only slightly improved model fit (Δ DIC = 8.49 and Δ BIC = 19.42), yielding an uninterpretable model with men and women's results equivalent.

RQ2: Does perceived empathy moderate the association between marital satisfaction and health?

After adding the main effect of perceived empathy and the interaction between perceived empathy and marital satisfaction, the model showed very poor fit (PPP-value = .00), with somewhat poor convergence shown in the parameter trace and distribution plots. Adding constraints for men's and women's parameters only slightly improved model fit (Δ DIC = 7.94 and Δ BIC = 18.82), yielding an uninterpretable model with men and women's results equivalent.

Discussion

The main purpose of this study was to test whether perceived spousal empathy—the level of empathy one spouse perceives the other extending—moderated the associations between depression and marital satisfaction (RQ1) and marital satisfaction and physical health (RQ2). To do this, a mediation model was also tested (H), with marital satisfaction serving as a mediator between depression and physical health. These research questions and hypothesis were examined by sex to see whether the role of empathy in a relationship differed by sex.

In the mediation model, depression was positively associated with physical health, which was an unexpected finding. Past literature had linked depression with physical health negatively (Bruce, 2000; Knapen et al., 2015), which is opposite of my results. A possible explanation for this is that the majority of the CHAMPS sample used was above average in health (only 9 of the 68 individuals—13.2% of the sample—reported below average health). Perhaps the CHAMPS couples in this sample were healthy couples that happened to be experiencing depressive symptoms for other reasons. Or maybe the couples had not yet experienced their depressive symptoms long enough for it to have any impact on their health. It is also important to note that depressive symptoms were measured in the CHAMPS couples, not whether they had a major depressive disorder diagnosis. So, while the average depression score was in the *severe depression* range ($M = 37.5$) that did not mean that they were diagnosed with major depressive

disorder by a professional. It is possible, therefore, that depression scores in our sample were representative of unique snapshots in time, rather than general depression. Indeed, the depression scale asks participants to rate their experiences in the past two weeks. If participants enrolled in the study at a particularly low moment, and they were not chronically depressed, then the physical effects of their depressive symptoms would not mirror the general literature linking these constructs. Future studies would benefit from studying clinical couples with major depressive disorder diagnoses, as well as how long they have struggled with that. Another unexpected finding with depression was that it was also positively associated with marital satisfaction. Again, this is contrary to past literature stating that depressive symptoms have a negative association with marital satisfaction (e.g., (Kronmüller et al., 2011; Whisman et al., 2004). Although this finding is unexpected and perhaps counterintuitive, an explanation may be found in the pain literature.

Some studies have found that couples with greater pain intensity reported also tended to have higher marital satisfaction (Bermas et al., 2000; Flor et al., 1987). One hypothesis suggested that the greater levels of pain experienced by a spouse could act as a catalyst for positive interaction between the spouses, possibly leading to increased marital satisfaction (referred to as *pain solicitation* in pain literature, i.e., one spouse sees another struggling, therefore they choose to engage more with that spouse to help them; see Newton-John and Williams, 2016). Flor et al. proposed that the spouses' emotional and cognitive responses to their situation were probably most important in determining whether their negative, painful experience would hinder or help their marital satisfaction. Applied to the current study, depressive symptoms may be a similarly painful experience and provide opportunities for spouses to engage

with and care for each other (i.e., *depression solicitation*), which may in turn increase their marital satisfaction.

It is also important to note the nature of this sample versus broader relationship science samples. The majority of research findings stating that depression and marital satisfaction would have a negative correlation come from nonclinical samples. However, this sample was clinical in nature, with all couples having at least one partner score below the clinical cutoff for marital satisfaction, so results from the general population may not apply. Clinical populations differ from nonclinical populations in that clinical populations are actively seeking professional help to improve their own situation. For one reason or another, they are motivated to achieve amelioration, and joint help-seeking behavior (such as seeking therapy as those in the current sample) may account for a positive link between depressive symptoms and marital satisfaction. That is, perhaps the link between depression and marital satisfaction in the literature is moderated by whether couples are actively engaged in changing or seeking help through therapy. Further research is needed to confirm these assumptions; however, the pain literature provides some support for this idea. Newton-John and Williams (2006) highlighted the importance of including spouses in pain management. In fact, they found positive associations between frequency of pain talk and marital satisfaction. They said that “there is something particularly supportive about being able to freely discuss one’s pain problem with one’s partner” (p. 61). More recently, Tate et al. (2019) have further clarified that spousal understanding of a patients’ pain is important for marital relationships, highlighting the importance of increased communication. If the same logic is applied to depression, then it would be beneficial for depressed individuals to be able to talk freely with their spouses about their struggle and for their spouses to better understand their situations, and both of these things can be worked on in

clinical settings. This could explain why depression levels were positively associated with marital satisfaction in my clinical sample study.

Marital satisfaction did not serve as a mediator in my hypothesized model since it was not related to physical health in this study. This lack of relationship also differed from what previous literature findings have shown (Kiecolt-Glaser & Wilson, 2017; Robles et al., 2014). This result could have been because the SF-12 assessment encompasses more than just physical health. Some of its questions refer to mental health, too, and it was intended to be used as a measure of overall health, not just physical health (Ware et al., 1996), which could have resulted in conflated outcomes. Another possible explanation takes into account the relatively young age of the couple participants. Perhaps marital satisfaction was not associated with physical health because the problems had not yet been chronically present. If chronic relationship issues bring about chronic health symptoms, then clinicians might have a window of opportunity early in the relationship in which to intervene. Early marital intervention could prevent the chronic health problems associated with poor marital satisfaction from arising in the first place. In summary, these results failed to reject the null hypothesis (i.e., marital satisfaction is not a mediator) and gave no evidence to suggest that marital satisfaction mediated the relationship between depression and physical health. Future studies should be longitudinal to analyze the association between these variables over time and clarify how long couples could be expected to struggle relationally before those struggles begin to have an impact on their health.

Because each model testing perceived empathy as a moderator had poor fit, interpreting interaction results was untenable. Theoretically, the VSA model suggests that moderators between these variables do exist, but perceived empathy did not act as a meaningful adaptation couples made in this study. Perhaps the sample characteristics shed light on that outcome. As

clinical couples, their joint, help-seeking behavior could explain the positive links found. If that is the case, then perceived empathy could either act as a moderator (enhancing positive effects) or as mediator (explaining the link between constructs). Although these couples were relationally distressed, it is nevertheless possible that their acknowledgement that they needed expert help to improve their relationship is indicative of some level of mutual understanding. That would require some level of empathy, and perhaps that was enough to benefit their relationship. As such, future research should look at perceived empathy as a mediator. This would help researchers and clinicians gain a better picture of the role empathy plays in relationships where at least one spouse experiences depressive symptoms.

Although overall model fit was poor for the moderation analyses, change in model fit slightly improved upon constraining men and women's parameter estimates to be equal. Thus, there may not be differences between the sexes in how these variables are related to each other. Indeed, the men and women in this sample reported almost identical levels of perceived empathy (for men, $M = 3.1$, $SD = 0.8$; for women, $M = 3.0$, $SD = 0.8$). Overall, the results are somewhat surprising because it contradicts previous research that showed wives' perceptions of their husbands' empathy as influential to their own relationship satisfaction, but that was not true for the husbands (Cohen et al., 2012). Again, further testing is necessary to better understand the relationships between these variables.

Even though the main effect between marital satisfaction and physical health was not statistically significant in the mediation model, it was still worthwhile to test the interaction to see if moderation existed anyway, since the VSA model suggested its existence. Unfortunately, the model fit for the proposed moderation model was poor enough to bar any interpretation of it. The improvement in model fit seen by constraining men and women should not be interpreted as

the effects being the same for men and women. Instead, these results should be seen as saying that these variables should not be modeled like this, and that holds true for men and women.

Limitations

Among the limitations in this study is which measures were used. Although it was borrowed from a validated assessment instrument (Busby et al., 2001) and has been successfully used in previous research (Busby & Gardner, 2008), the perceived empathy measure is not an independently validated measure. Future work should look at validated self-report measures that account for the cognitive and affective aspects of empathy, and measures beyond self-report to add to the empathy knowledgebase. And, as mentioned, a different measure for physical health would be better, since the SF-12 encompassed more than just physical health. Future studies would benefit from using measures specific to physical health, or by omitting mental health items from a physical health construct.

The poor model fit in the moderation models would normally indicate that those statistical models should not be analyzed as they are, but since the adapted theory guiding this study indicated that a moderation should exist, I decided to proceed with the analysis. Taking the poor model fit and VSA model into account, other variables might be better candidates as adaptive processes. Referring back to the concept of perceived partner responsiveness as adaptive processes, Reis (2007) shared other potential variables that future studies could examine, such as forgiveness, partner affirmation, sense of belonging, and autonomy support, among other things. Another limitation involving the statistical models used was that the dyadic data could not be analyzed together while still accounting for its inherent nonindependence due to the small sample size. Future studies would benefit from studying larger clinical sample sizes that allow researchers to use statistical methods that analyze the data as a whole while

accounting for nonindependence instead of having to analyze the data as separate groups to account for its nonindependence.

As a clinical, convenience sample study with the majority of participants being White and heterosexual, findings may not generalize to other clinical populations. In addition, findings from cross-sectional studies like this one are purely correlational, meaning that no cause-and-effect relationships can or should be inferred.

Clinical Implications

Although these study findings were not as expected, clinicians can still use this information to guide their work. First, good treatment should begin with good assessment. That includes asking about strengths along with the weaknesses in clients' lives. This study found that, within couples that are relationally distressed, those that reported having more depressive symptoms happened to have a little bit higher marital satisfaction (or at least reported less relational distress). Clinicians can assess their clients and see what might be helping some depressed clients maintain better marital satisfaction compared to others who are also struggling in their marriages. Whatever the clinician finds, they can highlight this hidden strength and potentially capitalize on it. The same is true for their physical health.

Similarly, a clinical implication that could be drawn from marital satisfaction not being related to physical health could be that perhaps the couple has sought out treatment early enough before chronic problems begat chronic problems, as mentioned earlier. The link between marital satisfaction and physical health has been well-documented (Kiecolt-Glaser & Wilson, 2017), so the fact that that link has not yet appeared in some couples could indicate that they have an improved chance at avoiding bigger problems in the future. Overall, clinicians should enter each

session with curious minds and be mindful of the problems that are and are not present in the room.

Conclusion

In summary, this study's main goal was to find out whether empathy moderated the relationship between depression and marital satisfaction and depression and physical health. Unfortunately, the moderation model results were inconclusive and uninterpretable. However, depression had a positive relationship with both marital satisfaction and physical health. Additionally, marital satisfaction and physical health did not have any meaningful relationship in this study. These results are a good reminder that even when past research strongly suggests that certain relationships should exist, that is not always the case. Further research should be done to examine clinical subpopulations so that clinicians do not have to rely mainly on research results stemming from nonclinical, general populations. Researchers and clinicians alike would benefit from remembering this simple truth: research does not negate individual experience, and individual experience does not negate research.

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Table 1*Sociodemographic Characteristics of Participants by Sex*

Characteristic	Male		Female	
	<i>n</i>	%	<i>n</i>	%
Ethnicity				
White	26	38	30	44
Hispanic	3	4	1	2
Asian	0	0	1	2
Biracial	5	7	2	3
Marital Status				
First marriage	33	49	31	46
Remarried	1	2	3	4
Highest educational level				
High school/GED	1	2	4	6
Some college	12	18	10	15
Associate degree	1	2	4	6
Bachelor's degree	12	18	11	16
Master's or professional degree	6	8	2	3
Doctorate degree	0	0	1	2
Vocational or technical degree	2	3	2	3
Employment				
Unemployed	1	2	3	4
Employed	31	46	22	32
Student	4	6	10	15
Caregiver/homemaker	1	2	15	22
Yearly income				
<\$25,000	6	9	7	10
\$25,001-\$55,000	15	22	15	22
\$55,001-\$75,000	9	13	8	12
\$75,001-\$100,000	3	4	4	6
>\$100,001	1	2	0	0

Note. $N = 68$ ($n = 34$ for each gender). Average participant age was 31.85 ($SD = 5.61$) and 30.38 ($SD = 5.95$) years old for males and females, respectively. Percentages are in relation to the full sample.

Table 2*Intercorrelations, Means, and Standard Deviations for Study Variables Disaggregated by**Gender*

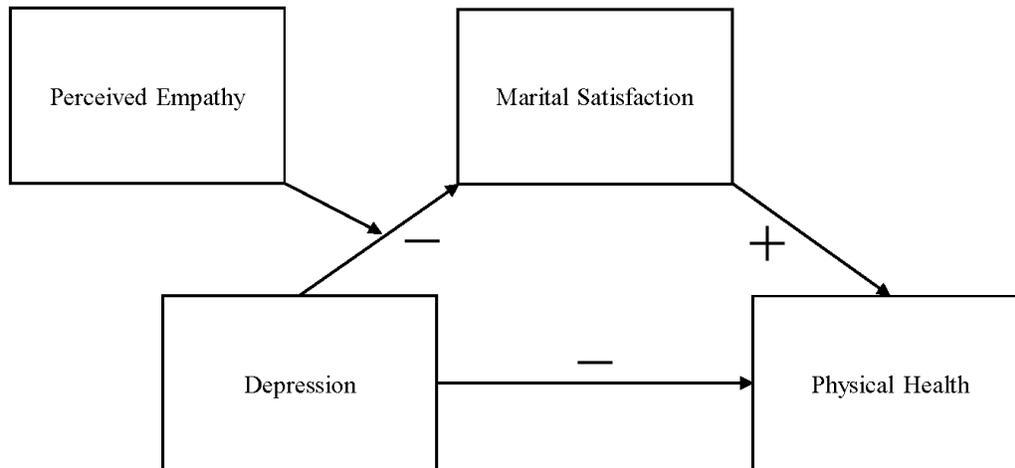
Variable	1	2	3	4
1. Depression	—	0.28	0.50**	0.28
2. Marital Satisfaction	0.25	—	0.23	0.56**
3. Physical Health	0.39*	0.03	—	0.47**
4. Perceived Empathy	0.29	0.59**	0.41*	—
	<i>M (SD)</i>			
Females	35.8 (8.8)	37.3 (12.1)	61.6 (13.7)	3.0 (0.8)
Males	39.2 (6.9)	43.9 (11.5)	66.3 (13.7)	3.1 (0.8)

Note. The results for the female sample ($n = 34$) are shown above the diagonal. The results for the male sample ($n = 34$) are shown below the diagonal.

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

Figure 1

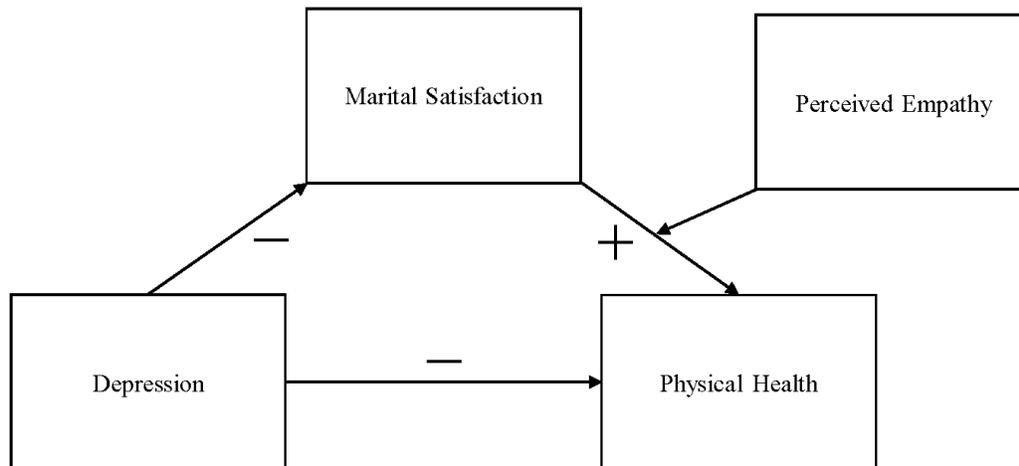
Multiple Group Analysis Examining Perceived Empathy's Moderating Effects on the Relationship Between Depression and Marital Satisfaction



Note. The plus (+) and minus (-) symbols represent the hypothesized positive and negative associations between variables. Model analyzed for men and women separately.

Figure 2

Multiple Group Analysis Examining Perceived Empathy's Moderating Effects on the Relationship Between Marital Satisfaction and Physical Health



Note. The plus (+) and minus (-) symbols represent the hypothesized positive and negative associations between variables. Model analyzed for men and women separately.