

DISSERTATION

MINDFUL PARTNERING: IMPLICATIONS OF A NOVEL THEORETICAL CONSTRUCT  
FOR PREDICTING REDUCED REACTIVITY TO MARITAL CONFLICT, GREATER  
PHYSICAL HEALTH, AND LOWER MORTALITY RISK

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## ABSTRACT

### MINDFUL PARTNERING: IMPLICATIONS OF A NOVEL THEORETICAL CONSTRUCT FOR PREDICTING REDUCED REACTIVITY TO MARITAL CONFLICT, GREATER PHYSICAL HEALTH, AND LOWER MORTALITY RISK

According to the theory of allostatic load, chronic stress leads to damage on the body that contributes to problems with physical health and early mortality. A large body of research suggests that mindfulness reduces stress, health problems, and mortality risk. In addition, stressful relationships with intimate partners have the power to cause frequent and/or intense physiological responses that, over time, contribute to allostatic load and thus negative health and mortality outcomes. However, previously identified predictors of relational and thus physical health lack a unifying concept to synthesize them. Study 1 presents the conceptualization of a novel theoretical construct, *mindful partnering*, as interpersonal mindfulness with one's romantic partner, as well as initial validation of the Mindful Partnering Measure (MPM). Participants were 599 individuals from: 1) an undergraduate student sample recruited from a university subject pool [used for exploratory factor analyses (EFA),  $N= 335$ ] and 2) a sample of married adults recruited through Mechanical Turk [used for confirmatory factor analyses (CFA),  $N= 264$ , subsets used for construct validity  $N= 147$ , and test-retest analyses  $N= 53$ ]. Results of the EFA and CFA supported a five-factor structure. Tests of internal consistency, construct validity, and test-retest reliability in the sample of married adults provided evidence for reliability and validity of the total MPM to assess mindful partnering, as well as the Mindful awareness and Acceptance/compassion subscales. However, the other subscales did not demonstrate adequate

test-retest reliability. Use of this measure in further research will allow for the study of the potential correlates and benefits of mindful partnering to further our understanding of this novel construct, and the following studies utilized the total and validated subscales of the MPM.

Study 2 investigated whether higher levels of mindful partnering would be associated with lesser biological stress to relationship conflict. Seventeen couple pairs ( $N= 34$ ) visited the laboratory to complete several tasks, including questionnaires (e.g., the MPM) and a conflict discussion. Participants had their Respiratory Sinus Arrhythmia (RSA), a measure of parasympathetic nervous system activation, measured during the baseline period and conflict discussion. Regression analyses suggested that MPM-Mindful awareness significantly predicted partners' greater RSA during the discussion task, with a small effect, suggesting greater physiological relaxation. No other results were significant, however, there were greater-than-trivial effects for several associations between mindful partnering variables and RSA, as discussed. In general, results suggested that when *one's partner* is more mindful, it may soothe the nervous system and relieve the potential stress of marital disagreement, however, *practicing* mindful partnering may actually be associated with biological stress.

Study 3 examined associations among mindful partnering and physical health as well as telomere length, an indicator of cellular aging. Eighty-three ( $N= 166$ ) couples completed questionnaires (including the MPM as well as an item to measure overall physical health), and 43 ( $N= 86$ ) of these couples gave a saliva sample which was assayed for telomere length. Results of regression analyses demonstrated that self-health was associated with total mindful partnering as well as MPM-Acceptance/compassion, which was also associated at trend levels with partner health. Links between total mindful partnering and MPM-Acceptance/compassion with health variables, as well as between MPM-Mindful awareness and partner health also demonstrated

greater-than-trivial/small, positive effect sizes. Associations between mindful partnering and telomere length did not reach significance, however, there were greater-than-trivial effect sizes for associations between self telomere length and MPM-Mindful awareness in the negative direction and MPM-Acceptance/compassion in the positive direction, and partner telomere length showed a small positive effect with MPM-Mindful awareness. These findings suggest that long-term health may be improved through mindful partnering, with implications for couples therapy and other interventions for couples.

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## Introduction

Low-quality relationships are one of the most harmful factors for physical health, as well as for longevity (Pepping & Halford, 2016; Valliant, 2012). The chronic stress of low-quality relationships leads to over-activity of physiological stress systems, a mechanism leading to dysfunction of the body's stress system and ensuing damage to physical health (Slatcher, Selcuk, & Ong, 2015). The relationship with one's intimate partner may be most impactful for physical health and longevity, as the chronic stress and physiological stress dysregulation that is so harmful to health is contagious among intimate partners, creating a dangerous cycle that intensifies stress (Timmons, Margolin, & Saxbe, 2015) and thus negative health outcomes.

Research suggests that there are several established predictors of better intimate partner relational quality, such as greater intrapersonal emotion regulation (Bloch, Haase, & Levenson, 2014), lower physiological reactivity during conflict (Gottman, Jacobson, Rushe, & Shortt, 1995) and greater attention to "bids of connection" from a partner (Driver & Gottman, 2004). However, the literature documenting a diverse array of elements that predict relationship quality is fragmented. Without a clear overarching concept that connects and synthesizes these unique predictors of relational quality, such findings are of limited applicability in understanding what interventionists may target to improve health through relationships. I propose just such a theoretical framing, *mindful partnering*.

Mindful partnering, a novel theoretical construct, is a potential predictor of health that synthesizes these unique predictors into a cohesive conceptual framework. This way of being with one's partner may involve mindful awareness in attention and action toward one's partner, nonreactivity in conflict, emotional awareness of one's partner, intentional acceptance and compassion of one's partner, and self-compassion in the partnership. Given that some established

predictors of partner relational quality are trait-like (e.g., Solomon, & Jackson, 2014) and thus may not be able to be changed, it is important that research identify relational predictors of health that can be modified and improved. *Intrapersonal* mindfulness is a modifiable skill that has implications for reducing stress, improving mental health (Hoffman, Sawyer, Witt, & Oh, 2010) and physical health (Grossman, Niemann, Schmidt, & Walach, 2004), and even improving cellular indicators of mortality risk (Schutte & Malouff, 2014). Intrapersonal mindfulness is associated with higher quality relationships (Karremans, Schellekens, & Kappen, 2017), though this effect is indirect, as it is mediated by the transference of intrapersonal mindfulness to the interpersonal domain (Jones, Welton, Oliver, & Thoburn, 2011); greater intrapersonal mindfulness is associated with greater romantic relationship satisfaction through mindful attunement and the feelings of safety and security that this attunement may foster (Jones, Welton, Oliver, & Thoburn, 2011). *Interpersonal* mindfulness, a manner of paying attention to others with nonjudgmental and deep awareness (Pratscher, Rose, Markovitz, & Bettencourt, 2018; Skoranski, Coatsworth, & Lunkenheimer, 2019), has received comparatively little research attention in relation to intrapersonal mindfulness. The exception is research on mindful parenting, which suggests that this construct is a predictor of relationship quality over and above intrapersonal mindfulness (Pratscher et al., 2018) that is also modifiable through intervention (Skoranski et al., 2019).

Mindful partnering, as we conceptualize it, is a form of interpersonal mindfulness in the relationship with one's intimate partner. Given the importance of interpersonal relationships for mental and physical health, and specifically the relationship with one's intimate partner, it is important that the health benefits of interpersonal mindfulness specifically with one's intimate partner (i.e., mindful partnering) be investigated. After establishing mindful partnering as a novel

theoretical framework to capture interpersonal mindfulness with one's intimate partner and developing a measure of mindful partnering (the purpose of Study 1 of this manuscript), it is important to understand how levels of mindful partnering may relate to the stressfulness of couple interaction, in order to illuminate mindful partnering as a potential mechanism for improving relationship quality and stability as well as physical health. This can be examined by investigating the association between mindful partnering and physiological reactivity to marital conflict (the purpose of Study 2). Repeated and/or intense physiological stress reactions, such as those that occur in response to marital conflict, have the ability to contribute to physical health (Juster et al., 2010) and even mortality risk (Prior et al., 2016). In addition to investigating how mindful partnering may be associated with physiological stress reactivity to marital conflict, it is important to investigate how mindful partnering may be associated with physical health and cellular indicators of longevity (the purpose of Study 3), to eventually inform interventions that improve health and lengthen the lifespan. The reviewed research suggests that mindful partnering, a novel theoretical construct, may be a potential modifiable predictor of reduced stress and thus health; however, this possibility has not been investigated. The findings of this study can offer information about the potential benefits of mindful partnering for predicting physiological stress functioning, health, and longevity.

## Study 1

### **Mindful Partnering: Introducing a Novel Theoretical Construct and Testing the Psychometric Properties of the Mindful Partnering Measure (MPM)**

Mindfulness can be defined as nonjudgmental, present-moment awareness (Kabat-Zinn, 1990). Previous research in *intrapersonal* mindfulness has suggested many promising benefits of this way of relating to internal sensations and individual experiences of one's environment (Grossman, Niemann, Schmidt, & Walach, 2004). Researchers have emphasized that social relationships are a fundamental part of the self (Galovan & Schramm, 2018) and that it is critical to shift away from a solely internal conceptualization of mindfulness and acknowledge social mindfulness (Barker, 2014). However, research has largely focused on intrapersonal mindfulness, mainly overlooking *interpersonal* mindfulness, which is awareness towards others that is nonjudgmental, attentive, and present-focused (Pratscher, Rose, Markovitz, & Bettencourt, 2018). The little research that has focused on interpersonal aspects of mindfulness has focused on domains such as parent-child relationships (Duncan, Coatsworth, & Greenberg, 2009), and friendship relationships (Pratscher et al., 2018), or have used measures that are limited in their scope (Kimmes et al., 2018). We conceptualize a novel theoretical construct, mindful partnering, as interpersonal mindfulness in the relationship with ones' romantic partner.

#### **Why Study Mindful Partnering?**

Most research on interpersonal mindfulness has focused on specific relationship domains, including in friendships (Pratscher et al., 2018) and parent-child relationships (Duncan et al., 2009), finding that greater relationship quality is associated with these specific types of relational mindfulness. Given that the quality of the relationship with ones' intimate partner has strong implications for health (for full review, see Burman & Margolin, 1992), conceptualizing

interpersonal mindfulness with ones' romantic partner (i.e., *mindful partnering*) is an important endeavor. Only one study has conceptualized interpersonal mindfulness in romantic relationships in this way, creating the Relationship Mindfulness Measure (RMM; Kimmes et al., 2018). In a measure development and validation study, the researchers found that their version of interpersonal mindfulness in ones' romantic relationship was associated with romantic relationship quality and attachment security, over and above intrapersonal mindfulness. Although these findings point to the relational benefits of mindfully relating to ones' partner, the measurement of romantic relational mindfulness in this study was limited. The measure only included five items, all assessing only one dimension of interpersonal mindfulness: focused awareness in the relationship. I believe that this is an incomplete picture of mindful partnering. More specifically, just as there are multiple facets to intrapersonal mindfulness (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006), mindful partnering is made up of several components. In addition to intrapersonal mindfulness and focused awareness of ones' partner, research suggests that a diverse array of relational elements predict greater relationship quality, for example, greater attention to one's partner (Driver & Gottman, 2004), intrapersonal emotion-regulation (Bloch, Haase, & Levenson, 2014), and partner acceptance (Kappen, Karremans, Burk, & Buyukcan-Tetik, 2018). However, an overarching concept that connects these unique predictors is needed to synthesize this research to create a fuller understanding and applicability. Mindful partnering may serve as such a unifying theme. Informed by the components of mindful parenting (Duncan, 2007; Duncan et al., 2009) as well as the Five Facets of intrapersonal Mindfulness (e.g., FFM, Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006), I conceptualize mindful partnering as including mindful awareness in attention and action toward one's partner, nonreactivity in conflict, emotional awareness of one's partner, intentional acceptance and

compassion of one's partner, and self-compassion in the partnership. More specifically, *mindful awareness in attention and action* toward one's partner involves attending with full awareness to one's partner, including focusing deeply on one's partner in shared activities and in actions toward one's partner. Being present with full attention in this way may allow one's partner to feel fully seen and heard, enhancing feelings of interpersonal connection and the feeling that a partner is emotionally accessible and dependable; these relational elements may be at the heart of intimacy as well as conflict resolution (e.g., Bowen, Yeates, & Palmer, 2018; Gottman & Silver, 2015). *Nonreactivity* in interpersonal mindfulness involves taking a mindful pause before reacting when upset by difficult situations with one's partner. This mindful pause can give time for an individual to decide the most helpful way to react in a given situation, bringing mindful awareness to how one behaves in a relationship and thus increasing the likelihood of choosing behaviors that are helpful and/or not harmful to a relationship. Given that the manner in which couples communicate during conflict is one of the most empirically supported predictors of longitudinal marital satisfaction and stability (e.g., Gottman, 2014), nonreactivity in conflict has potential to greatly impact relational quality. *Emotional awareness* of one's partner involves the ability to recognize the emotional state of one's partner, an ability that can be improved from mindfulness practice (Wachs & Cordova, 2007), and is important for quality relationships (Levesque, Lafontaine, Caron, Flesch, & Bjornson, 2014). Mindful partnering also involves *acceptance and compassion* of one's partner, and approaching differences with kindness, understanding, and empathic concern (e.g., Duncan et al., 2009). Such qualities can make it easier for couples to resolve conflict as well as provide support (e.g., Marriott, 2017), and increase relationship satisfaction (Kappen, Karremans, Burk, & Buyukcan-Tetik, 2018). Lastly, one can offer *self-compassion to oneself as a partner* by forgiving oneself for relational mistakes

and avoiding self-criticism for relational problems. When individuals are able to approach themselves with kindness, they may be able to extend these feelings towards their partners and avoid harsh self-judgements that may further exasperate negative sentiments and behaviors toward their partners (Neff & Beretvas, 2013), resulting in higher-quality partnerships (Neff & Beretvas, 2013; Karris & Caldwell, 2015).

### **Current Study**

This study aims to examine the factor structure and psychometric properties of a new measure to assess mindful partnering, the Mindful Partnering Measure (MPM). We hypothesized that the theoretically suggested subscales [informed by those of mindful parenting (Duncan, 2007; Duncan et al., 2009) and by the Five Facets of (intrapersonal) Mindfulness Questionnaire (e.g., FFMQ, Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006)], would be confirmed by a preliminary exploratory factor analysis (EFA) using a sample of college students and a confirmatory factor analysis (CFA) using a sample of married adults. We also hypothesized that the MPM and its subscales would show adequate reliability (internal consistency and test-retest reliability) as well as construct validity (as suggested by a moderate degree of overlap with similar constructs related to mindfulness and relationship functioning).

## **Method**

### **Participants and Data Collection**

Participants were 599 individuals from two different samples 1) an undergraduate student sample recruited from a university subject pool (used for preliminary analyses,  $N= 335$ ) and 2) a sample that was recruited through Amazon's Mechanical Turk (MTurk), an online platform in which individuals complete surveys for payment (used for primary analyses,  $N= 264$ ). Although the entire MTurk sample was needed to have adequate power for CFA analyses, two smaller

subsets of this sample were sufficient to have adequate power for construct validity correlational analyses and test-retest reliability analyses, and thus only a subset of the larger sample completed the construct validity measures ( $N= 147$ ) and a subset of this sample repeated the Mindful Partnering Measure at a later timepoint ( $N= 53$ ) (see Costello & Osborne, 2005 for sample size best practices in this research area). Participants self-selected to participate in the study if they met inclusion criteria by choosing to respond to queries to answer study questionnaires either from the subject pool or MTurk. The inclusion criteria for the college student sample was that they were required to be 17 years or older and currently in a romantic relationship. Only married MTurk workers above the age of 18 were given the opportunity to participate, to select for inclusion criteria.

Regarding the 335 individuals in the student sample (Female  $M_{age}= 19.35$ ,  $SD= 2.64$ , Male  $M_{age}= 21.18$ ,  $SD= 3.09$ ), 69.6% were female whereas 30.4% were male. Students represented the following ethnicities: 70.1% White, 9.3% Asian, 3.0% African American, 0.6% American Indian/Pacific Islander, 14.9% other/multiple races/ethnicities, and 2.1% not reported.

Those from the full Amazon's MTurk were 264 married (length of relationship  $M = 11.45$  years,  $SD = 9.54$  years) men (62.9 %) and women (33.7%; 0.8% other, 2.7% gender not reported). Participants were all above the age of 18 and young-to-middle-aged on average (Men's  $M_{age}= 31.44$  years,  $SD= 11.40$  years, Women's  $M_{age}= 38.31$  years,  $SD= 8.74$  years). Household income was, on average, in the 45,001- \$50,000 bracket ( $SD = \$15,001$ - $\$20,000$ ,  $Range = < \$5,000$  to  $> \$900,000$ ). A variety of levels of education were represented: 32.2% had attended graduate school, 20.5% had an associate's degree or vocational school, 17% had some college but no degree, 13.3% had a bachelor's degree, 6.8% had a high school degree or GED, and 7.6% did not report their education. In terms of ethnicity, the sample was comprised of those

who were: 57.2% White, 21.6% Asian, 6.4% African American, 3.8% American Indian/Pacific Islander, and 8% other/multiple races/ethnicities.

All procedures were approved by an institutional review board (ID 19-8631H) and were completed in the Spring of 2019. Participants answered a battery of questionnaires after completing informed consent online. Two weeks after completing questionnaires at time one, 84 MTurk participants [(the number indicated by power analysis (GPOWER; Faul & Erdfelder, 1992)] needed to be able to detect moderate correlations) were contacted to complete the MPM one more time, to allow an examination of test-retest reliability. Fifty-three respondents accepted invitations to participate at time two. Participants were given class credit (college student sample) or compensation (MTurk sample) for participating.

## **Measures**

**Mindful partnering.** The Mindful Partnering Measure (MPM; see appendix for the original and final MPM) was developed to measure the extent to which one demonstrates five theoretical elements of mindful partnering in their relationship with their romantic partner: (1) MPM-Mindful awareness, (2) MPM-Acceptance/compassion, (3) MPM-Emotional awareness, (4) MPM-Nonreactivity, and (5) MPM-Self-compassion. The original battery of MPM items included 31 items, and participants were asked to rate how true each statement is for them typically in their relationship on a scale from 1('never true') to 5('always true'). Sum scores after reverse scoring were calculated; individual subscale and total scores were created such that higher scores reflected greater levels of mindful partnering. This measure was very closely adapted from a previous measure of mindful parenting, the expanded version of the Interpersonal Mindfulness in Parenting scale (The 31-item IMP scale, Coatsworth et al., 2015; Lippold et al., 2019, as validated by de Bruin et al., 2014; which expanded upon the 10-item IMP scale,

Duncan, 2007). Originally, Duncan (2007) created the first IMP scale, a 10-item version. The 10-item version was then expanded upon to create a 31-item version (Coatsworth et al., 2015). The theoretical components of mindful parenting proposed by Duncan et al. (2009) were used to generate these additional items (Lippold et al., 2015). After translating the IMP scale to Dutch, de Bruin et al. (2014) conducted a factor analysis on the measure and examined its psychometric properties. Translations and back translations (between English and Dutch) of the 31-item IMP were completed by a team of researchers including L. Duncan (de Bruin et al., 2014). For the current study, to create the MPM, all items from the 31-item IMP were modified to reflect the romantic relationship rather than the parenting relationship (e.g., substituting the word “child” for “partner”; changing pronouns). Hypothesized subscales for the MPM were partly based on the validated subscales from the IMP, as well as theoretical conceptualizations of the components of mindful parenting set forth by Duncan et al. (2009).

**Measures to examine construct validity. *Intrapersonal mindfulness.*** Participants completed the Five Facet Mindfulness Questionnaire (FFMQ, Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006) to assess five dimensions of intrapersonal mindfulness. Respondents were asked to rate 39 items on a scale from 1(‘never or very rarely true’) to 5(‘very often or always true’). Subscales included mindfulness in observing (“When I’m walking, I deliberately notice the sensations of my body moving”;  $\alpha = .82$ ), describing (“I’m good at finding words to describe my feelings”;  $\alpha = .89$ ), acting with awareness (“When I do things, my mind wanders off and I’m easily distracted”, reverse scored;  $\alpha = .89$ ), nonreactivity to inner experience (“I perceive my feelings and emotions without having to react to them”  $\alpha = .81$ ), and nonjudging of inner experience (“I criticize myself for having irrational or inappropriate emotions,” reverse scored,  $\alpha = .91$ ). Higher average scores reflect greater levels of intrapersonal mindfulness in each

dimension after reverse scoring. Scores on all subscales were summed for a FFMQ- total score ( $\alpha = .91$ ).

***Relationship mindfulness focused attention.*** We included the Relationship Mindfulness Measure (RMM, Kimmes et al., 2018) to measure the degree to which one demonstrates mindful focused attention in ones' romantic relationship. The measure includes five items (e.g., "When I'm with my partner, I find myself saying or doing things without paying attention"). Respondents were asked to rate the degree to which each statement applies to them on a scale from 1('almost always') to 6('almost never'). Higher average scores are indicative of greater interpersonal mindfulness in ones' romantic relationship ( $\alpha = .86$ ).

***Marital satisfaction.*** Participants completed the Dyadic Adjustment Scale, satisfaction subscale (DAS-S Spanier, 1976). Respondents rated on a scale from 1('all of the time') to 6('never') the extent to which seven items apply to their romantic relationship (e.g., "In general, how often do you think that things between you and your partner are going well?"). Also as a part of the DAS-S, respondents were asked to rate the degree of happiness in their relationship, on a scale from 0('extremely unhappy') to 6('perfect') and to rate their commitment to their relationship on a scale from 1('I want desperately for my relationship to succeed, and would go to almost any length to see that it does') to 6('my relationship can never succeed, and there is no more that I can do to keep the relationship going'). Scores on all nine items of the DAS-S were summed after reverse scoring relevant items; higher scores reflect greater satisfaction ( $\alpha = .86$ ).

***Perspective taking in one's relationship.*** Participants completed the cognizance subscale of the Self Dyadic Perspective Taking Scale (DPTS-S, Long, 1990) to assess the degree to which participants generally are aware of the cognitive perspective of their romantic partner. Respondents rate on a scale from 0('does not describe me well') to 4('does describe me very

well') the extent to which six items describe how they generally relate to their romantic partner. Higher sum scores on the cognizance subscale are reflective of greater awareness of one's partner's perspective (e.g., "I always know exactly what my partner means";  $\alpha = .66$ ).

***Personality: Agreeableness and emotional stability.*** Participants completed the Ten-Item Personality Inventory (TIPI, Gosling, Rentfrow, & Swann, 2003), agreeableness and emotional stability subscales. On a scale from 1('disagree strongly') to 7('agree strongly'), respondents rated the extent to which they believe that different words describe them (e.g., agreeableness, "critical, quarrelsome," reverse scored). Higher sum scores after reverse scoring reflect a greater level of a given personality trait (internal consistency: agreeableness  $r = .40$ ; emotional stability  $r = .59$ ).

### **Analytic Plan**

First, in line with best practices (Worthington & Whittaker, 2006), an exploratory factor analysis of the MPM was conducted using the student sample. Due to expectations that the scores on all factors' eigenvalues would be correlated with one another, we used an oblique rotation and thus examined GEOMIN rotated factor loadings (Hattori & Preacher, 2017), and items were considered possible items in a given subscale if their factor loadings were above .40 (Ford et al., 1986). Then, a confirmatory factor analysis was conducted in a sample of married individuals from MTurk. Using maximum likelihood estimation and following guidelines by Hu & Bentler (1999), to demonstrate good model fit, the RMSEA was expected to be less than .06, CFI greater or equal to .95 (with .90 indicating adequate model fit), and the SRMR was expected to be less than .08. Although the chi-square statistic is often used to evaluate model fit, we chose not to use this statistic in this study due to its sensitivity to sample size, although we report it for reference (Bentler & Bonnet, 1980). Results and theoretical structure were used to inform

subscales of the MPM. Factor analyses relied on maximum likelihood estimation to handle missing data. Reliability was tested both through internal consistency and test-retest reliability in the MTurk sample. Internal consistency was examined for the total MPM as well as all subscales using Cronbach's alpha coefficients [with the exception of subscales with too few items (i.e., less than 3), for which inter-correlations among items were examined instead, due to the sensitivity of Cronbach's alpha coefficients to item number]. Alphas were expected to be above .70 and inter-item correlations to be at least .2 to indicate adequate internal consistency (Pallant, 2011).

MPM- Total, MPM- Emotional awareness, MPM- Self-compassion, and MPM- Acceptance/compassion at time two were skewed; therefore, nonparametric Spearman rho correlations were used in correlations with these variables (Hauke & Kossowski, 2011). MPM- Mindful awareness and MPM- Nonreactivity were not skewed, and thus Pearson correlation coefficients were examined. Test-retest reliability was examined through correlations among scores on the MPM from the MTurk sample across a 2-week period, where strong positive correlations were expected to support high test-retest reliability. Then, correlational analyses were conducted to examine construct validity, examining correlations between the MPM (total and subscale scores) and several other constructs, as described below. Tests of normality indicated that of these variables, cognitive perspective taking, emotional stability, agreeableness, and FFMQ- observing and FFMQ- describing were skewed. All correlations that included a skewed variable were conducted using Spearman rho correlation coefficients; otherwise, Pearson correlation coefficients were used. Correlations that were small to moderate ( $.1 \leq r \leq .3$ ), or strong ( $r \geq .5$ ), but not indicative of multicollinearity (.80 or above; Berry & Feldman, 1985), were interpreted as evidence that mindful partnering was related to (shows convergent validity

with) these measures, but is not an overlapping construct with (shows divergent validity with) any of these measures. Correlational analyses handled missing data through pairwise deletion.

## **Results**

### **Missing Data Analyses**

Mindful partnering variables (subscales and total) were missing at low percentages (Student sample: 0-5.15%; MTurk sample: 0.4-2.3%), as were variables used for construct validity correlational analyses (0.7-1.4%). Results of Little's missing completely as random (MCAR) test for time one were nonsignificant (Student sample,  $p = .070$ ; MTurk sample,  $p = 1.00$ ). However, there was systematic missingness at time two in the MTurk sample (MCAR  $p = .002$ ). There were mostly no significant differences in time one variables between those who did and did not complete time two, however, individuals who did provide time two data scored significantly higher on MP- Emotional awareness, MP- Total, income, and age ( $ps < .043$ ).

### **Preliminary Analysis (Exploratory Factor Analysis)**

Examination of eigenvalues and the scree plot suggested the retention of 5 factors (the first five factors of the data had eigenvalues above the recommended cutoff value of 1, see Table 1; the scree plot became flatter after the fifth factor). The five-factor model demonstrated good model fit [(RMSEA = .044, SRMR = .029, CFI = .951;  $\chi^2(320) = 528.798$ ,  $p = .000$ )], although model fit improved with the addition of factors up to the maximum possible factors of eight (see below). Despite the fact that model fit improved with the addition of factors (with the model with the maximum possible eight factors fitting best), examination of factor loadings indicated that models above five factors lacked conceptual clarity and were not interpretable. However, the five-factor model was interpretable (i.e., supported by our theoretical conceptualization); the full rotated solution of the EFA can be found in Table 1.

Due to a lack of conceptual fit, some items were removed from the factors for which they were suggested in the EFA. Although all items in each factor were examined together to see if items fit together with a label outside of our theoretical model, our theoretical conceptualization still seemed to fit best. Item 22 (see the MPM- Original in the appendix for item text) was moved from factor one (MPM-Acceptance/compassion, where it loaded most heavily) to factor four (MPM- Emotional awareness, where it also held a relatively high loading) due to a clearer theoretical fit. Item 24 was also removed from factor one due to a lack of theoretical fit. Items 12 and 20 were removed from factor three (MPM-Mindful awareness). In addition, items 3, 6, 8, and 18 were dropped from the full 31-item scale due to a failure to demonstrate high enough factor loadings for any scale. A second EFA was conducted removing these items from the analysis, and interpretation of the eigenvalues, scree plot, and model fit indices remained similar (i.e., five factors with eigenvalues greater than one, scree plot suggesting a five-factor structure, good model fit, [RMSEA = .045, SRMR = .027, CFI = .960;  $\chi^2(226) = 380.483, p = .000$ ]). The use of our theoretical conceptualization as well as eigenvalues, scree plot, and model fit statistics lead us to move forward with the five-factor structure for the CFA. Subscales and factor loadings of the final items are presented in Table 2.

### **Primary Analyses**

**Confirmatory factor analysis.** A CFA (see Figure 1) was conducted to seek to confirm the theoretically and empirically driven factor structure in the MTurk sample. Again, maximum likelihood estimation was used, and the same fit indices were utilized. The CFA demonstrated adequate fit [(RMSEA= .047, CFI= .942, SRMR= .053;  $\chi^2(199) = 315.859, p = .000$ )], confirming the five-factor structure of the MPM.

**Reliability.** Alpha coefficients were computed for the MPM- Total ( $\alpha=.931$ ), MPM-Acceptance/compassion ( $\alpha= .846$ ), MPM-Mindful awareness ( $\alpha= .876$ ), and MPM-Self-compassion ( $\alpha= .708$ ). All alphas were above the cutoff of .70, indicating adequate internal consistency. MPM-Nonreactivity and MPM-Emotional awareness each included only two items, and thus inter-item correlations were calculated instead of Cronbach's alpha coefficients. Inter-item correlations indicated adequate internal consistency (correlations of at least .2) of the two subscales (MPM- Nonreactivity,  $r= .268$ ; MPM- Emotional awareness,  $r=.428$ ). As such, the total MPM as well as all MPM subscales were internally consistent.

Test-retest correlational analyses suggested that MPM- Total at time one and time two were strongly positively correlated ( $r_s(51)= .834, p< .001$ ), as were MPM-Acceptance/compassion ( $r_s(51)= .794, p< .001$ ), and MPM-Mindful awareness ( $r(51)= .794, p< .001$ ), indicating adequate test-retest reliability for these subscales. However, less than adequate test-retest reliability was evident for the other subscales ( $<.70$ ), although large positive correlations were still observed between time points for MPM- Self-compassion ( $r_s(50)= .571, p< .001$ ) and MPM- Nonreactivity ( $r(51)= .588, p< .001$ ), but only a small positive correlation was observed for MPM- Emotional awareness ( $r_s(51)= .390, p= .004$ ).

**Construct validity.** Results suggested that MPM- Total demonstrated strong correlations with relationship focused attention mindfulness ( $r_s(143)= .646, p< .001$ ), marital satisfaction ( $r_s(144)= .630, p< .001$ ), and totals on the FFMQ ( $r_s(144)= .683, p< .001$ ). As such, the MPM- Total was correlated with, but not an overlapping construct with, the expected variables. In terms of the MPM subscales, MPM-Mindful awareness was strongly correlated with the FFMQ- Acting with awareness ( $r(144)= .574, p< .001$ ). MPM- Nonreactivity was strongly correlated with FFMQ- nonreactivity ( $r(144)= .565, p< .001$ ) and moderately correlated with emotional

stability ( $r_s(144) = .296, p < .001$ ). MPM- Emotional awareness was moderately correlated with cognitive perspective taking with one's partner ( $r_s(143) = .397, p < .001$ ) and the FFMQ- Describing ( $r_s(144) = .419, p < .001$ ), but was not significantly associated with the FFMQ- Observing ( $r_s(144) = .134, p = .106$ ). MPM-Acceptance/compassion was moderately correlated with both the FFMQ- Nonjudging ( $r(144) = .271, p = .001$ ) and the agreeableness dimension of personality ( $r_s(143) = .444, p < .001$ ). Lastly, MPM- Self-compassion showed a moderate correlation with emotional stability ( $r_s(141) = .393, p < .001$ ). Results of these construct validity correlational analyses suggest that there were moderate or strong correlations (but not those indicative of multicollinearity) between the MPM dimensions with the hypothesized constructs with little exception, suggesting that the mindful partnering constructs are associated with constructs that they theoretically should be, but are not measuring the same constructs as these associated variables.

## **Discussion**

In this study, the MPM was developed based on a previous questionnaire assessing mindful parenting (de Bruin et al., 2014), and a potential theoretical model was created using conceptualizations of mindful parenting (Duncan et al., 2009) as well as facets of intrapersonal mindfulness (Baer et al., 2006; de Bruin et al., 2012). This study provides support for the underlying construct of mindful partnering and its factor structure. As we describe in more detail in the following paragraphs, the results largely supported the validity and reliability of the total MPM as well as the MPM-Acceptance/compassion and MPM-Mindful awareness subscales. However, due to inadequate test-retest reliability, the MPM-Self compassion, MPM-Emotional awareness, and MPM- Nonreactivity subscales must be further refined before independent use as standalone subscales.

Results of the preliminary exploratory analysis in a sample of students, along with theory, supported a five-factor structure of the MPM. A confirmatory factor analysis in the MTurk sample confirmed the five-factor structure and provided further empirical support for the subscales and total MPM. As such, the MPM showed five underlying components of mindful partnering in line with theory, providing support for our hypothesis. Next, reliability of the MPM and its subscales were tested. Internal consistency was adequate for both the total MPM and its subscales. Therefore, this study provides evidence that the items of the total MPM and each of the subscales are reliably measuring underlying constructs. Test-retest reliability also was supported for MPM- Total and MPM-Acceptance/compassion as well as MPM-Mindful awareness, indicating that these dimensions of mindful partnering may specify stable individual differences in relating to one's romantic partner. However, although strong test-retest correlations were evident for MPM- Self-compassion and MPM- Nonreactivity subscales, correlations did not reach the .70 cutoff for adequate test-retest reliability, and this correlation was especially low for MPM- Emotional awareness, suggesting that these subscales may not have adequate psychometric properties to be used independently of the full measure (a finding that I will explain in the "Interpretation of Unexpected Findings" section below).

Another objective of this study was to examine construct validity of the MPM. Correlational tests seeking to provide support for construct validity supported that there were moderate to strong correlations between most dimensions of mindful partnering and hypothesized constructs. No correlations were above the range indicating multicollinearity, indicating that no dimensions of mindful partnering were overlapping (i.e., measuring the same thing as) any of the other constructs. As such, discriminant validity was supported for all hypothesized measures. Significant correlations between dimensions of the MPM and most

hypothesized constructs supported convergent validity. The only correlation that was not significant was the hypothesized correlation between MPM-Emotional awareness and FFMQ-observing, which is interpreted in the next section.

### **Interpretations of Unexpected Findings**

There were unexpected findings in the current study regarding 1) test-retest reliability of several subscales and 2) one correlational analysis to test construct validity. Regarding test-retest reliability, adequate test-retest reliability was not supported for the MPM- Self-compassion and MPM- Nonreactivity subscales (although these correlations were still strong) and was especially low for MPM- Emotional awareness subscale. It is possible that the inadequate test-retest reliabilities may reflect true measurement error and suggest that these subscales are not reliable across time due to a failure to capture true constructs, and, as such, we do not recommend the use of these subscales in isolation in future studies until they are further refined. Further work is needed to refine these subscales for future use; as measure development research is an iterative process, additional items in these subscales should be added until test-retest reliability for these subscales is proven adequate. There are also possible alternative reasons for this observation. The subscales with low test-retest reliability had the smallest number of items (2 or 3 each). It may be that the low consistency of responses for these subscales was due to an increased random measurement error because of the small number of items in each scale (Emons, Sijtsma, & Meijer, 2007). With only a small number of items, there is less room for random fluctuation in respondents' answers without affecting the consistency of scores on the subscale. Although short scales have advantages such as reducing participant burden, one drawback is a lower level of individual consistency in responses (Emons et al., 2007). Another alternative explanation for the observed low test-retest reliability of certain subscales could be the fundamental difference

between those subscales that demonstrated adequate test-retest reliability and those that did not, for example, the influence of external factors on the constructs. In the words of DeVellis (2016, pg. 69), test-retest reliability “may best be thought of as revealing something about the nature of a phenomenon *and* its measurement, not the latter alone.” Given evidence that negative events may cause such day-to-day changes in intrapersonal mindfulness (Lucas-Thompson et al., 2021), environmental circumstances such as stress may vary from day to day, or week to week, causing oscillations (DeVellis, 2016) in these dimensions of mindful partnering. For example, if one is experiencing a significant stressor (e.g., a deadline at work), they may find themselves being more critical of themselves (i.e., less compassionate toward themselves as a partner), having a shorter fuse (i.e., lower levels of nonreactivity in the relationship), and having less of a tendency to pick up on their partner’s emotional cues (i.e., lesser emotional awareness of one’s partner). It may be that the other components of mindful partnering are less sensitive to short-term fluctuations than these subscales because they are less sensitive to the effects of stress or other environmental factors. Future studies should investigate potential factors that may fluctuate across weeks (e.g., levels of stress, negative events) and contribute to greater intra-individual variability in the relevant components of mindful partnering. In addition, the subscales that demonstrated less than adequate test-retest reliability (emotional awareness of one’s partner, self-compassion in the partnership, and nonreactivity in conflict) may reflect constructs that are more self-focused than the subscales that did demonstrate adequate test-retest reliability (mindful awareness in attention and action toward one’s partner or intentional acceptance/compassion toward one’s partner), which appeared to be more other-focused. It may be that these constructs were more consistent across time due to their more relational nature, as partners may be more likely to relate to others in more stable ways than themselves (e.g., in the case of self-compassion

in the partnership), and nonreactivity in conflict as well as emotional awareness may fluctuate as well based on fluctuations in mood.

The other unexpected finding in our results was in regards to one correlational analysis to test construct validity. The hypothesized correlation between MPM-Emotional awareness and FFMQ-Observing was not significant. However, emotional awareness of one's partner was associated with the ability to cognitively take the perspective of one's partner as well as the describing facet of the FFMQ. As such, if one is able to "put themselves in their partner's shoes," and describe their own internal experience, they are more likely to be able to take note of their partner's emotions. However, being able to observe one's own internal and external experiences may not be associated with a greater ability to notice a partner's experiences. Interestingly, both Baer et al., (2006) and de Bruin et al., (2012) reported unexpected findings regarding the observing facet of intrapersonal mindfulness as well. Bruin et al., (2012) found that the observing facet was the only one of the five facets of intrapersonal mindfulness which did not relate to many of the hypothesized constructs (i.e., alexithymia, thought suppression, rumination, worry, dissociation, and psychological symptoms), and was, unexpectedly, positively associated with thought suppression (an unhealthy way of handling thoughts). Similarly, Baer et al. (2006) found an unexpected positive association between the observing facet and maladaptive psychological constructs in a sample of non-meditators; however, such awareness of internal sensations was associated with psychological health in meditators. It may be that the observing facet of mindfulness, if not paired with the accepting, compassionate, and nonreactive facets of mindful attention, can represent an unhealthy level of self-focus (Baer et al., 2006). As such, the finding that the observing facet of intrapersonal mindfulness was not significantly associated

with emotional awareness of one's partner is less surprising and may be due to the fact that the sample included both meditators and non-meditators.

### **Limitations and Future Directions**

Although this study provides evidence for the initial validation of the total MPM, MPM-Acceptance/compassion, and MPM-Mindful awareness, as well as partial evidence for the other three subscales, it is not without its limitations. Although beyond the scope of this project, future investigations should test invariance across groups to determine if the construct of mindful partnering remains the same or differs across different types of relationships (e.g., shorter vs. longer relationships, heterosexual vs. homosexual relationships). Another limitation is the use of a convenience sample through MTurk. MTurk has many strengths as a survey research recruitment tool (Paolacci, Chandler, & Ipeirotis, 2010), yet, generalizability from MTurk samples may be limited in some situations (Walters, Christakis, & Wright, 2018). It is important that future research investigate how mindful partnering may be different in MTurk samples vs. other samples of married individuals recruited from other platforms (e.g., in-person rather than online). In addition, there are limitations regarding test-retest reliability analyses. Test-retest reliability analyses were based on those who were older, had higher incomes, and had greater levels of MP-Emotional awareness/MP-Total, a limitation of the test-retest portion of our analyses.

### **Conclusion**

This study introduced a novel theoretical concept, mindful partnering, as a multi-faceted form of interpersonal mindfulness with one's romantic partner. On the whole, results supported the theoretical structure of this construct, provided evidence of adequate internal consistency for the full measure and all of its subscales, and indicated adequate test-retest reliability for the full

scale as well as for the MPM-Acceptance/compassion and MPM-Mindful awareness subscales. Results of correlational analyses investigating construct validity support that the mindful partnering construct and its dimensions demonstrate convergent validity (are associated with constructs that they theoretically should be), as well as divergent validity (are not measuring the same construct as these associated variables). As such, our findings suggest that mindful partnering is a unique construct associated in the expected ways to related constructs. As a result, this study provides initial evidence of the validity and reliability of the total Mindful Partnering Measure, as well as for the MPM-Acceptance/compassion and MPM-Mindful awareness subscales. Validated measures are needed in social science research to provide the ability to accurately assess constructs that may be important in expanding our understanding of people and relationships. Such measures can be used to discover potential constructs that may be associated with better interpersonal relationships or individual well-being. As such, the total MPM (and two of the MPM subscales) may be used in research to investigate the predictors and consequences of a new theoretical construct, mindful partnering. Investigations examining the potential benefits of this form of interpersonal mindfulness with one's partner (e.g., on relational factors, health) may serve as the next step in investigating this novel theoretical construct and its importance for relational and mindfulness research. In addition, mindful partnering may be an important construct in couples therapy and interventions for couples. If further research confirms the potential benefits of mindful partnering for individual and relational health, couple therapists may choose to use this measure in their work with clients to measure how interpersonal mindfulness between partners changes throughout the course of therapy in order to measure outcomes. In addition, couples therapy methods and interventions may be developed to directly target the facets of mindful partnering, informed by the MPM and this research.

## Tables and Figures

**Table 1**

*Geomin Rotated Factor Loadings of all Items in the Exploratory Factor Analysis*

<b>Item</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1R	0.098	-0.095	0.635*	-0.018	0.018
2	0.354	0.435*	0.057	0.103	-0.076
3	0.363*	-0.054	0.055	0.189*	-0.191*
4	0.468*	0.008	0.266*	0.164*	-0.127
5R	-0.027	0.337*	0.430*	-0.022	0.109
6	0.279	0.156	-0.008	0.274*	-0.106
7	0.558*	0.101	0.092	0.056	0.007
8	0.332*	0.334*	0.156*	0.076	0.035
9R	0.178	0.004	0.729*	0.008	-0.069
10R	0.040	0.098	0.650*	0.061	0.017
11R	-0.142	0.306*	0.588*	-0.003	0.084
12R	-0.026	0.008	0.594*	0.275*	0.049
13R	0.154	-0.160*	0.750*	0.057	-0.042
14R	0.066	0.274*	0.665*	-0.180*	0.058
15R	-0.207*	-0.026	0.002	0.056	0.667*
16	0.794*	-0.164	0.008	-0.006	0.059
17R	0.004	-0.064	0.142	-0.063	0.655*
18	0.360*	0.286*	-0.309*	0.055	0.149
19R	0.334*	-0.177*	0.649*	-0.018	-0.031
20	0.061	0.163	-0.489*	0.115	0.253*
21	0.355	0.499*	-0.186*	-0.070	-0.025
22	0.532*	-0.022	-0.003	0.507*	-0.001
23R	-0.010	0.110	0.220*	0.017	0.548*
24	0.786*	-0.090	-0.007	-0.093	0.049
25	0.742*	0.028	0.107	-0.089	0.048
26R	0.147	0.035	0.405*	-0.102	0.279*
27	0.416*	0.399*	-0.035	-0.147	-0.047
28	0.591*	0.308*	-0.006	0.015	-0.091
29R	-0.067	0.317*	0.625*	0.032	0.109
30	0.495*	0.024	-0.053	0.512*	0.053
31	0.695*	0.041	0.103	0.027	-0.032

\*Significant at the  $p=.05$  level. Item numbers with “R” were reverse-scored. *Note:* numbering is according to the original items, not the final MPM which had fewer items. Both the original and the final MPM can be seen in the appendix.

**Table 2**

*Factor Loadings of Included Items of the Final MPM along with Eigenvalues for each Factor, as Suggested by Exploratory Factor Analysis*

<b>Item Number</b>	<b>Item Text</b>	<b>Eigenvalue</b>	<b>Factor Loading</b>
	<b>MPM-Acceptance/compassion</b>	8.438	
3	I listen carefully to my partner's ideas, even when I disagree with them.		.468
5	Even when it makes me uncomfortable, I allow my partner to express his/her feelings.		.558
11	When my partner is going through a difficult time, I try to give him/her the nurturing and caring he/she needs		.794
17	I am kind to my partner when he/she is upset.		.742
18	When my partner does something that upsets me, I try to keep my emotions in balance		.416
19	I try to understand my partner's point of view, even when his/her opinions do not make sense to me.		.591
22	I try to be understanding and patient with my partner when he/she is having a hard time.		.695
	<b>MPM- Nonreactivity</b>	4.256	
2	When I'm upset with my partner, I notice how I feel before I take action.		.435
14	In difficult situations with my partner, I pause without immediately reacting.		.499
	<b>MPM-Mindful awareness</b>	2.238	
1	I find myself listening to my partner with one ear because I am busy doing or thinking about something else at the same time.		.635
4	I often react too quickly to what my partner says or does.		.430
6	I rush through activities with my partner without being really attentive to him/her.		.729
7	How I am feeling tends to affect how I behave with my partner, but I do not realize it until later.		.588
8	When I am doing things with my partner, my mind wanders off and I am easily distracted.		.750
9	When my partner makes me upset, I say or do things I later regret.		.665
13	I am often so busy thinking about other things that I realize I am not really listening to my partner.		.649
20	When something my partner does upsets me, I get carried away with my feelings		.625
	<b>MPM- Emotional Awareness</b>	1.289	
15	It is easy for me to tell when my partner is worried about something.		.507
21	I can tell what my partner is feeling even if they do not say anything.		.512
	<b>MPM- Self-compassion</b>	1.099	
10	I tend to be hard on myself when I make mistakes as a partner.		.667
12	When times are really difficult with my partner, I tend to blame myself.		.655
16	I tend to criticize myself for not being the kind of partner I want to be.		.548

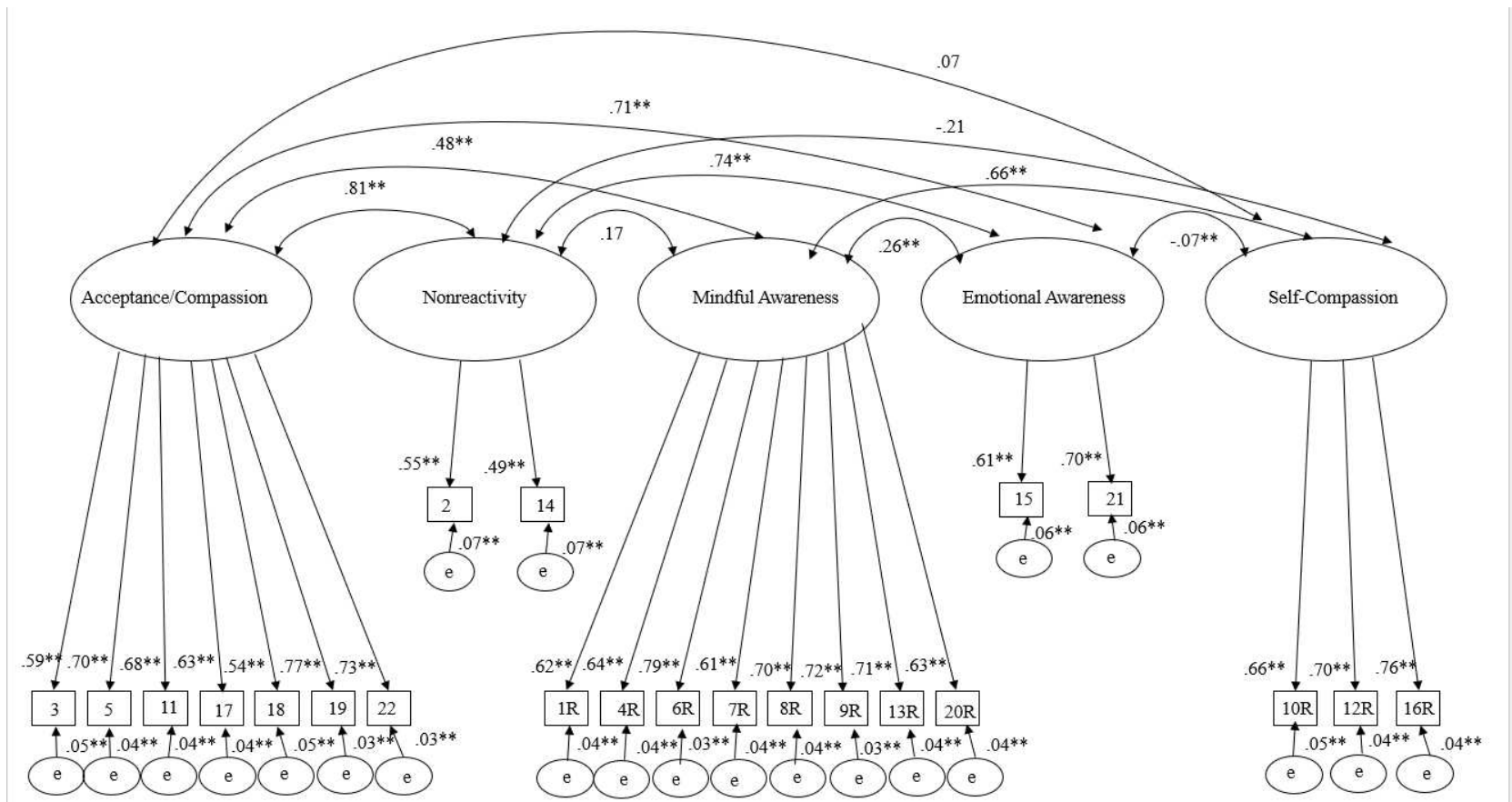


Figure 1. Results of Confirmatory Factor Analyses of the Mindful Partnering Measure \*\*Significant at the  $p = .00$  level. Estimates are STDYX standardized.

## Study 2

### **Is Mindful Partnering Associated with Physiological Reactivity to Marital Conflict?**

Research suggests that high physiological reactivity to marital conflict may serve as a source of chronic biological stress that leads to negative health outcomes (Wanic & Kulik, 2011), as well as divorce and lower marital quality (Gottman, 2014). High physiological reactivity to marital conflict indicates that a partner is biologically stressed by marital interaction. Frequent and/or intense stress caused by couple interaction may weigh on an individual and a relationship over time, leading to dissatisfaction in the relationship (and ultimately divorce or marital unhappiness, Gottman, 2014) as well as chronic biological stress that leads to wear and tear on the body and thus negative health outcomes (Wanic & Kulik, 2011). It is important that researchers work to understand predictors of physiological reactivity to marital conflict to find potential mechanisms of reducing the stressfulness of marital conflict and thus improving health and marital stability.

Research has identified that greater levels of certain positive couple communication behaviors (e.g., support) and lower levels of certain negative communication behaviors (e.g., criticism) are associated with lesser physiological reactivity to marital conflict, including lesser cortisol (Feinberg et al., 2013) and cardiovascular (Nealey-Moore et al., 2007) reactivity. In addition, intrapersonal mindfulness, a manner of holding open, accepting attention to present-moment experience, is associated with lesser physiological reactivity to marital conflict (Laurent, Laurent, Hertz, Egan-Wright, & Granger, 2013). As such, previous research suggests that both greater quality couple relationships and mindfulness may reduce the stressfulness of marital interactions. However, a novel theoretical perspective is needed to be able to conceptualize and integrate these behavioral and intrapersonal predictors of the stressfulness of marital interaction.

The purpose of this research is to investigate the association between mindful partnering, a novel theoretical construct developed by the author and colleagues (Seiter, Lucas-Thompson, Prince, Quirk, & Coatsworth, 2021), and physiological reactivity to marital conflict. Mindful partnering includes mindful awareness in attention and action toward one's partner, intentional acceptance and compassion of one's partner, and total mindful partnering. Mindful partnering may enhance relationship safety and security as well as reduce the threat of marital conflict and thus soothe the activity of the stress system in marital conflict. In this manuscript, I test mindful partnering as a potential predictor of lesser physiological reactivity to marital conflict.

### **Physiological Stress Reactivity**

When an individual experiences a stressful or threatening event, the human body is equipped with several physiological stress systems that respond in unique ways to the stressor. These responses promote survival by activating the fight or flight response, promoting action tendencies to protect or defend oneself. There are two arms of the human stress response: the hypothalamic-pituitary-axis (HPA axis) and the autonomic nervous system (ANS). The HPA axis is a neuroendocrine system which releases hormones in response to activation (McEwen, 1998). Cortisol, a glucocorticoid, is the primary stress hormone released by the HPA axis. The ANS controls responding of myriad organs of the body (e.g., eyes, salivary glands, sweat glands, blood vessels, heart, stomach, bladder), and is composed of two competing systems: the sympathetic nervous system (SNS) and the parasympathetic nervous system (PNS; Porges, Doussard-Roosevelt, & Maiti, 1994). When the SNS is activated, this indicates activation of physiological stress reactivity, inciting responses such as constricting blood vessels and accelerating the heart rate (Lucas-Thompson, McKernan, & Henry, 2018). In contrast, PNS activation allows the body to rest, for example decelerating heart rate and promoting digestion.

Not only are the HPA-axis and ANS different in their mechanisms of action (i.e., through hormone release vs. through the activation of target organs), they are different in the time scale of their responding. Responses of the ANS happen much faster and are more short-lived than responses of the HPA-axis (Lucas-Thompson, McKernan, & Henry, 2018). In contrast, HPA-axis responses such as cortisol reactivity do not occur in full until quite a bit after the stressful event (e.g., 20-40 minutes after), and demonstrate a longer recovery time (Ulrich-Lai & Herman, 2009). Most past studies investigating physiological reactivity to marital conflict have focused on cortisol reactivity (as reviewed below). As such, it is important that research use measures of both HPA-axis and ANS reactivity in examining predictors of the physiological stress response to fully understand how the body reacts to stressors.

Another way of measuring physiological reactivity, and specifically ANS activity, is respiratory sinus arrhythmia (RSA). RSA reflects the activation of the PNS. Vagal tone regulates the autonomic nervous system by activating the PNS, and RSA is a measure of vagal activation (McKernan & Lucas-Thompson, 2018). A higher RSA suggests a higher vagal tone, indicating that the body's parasympathetic nervous system (i.e., the relaxation response) is more active (Lunkenheimer et al., 2015). Research using RSA as a measure of physiological reactivity to marital conflict has been limited (e.g., Cribbet, Smith, Uchino, Baucom, & Nealey-Moore, 2020), and thus the use of RSA to investigate how parasympathetic activity may be associated with mindful partnering, the objective of this study, is a novel contribution to the marital interaction literature.

### **Couple Communication and Physiological Reactivity to Marital Conflict**

Researchers have discovered that couple communication behaviors are associated with physiological responding to marital interactions, and such physiological reactions to marital

conflict are associated with relationship quality and stability over time (Gottman & Levenson, 1992; Gottman, 2014). In this research, couples are told to discuss the largest areas of conflict in their relationship and these interactions are coded for the frequency and/or intensity of different communication behaviors by objective observers. Researchers can take physiological measures during or after such discussions to measure physiological reactivity to marital conflict.

The most frequently used measure of physiological reactivity in this research has been cortisol reactivity. Such research suggests that greater overall positive communication behaviors, and especially supportive behavior, during marital conflict are associated with lessened cortisol reactivity and steeper post-discussion cortisol recovery (Feinberg, Jones, Granger, & Bontempo, 2013, for men with high levels of anxiety; Laurent et al., 2013; Robles, Shaffer, Malarkey, & Kiecolt-Glaser, 2006 ), whereas negative communication behaviors (including demand/withdraw behavior, Heffner et al., 2006, Kiecolt-Glaser et al., 1996; criticism, and conflict intensity, Aloia & Solomon, 2015a, Rodriguez & Margolin, 2013) are associated with greater cortisol reactivity (Aloia & Solomon, 2015b; Feinberg et al., 2013, only for men; Miller, Dopp, Myers, Stevens & Fahey, 1999, only for men), and attenuated post-discussion cortisol recovery (Feinberg et al., 2013, in men with high anxiety and a history of frequent marital conflict; Robles et al., 2006). For example, 21.3% of the variance in wives' cortisol reactivity throughout conflict discussions is accounted for by negative behavior reciprocity between partners (Kiecolt-Glaser et al., 1997). In addition to these observed behaviors, individuals who self-report greater satisfaction with their partners' support behaviors demonstrate lower cortisol reactivity during marital conflict (Heffner, Kiecolt-Glaser, Loving, Glaser, & Malarkey, 2004). These findings suggest that positive communication behaviors, and specifically support behaviors, may have the ability to soothe physiological stress reactivity, as well as enhance physiological recovery, to marital conflict,

whereas negative communication behaviors may have the potential to exasperate the biological stress of marital conflict.

This research suggests that physiological stress systems, specifically the HPA axis, are typically activated during marital conflict, and to varying degrees depending on couple relationship factors. It is important to study multiple systems of stress responding, as these systems act through different mechanisms and on different time scales. Although the research has been scarcer, evidence suggests negative marital communication is associated with cardiovascular reactivity, a measure of ANS activity, to marital conflict (Coutinho et al., 2017). Stressful and negative marital interactions (e.g., those characterized by hostility) are associated with larger increases in blood pressure (Newton & Sanford 2003) and cardiac output (Nealey-Moore et al., 2007), in addition to greater heart rates (Coutinho et al., 2017; Robles & Kiecolt-Glaser, 2003). However, supportive behaviors during couple interaction do not increase blood pressure (Robles & Kiecolt-Glaser, 2003). One review suggested that greater marital quality accounts for 1.69% of the variance seen in cardiovascular reactivity during marital conflict (a small effect; Robles et al., 2014). This research suggests that warmth and caring behavior toward a partner does not cause physiological reactivity, whereas those behaviors that convey threat to an individual or relationship do increase cardiovascular reactivity.

However, cardiovascular reactivity is only one reflection of autonomic activation. Because heart rate is influenced by both the SNS and the PNS, cardiovascular reactivity offers a measure of SNS and PNS activation simultaneously. As such, it is unclear if increases in heart rate in this research are due to increased SNS activity or decreased PNS activity. It is not enough to focus simply on cardiovascular responding in this body of research because doing so gives us an unclear picture of SNS or PNS reactions, each of which has different implications for social relationships

and health (Cribbet et al., 2020). Extending the research documenting greater ANS reactivity to more stressful marital interactions, research has used RSA as an outcome measure. The use of RSA is an important extension to the aforementioned literature, as RSA is a purer measure of PNS activation, allowing us to understand the potential role of marital interaction on influencing PNS activity. As such, the use of RSA as an additional measure of ANS activity in marital interaction research is a necessary one. Such research finds that positive marital interactions result in increases in RSA, indicating PNS activation (i.e., activation of the relaxation response) whereas negative marital conflict causes a reduction of RSA (Cribbet et al., 2020; Smith et al., 2011). Lower RSA is associated with increases in marital strain (i.e., criticism, demands, tension, conflict) over 10 years, whereas higher RSA is associated with increases in marital support and quality over the same time period (Donoho, Seeman, Sloan, & Crimmins, 2015). During dyadic interactions, giving support increases RSA, with support provision explaining 8% of the variance in increases in RSA (a small effect; Borelli, Shai, Fogel Yaakobi, Levit-Binnun, & Golland, 2019). One study found that lower reported relationship quality is associated with lower resting RSA for both men (accounting for 6.25% variance) as well as women (accounting for 4% of the variance; Smith et al., 2011), although these effects were also small. This study also showed that indicators of communication quality (lesser negative affect, lesser controlling behavior, greater affiliation) are associated with increases in RSA when discussing areas of conflict with one's spouse (Smith et al., 2011). Further research is needed to examine predictors of changes in RSA in response to marital conflict. It is important that more research investigate how qualities of romantic relationships are associated with the RSA response to marital conflict, as this is an important indicator of PNS activity, a physiological indicator that is associated with long-term health and well-being (Beauchaine, 2015; Masi, Hawkey, Rickett, & Cacioppo, 2007).

## **Intrapersonal Mindfulness and Physiological Reactivity to Marital Conflict**

Intrapersonal mindfulness reduces subjective stress reactivity (Kabat-Zinn, 1990) in addition to physiological reactivity to a variety of stressors (e.g., public speaking and performance, Lucas-Thompson, Miller, Seiter, & Prince, 2019; Creswell & Lindsay, 2014). Specifically, intrapersonal mindfulness is associated with lesser physiological reactivity to marital conflict (Laurent, Laurent, Hertz, Egan-Wright, & Granger, 2013). Individuals who demonstrate greater dispositional mindfulness show reduced cortisol reactivity to a marital conflict discussion (in addition to less negative affect and more positive appraisals of the conflict, Hertz, Laurent, & Laurent, 2015) as well as quicker cortisol recovery after marital conflict (Laurent, Hertz, Nelson, & Laurent, 2016). Although the literature documenting associations among intrapersonal mindfulness and physiological responses to marital conflict has solely used cortisol reactivity as an outcome measure, this research suggests a promising potential for intrapersonal mindfulness to reduce the physiological stress of couple interaction. It is important that further research examine ANS stress responding to expand this literature.

The vast majority of the time, mindfulness in the literature refers to intrapersonal mindfulness, but mindfulness can also be interpersonal. Interpersonal mindfulness is a way of relating towards others with present-moment, focused, open, and accepting attention (Pratscher, Rose, Markovitz, & Bettencourt, 2018). Although interpersonal mindfulness is understudied, research suggests it is a way of relating to others with implications for relationship quality and stress reduction (Pratscher et al., 2018; Skoranski, Coatsworth, & Lunkenheimer, 2019). In line with the idea that the positive benefits of intrapersonal mindfulness for relationships are indirect, being due to enhanced interpersonal mindfulness (e.g., Jones, Welton, Oliver, & Thoburn, 2011), research suggests that the association between intrapersonal mindfulness and cortisol reactivity is

mediated by attachment avoidance (Hertz, Laurent, & Laurent, 2015). As such, it may be that mindfulness impacts the biological stress of couple interaction through its effects on relationship factors. It may be that *interpersonal* mindfulness with ones' partner (i.e., mindful partnering) predicts lesser physiological reactivity to marital conflict over and above intrapersonal mindfulness; and this study seeks to investigate this possibility.

### **Mindful Partnering: A Novel Theoretical Construct with Potential to Predict Lesser Physiological Reactivity to Marital Conflict**

The association between communication behaviors and physiological reactivity to marital conflict highlights the importance of couple relationship factors for predicting the stressfulness, and thus physiological reactivity, of marital conflict. It is clear from the reviewed literature that more positive and less negative marital interaction behaviors are associated with lesser reactivity to marital conflict by a variety of different physiological indicators. However, a unifying theory explaining the link among positive and negative behavior with marital outcomes (such as the stressfulness of couple interaction) are lacking. As an illustration of this, Behavioral Marital Therapy (BMT) is a form of therapy informed by findings that rewarding (i.e., positive) behaviors occur more often, and nonrewarding (i.e., negative) behaviors less often, between nondistressed couples than between distressed couples. However, this form of therapy has been referred to as a “treatment approach in search of a theory,” based on basic research and lacking a unifying concept to explain the reasons for (or even the causal direction of) the link between marital behavior and marital outcomes (Jacobson, 1979, p. 170). This lack of theoretical perspective has been suggested to contribute to concerns about the general efficacy of such methods of couple therapy that focus on changing behaviors alone, without formulating a theoretical perspective to clarify and focus couple therapy (Johnson, Hunsley, Greenberg, &

Schindler, 1999). As such, examinations of simply marital *behavior* provide an incomplete picture as to why we see differences in the biological stress of couple conflict.

Mindful partnering is a novel theoretical construct that involves mindful awareness in attention and action toward one's partner and intentional acceptance and compassion of one's partner. Most research focuses on the benefits of intrapersonal mindfulness (Kabat-Zinn, 1990). However, interpersonal mindfulness has been associated with greater relationship quality in a variety of different forms of relationships (friendship relationships, Pratscher, Rose, Markovitz, & Bettencourt, 2018; parent-child relationships, Skoranski, Coatsworth, & Lunkenheimer, 2019). In romantic relationships, this mindful manner of being in a relationship may be soothing to partners' stress systems.

As discussed, overall positive behaviors as well as supportive behavior in marital conflict are associated with lesser physiological reactivity to marital conflict (Feinberg, Jones, Granger, & Bontempo, 2013, Heffner, Kiecolt-Glaser, Loving, Glaser, & Malarkey, 2004; for men with high levels of anxiety; Laurent et al., 2013; Robles et al., 2006). In contrast, intensity of negative interaction behaviors, negative behavior reciprocity, criticism, and wife demand/husband withdraw communication patterns are associated with greater physiological reactivity to marital conflict (Aloia & Solomon, 2015a; Aloia & Solomon, 2015b; Feinberg et al., 2013; Heffner et al., 2006; Kiecolt-Glaser et al., 1996; Rodriguez & Margolin, 2013; Stevens & Fahey, 1999). Mindful partnering may serve as a theoretical perspective for why we see links among these specific behaviors and physiological reactivity to marital conflict. It may be that those who interact with their partners with mindful awareness in attention and action show lower levels of the intensity of negative marital interaction as well as negative behavior reciprocity. Such partners are able to attend and act with clear-seeing intention as well as take a mindful pause to

avoid acting in ways that may be harmful for the partnership. In addition, acceptance and compassion towards one's partner are forms of relating in which warm, supportive, and non-critical actions are inherent. Therefore, the theoretical construct of mindful partnering may serve as a unifying concept to synthesize behavioral predictors of the stressfulness of marital interaction. Research supports that intrapersonal mindfulness is associated with relationship security (Ryan, Brown, & Creswell, 2007). It may be that partners who fully see and hear each other, have deep caring and concern for one another, and fully accept one another may show less of a stress response to marital conflict because such mindful partnering may enhance safety and security in the relationship. Such security in the relationship may reduce the threat of marital conflict and thus be less activating to the stress system. Partners who act toward one another with mindful attention and compassion in conflict may behave in ways that are less threatening to the relationship and thus the physiological stress system. This study seeks to investigate whether physiological reactivity to marital conflict may be predicted by mindful partnering, a novel theoretical perspective.

### **Current Study**

As reviewed, although the effects have been small, both more positive and less negative couple communication as well as greater intrapersonal mindfulness are associated with lesser physiological reactivity to marital conflict. However, solely behavioral or intrapersonal conceptualizations of predictors of the stressfulness of marital interaction provide an incomplete picture, with the need for a novel theoretical perspective. Interpersonal mindfulness with one's romantic partner (i.e., mindful partnering) is a potential predictor of lesser physiological stress in reaction to marital conflict. The goal of the current study is to investigate this association in a

sample of couples. I hypothesize that mindful partnering is positively associated with higher RSA during marital conflict (a measure of greater PNS activation) in both self and partner.

## **Method**

### **Participants**

Participants were seventeen couple pairs ( $N= 34$ ) who were parents of teens aged 12-17 who participated in a larger study involving a mindfulness program for teens (NCCIH-funded project K01AT009592-01, PI: Lucas-Thompson). Families were recruited through advertisements in school newsletters, various listservs, and through flyers placed around town and distributed at local events and at a local therapy center. Teen children of parents were required to report at least rarely being stressed or anxious, and parents were required to currently be living together (years living together  $M = 6.19$ ,  $SD = 7.02$ ). The sample was composed of primarily heterosexual couples, with the exception of one same-sex female couple.

Household income was, on average, in the \$80,001 — \$90,000 block ( $SD = \$10,001$  — \$15,000,  $Range = \$10,001$ - $\$15,000$  to  $\$200,000$ - $\$250,000$ ). The average age of men was 36.41 ( $SD = 7.746$ ) and of women was 32.31 ( $SD = 4.22$ ). The sample was primarily made up of Non-Hispanic White participants (Women: 88.2% White, 5.9% Asian or Pacific Islander, 5.9% other/ 88.2% Non-Hispanic or Latino, 5.9% Hispanic or Latino, 5.9% not reported; Men: 94.1% White, 5.9% other/ 94.1% Non-Hispanic or Latino, 5.9% unknown or not reported). A variety of levels of education were represented (Women: 11.8% High school or GED, 11.8% some college but no degree, 29.4% bachelor's degree, 5.9% some graduate work, 17.6% Masters degree, 5.9% more than a Master's degree, and 17.6% doctoral degree; Men: 17.6% some college but no degree, 17.6% bachelor's degree, 5.9% some graduate work, 41.2% Masters degree, 5.9% more than a master's degree, and 11.8% doctoral degree).

## **Procedure**

Parent couples visited the laboratory to complete several tasks, including questionnaires and a marital conflict discussion. In line with a common strategy for observing marital conflict (Driver & Gottman, 2004), participants independently rated areas of common relationship conflict, and a research assistant selected 3-4 topics for the couple to discuss based on these ratings. After a 5-minute baseline period in which couples watched a nature video, couples tried to reach a resolution to their problems for 10 minutes. Participants had their RSA measured during the baseline period and conflict discussion. Couples were connected to physiological equipment to measure RSA. A research assistant aided the participants in placing sensors in the necessary places and connecting to wires to participants. RSA was measured based on electrocardiogram and respiration. To measure electrocardiogram, sensors were placed on the right wrist and left ankle for the wired setup (women) and on the collarbones and left rib for the wireless setup (men). Participants also wore a respiration belt around the chest to measure respiration, a wired one for women and a wireless one for men.

## **Measures**

**Mindful partnering.** Participants completed the Mindful Partnering Measure (MPM; Seiter, Lucas-Thompson, Prince, Quirk, & Coatsworth, 2021) to measure the extent to which one demonstrates mindful partnering in their relationship with their romantic partner. The total measure includes 22 items, and participants are asked to rate how true each statement is for them typically in their relationship on a scale from 1 ('never true') to 5 ('always true'). A total mindful partnering score was created by summing all items on the questionnaire, after the necessary reverse-scoring. Higher scores reflect greater levels of mindful partnering in one's relationship. In addition to the total mindful partnering score, subscales included (1) mindful awareness in

attention and action toward partner (i.e., MPM-Mindful awareness e.g., “I rush through activities with my partner without really being attentive to my partner”), and (2) intentional acceptance and compassion for one’s partner (i.e., MPM-Acceptance/compassion e.g., “I am kind to my partner when he/she is upset”). Subscale scores were created by summing all relevant items after the necessary reverse-scoring. In addition to these subscales, items were included in the questionnaire to measure nonreactivity in conflict with one’s partner, emotional awareness of one’s partner, and self-compassion in the partnership; however, although these items were included in the total measure, these were not standalone subscales due to a failure of these independent subscales to demonstrate adequate test-retest reliability (see Seiter et al., 2021).

**Physiological reactivity to marital conflict.** BIOPAC MP160 systems data acquisition hardware (BIOPAC Systems, Inc., Goleta, CA, USA) was used to measure respiration and electrocardiogram. AcqKnowledge Analysis software was used to analyze RSA. Physiological data files were split into those recorded during baseline and those recorded during the discussion. After cleaning per BIOPAC guidelines, the peak-valley method was used to compute the RSA index (El Sheikh et al., 2009; Grossman, Van Beek, & Wientjes, 1990; McKernan & Lucas-Thompson, 2018). Then, average RSA values were calculated for baseline and for the marital conflict task.

**Intrapersonal mindfulness.** As I am interested in examining the predictive power of mindful partnering as a form of interpersonal mindfulness independent of intrapersonal mindfulness, intrapersonal mindfulness will be included as a covariate in analyses. Intrapersonal mindfulness was measured using the Mindful Attention and Awareness Scale (MAAS; MacKillop, & Anderson, 2007). This measure is a reliable and valid measure of intrapersonal mindfulness (Jermann et al., 2009). To complete the questionnaire, respondents are asked to rate,

on a scale from 1(‘almost always’) to 6(‘almost never’), their answers to 15 items (e.g., “I find it difficult to stay focused on what's happening in the present”). Scores are averaged and relevant items are reverse scored. Higher scores are reflective of greater mindfulness.

**Demographic control variables.** Participants reported on their age, ethnicity, highest level of education, and relationship duration. Ethnicity was dummy coded as Caucasian or minority race for the purpose of analyses. These variables were controlled for in regression analyses.

### **Statistical Plan**

All variables were tested for normality. Due to significant skew, baseline and discussion levels of RSA were log-transformed. Analyses tested if self-reported mindful partnering was related to RSA level during conflict, controlling for RSA during baseline, intrapersonal mindfulness, and demographic variables. Total mindful partnering as well as MPM-Mindful awareness and MPM-Acceptance/compassion were tested as potential predictors of RSA during the discussion. Separate models were utilized for self and partner RSA to preserve a smaller parameter to sample size ratio, thus avoiding model overfitting (which would limit the generalizability of the results; Babyak, 2004; Howell, 1987). Subscale scores were tested as predictors in one model separate from total mindful partnering.

As the sample was comprised of couples, and thus individuals who were not independent from each other (and were likely to be more similar to each other than other random individuals), it was important to control for the nonindependence (i.e., nested nature) of the data. Otherwise, standard errors of partners within couples would be biased to be too small, biasing hypothesis tests and confidence intervals toward significance and thus type I errors (Long & Ervin, 2000; White, 1980). Regression analyses utilizing the “type is complex” option of the analysis

command in Mplus (version 7.11, Muthen & Muthen, 2013) in conjunction with the “cluster” option of the variable command and maximum likelihood estimation were utilized to control for the nested nature of the data. Using these options in Mplus utilizes a sandwich estimator to adjust standard errors for partners within couples to take into account nonindependence, correcting the bias seen with nonindependence within samples (McNeish Stapleton, & Silverman, 2017). Using such cluster-robust standard errors (Freedman, 2006) enables unequal error variance by setting between-cluster covariances of the standard errors (i.e., standard error covariances between couples) at a value of zero (Wooldridge, 2016). Between-cluster standard errors are allowed to be correlated, as the standard error covariances are set at 0, and as such, sandwich estimation corrects for clustering/correlations between partners.

I tested the hypothesis that higher levels of mindful partnering are associated with higher RSA levels during conflict (for both self and partner) with traditional significance testing (examining whether these associations are in the expected direction and significant). However, due to a small sample size and thus a lack of power, I also calculated and examined effect sizes as well as confidence intervals to test this hypothesis. The hypotheses were considered to be supported if there was a small effect size in the positive association between mindful partnering (both total and subscales) and RSA during the marital conflict discussion, informed by research that indicates similar effect sizes for marital quality, negative marital conflict, and support predicting RSA (Borelli et al., 2019; Smith et al., 2009; Smith et al., 2011). Effect size was measured with STDYX-standardized regression coefficients. Following Cohen’s (1988) guidelines for interpreting correlation coefficients, values below .1 were considered trivial effect sizes, values of .1 to .3 were considered small effects, values between .3 and .5 were considered medium effects, and values of .5 and above were considered large effects (in line with common

practice for interpreting standardized regression coefficients, e.g., Duckworth, Tsukayama, & Kwok, 2012). Confidence intervals were also calculated and examined to estimate the degree of uncertainty associated with the estimates of these associations.

## **Results**

### **Descriptive Statistics and Bivariate Correlations**

Descriptive statistics and bivariate correlations are presented in Table 3. Results of bivariate correlations showed that total mindful partnering was positively associated with MPM-Mindful awareness and MPM-Acceptance/compassion, as well as intrapersonal mindfulness. Intrapersonal mindfulness was also positively associated with MPM-Mindful awareness and MPM-Acceptance/compassion. RSA during baseline and during the discussion were significantly positively associated for individuals in the sample. In addition, education was significantly positively associated with RSA at baseline. No other bivariate correlations between study variables were significant.

### **Results of Regression Analyses**

Table 4 reports the results of regression analyses testing mindful partnering variables as predictors of RSA during the discussion task (controlling for RSA during baseline, demographic variables, and intrapersonal mindfulness) in regards to significance testing and examination of confidence intervals and effect sizes. MPM-Mindful awareness significantly positively predicted partner's greater RSA, with a small effect. These results were also supported by a confidence interval which did not contain the null value of 0, suggesting a rejection of the null hypothesis; confidence interval results suggested 95% confidence that the true mean was between .00 and .06.

No other mindful partnering variables were significantly predictive of RSA as indicated by significance testing or examination of confidence intervals (see Table 4 to examine confidence intervals and thus the degree of uncertainty associated with estimates of these associations). As indicated by standardized regression coefficients, there was a medium strength association of one's own RSA with MPM-Total, and a small association between one's own RSA and MPM-Acceptance/compassion, and these associations were negative in direction, such that greater MPM-Acceptance/compassion and MPM-Total were associated with lower levels of RSA during the discussion. Examination of standardized regression coefficients also suggested a small, positive association between MPM-Total and one's partner's RSA, such that greater total mindful partnering was associated with higher levels of partner's RSA during the discussion.

### **Discussion**

This study investigated associations between mindful partnering and parasympathetic activation during marital conflict. Traditional significance testing using *p*-values in addition to examination of confidence intervals and effect sizes suggested that MPM-Mindful awareness was a significant positive predictor of one's partner's greater RSA, with a small effect size. Whereas no other results were significant according to traditional significance testing, examinations of effect sizes revealed greater-than-trivial effects for several associations between mindful partnering variables and RSA during the conflict task. There was a medium negative association between one's own RSA with MPM-Total, a small negative association of one's own RSA and MPM-Acceptance/compassion, and a small positive association between MPM-Total and one's partner's RSA. These effect size results suggest that having a partner higher in total mindful partnering, but being lower in mindful partnering and acceptance/compassion oneself, may be associated with a greater RSA.

This research expands on the current literature investigating physiological responses to marital conflict in several ways. First of all, mindful partnering is a newly conceptualized construct, developed by the authors, and this study is the first investigation of how this novel construct is associated with physiological reactivity to marital conflict. These results, though based on a small sample size and thus having limited power, are promising in suggesting an association between mindful partnering and physiological reactions to marital conflict. Secondly, most of the current literature examining links between marital characteristics and physiological reactivity to marital conflict has investigated cortisol responding (e.g., Robles et al., 2006), a measure of HPA-axis functioning. By using RSA as a measure of physiological stress, we add a biological measure of ANS activity, a biological system that is quicker at responding to stress than the HPA-axis, providing more novel information about biological responding to marital conflict as predicted by relationship characteristics and expanding on the limited research in this area (e.g., Borelli et al., 2019; Cribbet et al., 2020; Smith et al., 2011).

One of the findings of this study was that MPM-Mindful awareness was significantly associated with a partner's greater PNS activation during a marital conflict discussion, suggesting greater relaxation. These results suggest that when one's partner is fully present and attentive, it may relieve the potential stress of marital disagreement. When a partner pays attention with mindful awareness, it may soothe a partner's nervous system by creating a feeling of being fully listened to and understood in the context of conflict. Practicing mindful awareness of one's partner may send a signal that one is emotionally accessible and able to be depended on. Knowing that one's partner is emotionally accessible and engaged in this way is a powerful antidote to harmful nervous system activation (Makinen & Johnson, 2006). In fact, helping both partners feel fully heard and understood through mindful attention is the fundamental goal of

often-used and effective couples therapy strategies for healing relationship wounds and resolving conflicts (e.g., the speaker-listener technique, Diamond & Lebow, 2016; the attachment injury resolution model of emotionally-focused couples therapy, Makinen & Johnson, 2006). Such interventions that encourage partners to pay full attention to each other may prevent escalation of negative interaction patterns, a predictor of divorce and lower marital quality (Markman, Stanley, & Blumberg, 2010). As such, mindful awareness in attention toward one's partner may soothe the nervous system during marital disagreement through enhancing interpersonal connection and a sense of safety and security, reducing the threat of marital conflict. As a result, mindful awareness in the couple relationship may initiate a greater relaxation response and a less pronounced fight or flight response in partners.

Alternatively, it could be that the causal direction of these findings is in the opposite direction, i.e., that one's partner's greater RSA influenced the level of mindful awareness during the interaction. It could be that, when one's partner is less stressed in a conversation (as indicated by greater RSA), one is able to stay more present and attentive due to also feeling less stressed themselves. Such a suggestion is in line with research that suggests that couples "link up" their stress responses during conflict discussions, with greater stress in one partner creating greater stress in the other (Timmons, Margolin, & Saxbe, 2015), and research suggesting that being under stress inhibits one's ability to be mindful (Lucas-Thompson et al., 2021). Future studies using experimental or longitudinal designs should investigate the causal direction of my findings.

In line with our hypotheses, there was a small association between MPM-Total and partner RSA, pointing to a relaxation effect of partner total mindful partnering. These findings are in keeping with literature that less positive and more negative communication behaviors during conflict (Smith et al., 2011; Robles et al., 2006), as well as levels of intrapersonal

mindfulness (Laurent, Laurent, Hertz, Egan-Wright, & Granger, 2013) are associated with less pronounced physiological stress responses to conflict. Again, alternatively, it could be that this small effect was due to a less stressful interaction creating more fertile ground for practicing mindfulness in the conversation, rather than the other way around.

Regarding results of one's mindful partnering for one's own RSA, there was a medium association between one's own RSA with MPM-Total and a small effect for MPM-Acceptance/compassion. In contrast to my hypotheses, these associations were negative in direction. These effect size results are suggestive that practicing mindful partnering in conflict with one's partner may actually serve as a physiological stressor. Such findings are also consistent with research that finds that, paradoxically, mindfulness can actually have adverse effects for those who practice (e.g., increased stress and anxiety, Farias & Wikholm, 2016; increased drug abuse for military veterans who have experienced moral injury, for certain facets of mindfulness, Davies, Prince, Bravo, Kelley, & Crain, 2019). Researchers have suggested that, for some, mindful focused attention may amplify internal problems by bringing awareness to them (Farias & Wikholm, 2016); similarly, such attention with one's partner could bring greater awareness to relationship problems which may cause distress. For example, Baer et al. (2006) found that, for non-meditators, the observing facet of mindfulness was associated with negative mental health outcomes, however, the opposite was true for meditators. This is likely due to the fact that meditators have developed accepting and compassionate awareness toward themselves and their internal experiences, as well as practiced enough to desensitize to the at times challenging aspects of mindfulness.

Or, in contrast to the soothing effect of mindful partnering for one's partner (i.e., being the recipient of mindful partnering) during conflict, *practicing* mindful partnering may actually

be mildly stressful, as one has to employ effort and energy in order to be mindful in conflict and responsive to their partner's pain. The original Latin meaning of "compassion" is to "suffer with," and can be thought of as being present in another's pain (Maben, Cornwell, & Sweeney, 2010). As such, expressing compassion for one's partner involves truly understanding the others pain, and feeling their hurt along with them, along with expressing empathy and a deep concern. Some research suggests that expressing empathy may result in taking on some of the recipient's emotional pain (Coyne & DeLongis, 1986; Wortman, & Dunkel-Schetter, 1979). As such, it makes sense that practicing compassion would cause some suffering, and thus physiological stress. Although our findings of an effect in the *negative* direction between mindful partnering, and specifically acceptance/compassion, and one's own RSA are in contrast to research studies suggesting that giving support relieves physiological stress (e.g., Borelli et al., 2019), the distinction between these studies may lie in the difference between support and compassion, the former of which does not require as deep of a dive into another's pain. Again, the direction of causality may also be flipped here; it could be that greater physiological stress may cause one to behave more mindfully in relationship, although this direction of findings would not be supported by previous research. Theoretically, if marital discussions tend to cause a significant amount of stress, one may have learned to practice more total mindfulness and acceptance/compassion out of necessity to try and de-escalate a stressful conversation. However, this suggestion is in contrast to studies that find that greater stress during conflict discussions is associated with more negative and less positive behaviors toward one's partner (e.g., Feinberg et al., 2013, Nealey-Moore et al., 2007).

Although this study serves as a novel and important addition to the literature, it is not without limitations. The largest limitation of this research is the small sample size. As such, the

power to detect meaningful findings was limited. Further studies should examine the associations among mindful partnering variables and physiological stress during marital conflict in a larger sample. In addition, this study was cross-sectional, not longitudinal, and observational instead of experimental; and so the ability to make causal conclusions is limited. As discussed, it is possible that RSA in response to interpersonal interactions may have an influence on mindful partnering variables rather than the other way around. Further studies may use mechanisms to manipulate levels of mindful partnering (rather than measuring trait mindful partnering) to investigate causal influences on physiology, or investigate changes in mindful partnering and physiology over time. Lastly, characteristics of the current sample may limit the generalizability of these results to same-sex couples, couples in shorter-term relationships or without children, or to more diverse populations whom are not primarily non-Hispanic, White and middle-class. Future studies should be conducted with greater inclusiveness of these identities in order to promote generalizability of results.

In conclusion, this study investigated associations among mindful partnering variables and RSA during a marital conflict discussion. Results suggested that being a mindful partner (especially being mindfully aware toward one's partner) may alleviate biological stress in one's partner. In contrast, effect size results suggested that mindful partnering may actually cause biological stress for the one who practices it, possibly due to the increased effort involved in mindfulness and "suffering with" involved in practicing compassion toward one's partner. Although the sample size for this study was small, it provides promise for mindful partnering as a method of sharing the biological load of hard times with one's partner, and thus alleviating stress for one's partner. Further research should seek to replicate these findings in larger samples, and, if promise continues to be shown for mindful partnering, interventions to improve this

component of relationship functioning may be helpful in alleviating stress for partners. For example, couples therapists may wish to employ biofeedback methods in couples therapy, hooking clients up to physiological equipment to measure RSA and allowing partners to watch in real time how their biology responds to the practice of mindful partnering. For example, clients can watch in real time how their partner feels compassion toward them (i.e., suffering with, by experiencing increases in RSA when offering support while talking about tough topics), or how they are able to alleviate distress in their partner (i.e., by decreasing RSA in their partner when practicing mindful partnering), in order to show the effects of mindful partnering moment-by-moment and reinforce mindful partnering behaviors that help in reducing partner stress.

## Tables

**Table 3**

*Bivariate Correlations and Descriptive Statistics for Mindful Partnering, Physiological Reactivity to Marital Conflict, Intrapersonal Mindfulness, and Demographic Control Variables*

	1	2	3	4	5	6	7	8	9	10	11	12
1.MPM-Total	X	.83**	.72**	.56**	-.02	.00	-.05	-.02	.12	-.17	-.11	-.20
2.MPM-Mindful awareness		X	.33	.55**	.00	.20	.07	.13	.18	-.16	-.06	-.18
3.MPM-Acceptance/compassion			X	.35*	.00	-.08	-.09	-.16	.02	-.12	-.05	-.16
4.Intrapersonal Mindfulness				X	-.18	.05	.04	-.13	-.02	.06	-.30	.13
5.Baseline RSA <sup>a</sup>					X	.58**	.26	.32	-.11	-.14	.37*	.11
6.RSA during Discussion <sup>a</sup>						X	.32	.29	.05	-.14	.30	-.21
7.Baseline RSA- Partner <sup>a</sup>							X	.58**	-.13	-.17	.23	.11
8. RSA during Discussion- Partner <sup>a</sup>								X	.00	.10	.31	-.21
<u>Demographic Control Variables</u>												
9.Ethnicity									X	.08	-.22	.01
10.Age										X	.05	-.16
11.Education											X	-.20
12.Relationship Duration (Yrs.)												X
<i>M</i>	53.68	9.88	27.12	59.1	4.0	4.21	4.0	4.21	4.97	33.44	6.15	18.88
<i>SD</i>	8.39	4.10	3.22	11.83	.59	.59	.59	.59	.58	8.62	2.41	6.05

<sup>+</sup>  $p < .10$ . \* $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .<sup>a</sup>Log-transformed. Education was coded as the following: (1) less than high school, (2) high school or GED, (3) some college but no degree, (4) AA degree or vocational school, (5) bachelor's degree, (6) some graduate work, (7) masters degree, (8) law degree, (9) more than a master's degree, and (10) doctoral degree. Ethnicity was coded as follows: (1) American Indian, (2) Asian Pacific Islander, (3) Asian-American, (4) Caucasian, (5) other.

**Table 4**

*Results of Regression Analyses Testing Mindful Partnering Variables as Predictors of One's Own and One's Partner's RSA During the Marital Discussion Controlling for Baseline RSA, Intrapersonal Mindfulness, and Demographics*

	Unstandardized Results				STDYX Standardized Results			
	<i>b</i>	<i>SE</i>	<i>p</i>	95% CI [LL,UL]	$\beta$	<i>SE</i>	<i>p</i>	95% CI [LL,UL]
<b>RSA-Self</b>								
1.MPM-Total	-.02	.02	.14	[-0.05, 0.00]	-.31	.21	.13	[-0.72, 0.09]
2.MPM-Mindful awareness	.01	.02	.70	[-0.03, 0.05]	.05	.13	.70	[-0.21, 0.32]
3.MPM-Acceptance/compassion	-.05	.04	.25	[-0.16, 0.03]	-.26	.22	.24	[-0.70, 0.18]
<b>RSA- Partner</b>								
1.MPM-Total	.01	.01	.47	[-0.01, 0.03]	.12	.16	.47	[-0.20, 0.43]
2.MPM-Mindful awareness	.03	.02	.05	[0.00, 0.06]	.21	.10	.05	[-0.34, 0.39]
3.MPM-Acceptance/compassion	.01	.04	.90	[-0.06, 0.07]	.02	.19	.90	[0.04, 0.41]

*Note:* Higher levels of RSA indicate a more pronounced “rest and digest” response. Separate models were used for each dependent variable at well as for (1) total mindful partnering and (2) mindful partnering subscales.

### Study 3

## Is Mindful Partnering Associated with Greater Physical Health and Reduced Mortality Risk?

Problems with physical health impact the quality of life of many people (Dwyer-Lindgren, Mackenbach, van Lenthe, & Mokdad, 2017) and are a serious cause of disability, having a significant impact on labor market outcomes through missed work days and lower wages (Pelkowski & Berger, 2004). Experiencing chronic stress is a critical contributor to such health problems. Chronic stress leads to wear and tear on the body, creating problems with physical health as well as contributing to early mortality (McEwen, 1998). Therefore, it is imperative that research identify ways to reduce stress and thus problems with physical health. Two factors that are known to reduce chronic stress are (1) intrapersonal mindfulness and (2) interpersonal relationship quality. Research suggests that intrapersonal mindfulness, a manner of paying attention to the internal and external environment with present-moment, nonjudgemental attention, benefits health (Grossman, Niemann, Schmidt, & Walach, 2004), and lessens mortality risk as indicated by telomere length, a measure of cellular aging and mortality risk (Schutte & Malouff, 2014). Having higher quality interpersonal relationships, *and especially with ones' intimate romantic relationship partner*, is also linked to having better physical health (Burman & Margolin, 1992) and a longer lifespan (Valliant, 2012).

Given that intrapersonal mindfulness as well as interpersonal relationship quality with one's intimate partner are associated with better health and longevity, *interpersonal mindfulness with one's romantic partner* (i.e., mindful partnering) has potential for reducing chronic stress and thus improving mental and physical health. Interpersonal mindfulness is a manner of being with others with full attention and kind awareness (Pratscher, Rose, Markovitz, & Bettencourt,

2018). Mindful partnering, a novel theoretical concept developed by the author, is a manner of being with one's intimate partner in such a mindful way. Mindful partnering involves mindful awareness in attention and action toward one's partner and intentional acceptance and compassion of one's partner. Although mindful partnering has potential benefits for reducing chronic stress and improving health and mortality risk, research has not yet investigated how mindful partnering may be associated with health outcomes or longevity. The purpose of this study was to investigate associations among mindful partnering and global health as well as cellular indicators of mortality risk.

### **The Theory of Allostatic Load- How Does Stress Impact Physical Health and Longevity?**

Research suggests that chronic stress leads to damage on the body and thus physical health problems as well as earlier mortality (McEwen, 1998). When faced with stressors that are either internal (e.g., unpleasant thoughts) or external (e.g. a threatening stimuli), the body reacts with an acute stress response. Such acute stress responses include the activity of the autonomic nervous system (e.g., increased heart rate) and hypothalamic-pituitary axis (e.g., the secretion of cortisol), as well as the cardiovascular (e.g., elevated ambulatory blood pressure responses), metabolic (e.g., halting digestive processes), and immune systems (e.g., "immune-enhancing" effects). Acute stress responses prepare the body to respond in a helpful way to a stressor; for example, the body may prepare to defend itself, fight against a threat to its safety, or run away from such a threat. Therefore, acute stress responses are adaptive in a moment of stress.

However, according to the theory of allostatic load, when stress is experienced chronically and the body is not given time to recover from such stress responses, the result is wear and tear on the body (Pietromonaco, DeBuse, & Powers, 2013; McEwen, 1998). Chronic stress causes repeated stress responses, and therefore the persistent release of mediators of

neural, endocrine, and immune stress. When the body is overexposed to the physical agents of such stress responses, myriad organ systems in the body are vulnerable to damage. This damage to, or wear and tear on, the body due to chronic stress is referred to as allostatic load (McEwen, 1998). Because of the extensive damage to the body, allostatic load leads to negative health outcomes (Juster et al., 2010). For example, chronic stress and associated allostatic load is associated with peripheral arterial disease, diabetes, reduced immune functioning, cardiovascular disease, lower global health, and early mortality (Juster et al., 2010; McEwen, 1998). As such, it is a worthy research endeavor to investigate potential predictors of allostatic load and thus problems with health and longevity.

### **Cellular Aging and Telomeres**

One indicator of cellular aging, and thus mortality risk, is telomere length (Schutte & Malouff, 2014). For life and growth to occur, human cells divide through the process of mitosis. As cells undergo the process of mitosis, chromosomes replicate. Telomeres are located on the end of each chromosome—they do not replicate with the rest of the genetic material, due to the fact that DNA polymerase, the enzyme that is responsible for the synthesis and replication of DNA, is not able to accurately replicate the end of a DNA strand (Epel, Daubenmier, Moskowitz, Folkman, & Blackburn, 2009). Telomeres are the caps made up of nucleoproteins on the end of DNA strands which protect against cellular degeneration. Over the course of aging, with repeated mitosis, telomeres become shorter and shorter. As such, telomere length is an indicator of cellular aging, and is predictive of how long an organism will live.

Telomeres are shorter in individuals with greater chronological age, with greater risk for cardiovascular disease (independent of age), and with greater rates of age-related diseases (e.g., atherosclerosis, diabetes; Epel et al., 2009). Rather than simply reflecting chronological age,

though, telomere length can be influenced by a variety of different factors. Chronic stress has been shown to shorten telomere length. For example, chronic stress due to low socioeconomic status, depression, and daily life stress is associated with shorter telomere length (Carroll, Roux, Fitzpatrick, & Seeman, 2013; Epel et al., 2009; Schutte & Malouff, 2014). Stressful interpersonal relationships also have implications for the shortening of telomeres, including ambivalent social relationships (Uchino et al., 2012), lack of social support (for older adults, Carroll, Roux, Fitzpatrick, & Seeman, 2013,  $R^2$  change = .017, a small effect), and specifically less supportive marital relationships (Barger & Cribbet, 2016). Telomere shortening can be thought of as an example of allostatic load; telomeres are a reflection of stress and thus wear and tear on the body, with implications for longevity. It is important that research identify predictors of telomere shortening (particularly those that are modifiable) to elucidate potential mechanisms for preventing earlier mortality.

### **Intrapersonal Mindfulness as a Predictor of Better Physical Health and Lower Mortality Risk**

A robust literature suggests that intrapersonal mindfulness is associated with better health (Grossman, Niemann, Schmidt, & Walach, 2004). According to the stress buffering account, mindfulness may improve health by reducing dysregulated stress responses and subsequent stress-related disease (Creswell & Lindsay, 2014). Intrapersonal mindfulness reduces stress, anxiety, and depression (Hoffman, Sawyer, Witt, & Oh, 2010), improves self-care behaviors, as well as improves physical health (Grossman et al., 2004) and reduces mortality risk (with an effect size of  $d = .46$ , a small effect; Schutte & Malouff, 2014). A meta-analysis showed that individuals who participated in mindfulness based stress reduction (MBSR), a 6-week program that teaches mindfulness and meditation, experienced benefits in a variety of different health

outcomes including reduced: medical symptoms, sensory pain, physical disability, and functional quality of life estimates (with effect sizes of about  $d = 0.5$ , a small-to-medium effect size, across studies; Grossman et al., 2004); these benefits have been observed in healthy samples as well as in those with chronic illnesses, such as chronic pain, fibromyalgia, and several different forms of cancer. Such studies show the positive outcomes of increasing intrapersonal mindfulness through intervention. In addition, other studies have investigated the association among trait mindfulness and physical health, finding associations among greater levels of the nonreactivity facet of intrapersonal mindfulness (i.e., the tendency to stay present with internal and external experiences without needing to react to them) and better health (Consedine, & Butler, 2014). Dispositional mindfulness is associated with lower blood pressure (Tomfohr, Pung, Mills, & Edwards, 2015) and greater physiological recovery to stress (Fogarty et al., 2015), signs of lesser allostatic load on the body. Evidence suggests that intrapersonal mindfulness also increases health behaviors (e.g., greater physical activity, sleep, less binge eating; Roberts & Danoff-Burg, 2010). As such, this special way of interacting with the world with nonjudgement and focused awareness may reduce the stressfulness of life (and thus stress-related disease and disease processes; Creswell & Lindsay, 2014) as well as increase self-care behaviors, explaining the well-supported link between intrapersonal mindfulness and health.

Research also suggests that intrapersonal mindfulness is associated with cellular aging. A recent meta-analysis supported that greater intrapersonal mindfulness is associated with greater activity of telomerase, the enzyme that is responsible for slowing telomere shortening or even lengthening telomeres (Schutte & Malouff, 2014). Researchers suggest that this association is likely due to the reduction of the experience of chronic stress, and thus reductions in allostatic load that lead to telomere shortening. Specifically, Epel et al. (2009) suggest that intrapersonal

mindfulness reduces stress cognitions (e.g., appraisals of threat and ruminative thoughts) as well as stress arousal, and increases positive arousal states, leading to lesser stress on the body and thus telomere lengths that reflect healthier cellular aging. Through reducing chronic stress (Creswell & Lindsay, 2014), mindfulness may reduce allostatic load and thus contribute to greater physical health and longevity. It is important to note, however, that although intrapersonal mindfulness is an established predictor of beneficial physical health outcomes, individuals are embedded in social environments. Whereas intrapersonal predictors of health are important to know, further research is needed to establish predictors of greater health especially in interpersonal domains to fully understand the associations of a variety of environmental factors with health.

### **Couple Relationship Characteristics as Predictors of Physical Health and Longevity**

The stress that leads to allostatic load can come in many different forms (e.g., major life events, trauma, minor day-to-day stressors; McEwen, 1998). Social stressors are particularly likely to cause physiological stress responses (Dickerson, Gruenewald, & Kemeny, 2004) and thus allostatic load (e.g., Ha & Granger, 2016) and resulting negative health outcomes. One chronic stressor that leads to problems with physical health and mortality is the stress of low-quality relationships, and especially with ones' intimate romantic partner (Vaillant, 2012). Research suggests that those who are happily married are more likely to have better physical health (Burman & Margolin, 1992) and even lower mortality risk, demonstrating effect sizes from  $r = .07$  to  $.21$  in studies investigating greater marital quality predicting better health, and  $r = .11$  in studies showing greater marital quality in predicting lower mortality risk (all small effect sizes, Robles, Slatcher, Trombello, & McGinn, 2014). In addition, greater sexual intimacy with ones' partner has been found to be associated with longer telomere length (de Baca et al.,

2017), suggesting that relationship factors with one's romantic partner may be associated with cellular aging.

Marital conflict may cause physiological stress responses, especially if the conflict is characterized by unhealthy communication (e.g., Robles et al., 2006). Stressful marital interactions that occur repeatedly in a relationship may cause chronic stress, leading to wear and tear on the body (i.e., allostatic load; Seiter, Lucas-Thompson, & Henry, 2019) that leads to problems with physical health (e.g., Taylor, Repetti & Seeman, 1997). Couples who demonstrate positive communication behaviors (e.g., affection) are more likely to experience less stress (Holt-Lunstad, Birmingham, & Jones, 2008) and demonstrate healthy immune functioning (Gouin et al., 2009; Graham et al., 2009). However, couples who use more negative communication behaviors (e.g., criticism) are more likely to have problems with immune functioning as well as chronic health problems and illness symptoms, as well as poorer overall physical health (Bookwala, 2005; Gouin et al., 2009; Kiecolt-Glaser, Malarkey, Cacioppo, & Glaser, 1993). It may be that couple communication characterized by negative behaviors is experienced as a threat to the security of an attachment between partners, leading to physiological stress (Aloia & Solomon, 2015; Feinberg, Jones, Granger, & Bontempo, 2013). In contrast, positive communications may reinforce safety and soothe the stress system by creating a sense of security. As such, communication behaviors between partners may have implications for reducing chronic stress and thus improving physical health.

However, identifying unique behavioral predictors of less stressful couple relationships provides an incomplete picture of the environment of a couple relationship and connections to health. The causal direction between unhealthy couple communication and couple relationship quality is unclear (Jacobson, 1979), limiting the applicability of these findings to health research.

Some research suggests that less healthy couple communication, rather than being a cause of relationship stress, is the consequence of a less healthy environment in the couple relationship (Lavner, Karney, & Bradbury, 2016). Therefore, at least in part, communication behaviors may be a symptom of relationship distress and thus negative health, rather than a predictor of allostatic load. As such, research must move beyond looking simply at isolated couple behaviors in predicting health and find a way to conceptualize and integrate differences between interpersonal relationships that contribute to negative health outcomes and those that may protect from negative health outcomes. Mindful partnering may be such a novel theoretical conceptualization with potential to predict health and longevity.

### **Current Study: Mindful Partnering and its Implications for Health and Cellular Aging**

In sum, intrapersonal mindfulness as well as interpersonal relationships, and specifically the relationship with ones' intimate partner, are important for health and longevity (Grossman, Niemann, Schmidt, & Walach, 2004; Schutte & Malouff, 2014; Valliant, 2012). Given that both intrapersonal mindfulness and greater quality relationships are associated with better health and longevity, utilizing mindfulness skills and enhancing relationships may be synergistically associated with positive health outcomes. Both mindfulness and greater quality relationships have the power to reduce chronic stress and thus the allostatic load that is harmful to health and life span. Although most research focuses on the benefits of intrapersonal mindfulness, components of interpersonal mindfulness are associated with greater quality romantic relationships (Kimmes et al., 2018), suggesting potential benefits for reducing stress and improving health.

Mindful partnering, a novel theoretical conceptualization of interpersonal mindfulness in one's intimate partnership, is characterized by mindful awareness in attention and action toward

one's partner and intentional acceptance and compassion of one's partner. Mindful partnering as a unifying construct goes beyond the current research of identifying unique behavioral predictors of couple health (e.g., Holt-Lunstad, Birmingham, & Jones, 2008) to provide a fuller understanding of the environment a relationship. Partners who practice interpersonal mindfulness with each other may be likely to repeatedly soothe each other's stress systems rather than persistently activate them, with implications for health. For example, when partners show mindful awareness in attention and action toward each other, they may be able to trust that their partner is emotionally available, thus calming the potentially severe stress of a partner's emotional inaccessibility (Makinen & Johnson, 2006). With more mindful actions in conflict, mindful partners may also prevent intense responses of the physiological stress system that, when repeatedly activated, may cause allostatic load (Seiter, Lucas-Thompson, & Henry, 2019). Partners who demonstrate acceptance and compassion of each other may offer the warmth and caring to each other that is needed to soothe stress (e.g., Aloia & Solomon, 2015b) and thus prevent allostatic load. In total, mindful partnering may reduce problems with physical health and mortality risk through enhancing security and safety in relationships. Enhancing security and thus reducing the stressfulness and threat in relationships could have stress-reducing and thus health-promoting effects. The purpose of this study is to investigate the association among mindful partnering and physical health as well as telomere length, controlling for demographic factors.

## **Method**

### **Participants**

Study hypotheses were tested in a sample of couples participating in a larger study investigating associations among destructive conflict behaviors and cellular aging (funded by the

Colorado School of Public Health). Couples were recruited nationally through various listservs, mailing lists, and internet groups as well as locally through local online platforms and flyers placed around town. Participants were required to be at least 18 years of age and currently living together in a serious committed relationship. 83 couples ( $N= 166$ ) completed questionnaire data, and thus associations among mindful partnering and self-reported health were tested in this sample; however, only 43 couples ( $N= 86$ ) returned valid saliva samples, thus, associations among mindful partnering and telomere length were tested in this smaller sample. Demographics for each sample can be seen in Table 5. There were no differences in demographics or mindful partnering variables between those who did and did not return saliva samples with the exception of the number of years participants had been living together; those who returned saliva samples were together a significantly longer period of time ( $p = .002$ ).

### **Procedure**

Participants were given the option of completing study procedures online or in-person. First, one member of a couple completed a short screening questionnaire to determine if the couple fit inclusion criteria (i.e., being over the age of 18, in a committed relationship, and living together). If couples completed the study remotely, eligible couples completed informed consent either over the phone or through a video, and each member of the couple completed separate consent forms. Next, couples completed questionnaires that were emailed to them. Couples were also mailed a saliva DNA collection kit, including paid return postage and packaging as well as instructions for how to complete the saliva collection and mail the sample back to the lab at CSU. If couples participated in the study in-person, they completed all of these tasks at the laboratory. Saliva samples were stored in the laboratory and then assayed for telomere length.

### **Measures**

**Mindful partnering.** The Mindful Partnering Measure (MPM; Seiter, Lucas-Thompson, Prince, Quirk, & Coatsworth, 2021) was used to measure levels of mindful partnering in the relationship with in one’s romantic partner. Participants were asked to rate how true each of 22 statements is for them typically in their relationship on a scale from 1 (‘never true’) to 5 (‘always true’). Subscales included (1) mindful awareness in attention and action toward partner (i.e., MPM-Mindful awareness e.g., “When I am doing things with my partner, my mind wanders off and I am easily distracted”), and (2) having intentional acceptance and compassion for ones’ partner (i.e., MPM-Acceptance/compassion e.g., “I try to be understanding and patient with my partner when he/she is having a hard time”). All relevant items were summed after the necessary reverse scoring to create subscale scores. Items were also included in the questionnaire to measure nonreactivity in conflict with one’s partner, emotional awareness of one’s partner, and self-compassion in the partnership; however, although these items were included in the total measure score, these were not standalone subscales due to a failure of these independent subscales to demonstrate adequate test-retest reliability (see Seiter et al., 2021). Higher scores reflect greater levels of mindful partnering in one’s relationship (MPM Total:  $M= 60.87$ ,  $SD= 9.86$ ; MPM-Mindful awareness:  $M= 12.90$ ,  $SD= 4.63$ ; MPM-Acceptance/compassion:  $M= 29.65$ ,  $SD= 3.93$ ).

**Overall health.** Participants were asked how they feel about their health, in general, on a scale from 0 (‘poor’) to 4 (‘excellent’). This is the most commonly used self-reported health question used in U.S. health research, utilized in the majority of large national health surveys in the U.S. The overall health item has been found to be reflective of scores on longer health measures, and is associated with health-care utilization (Hays, Spritzer, Thompson, & Cella, 2015), as well as mortality (Bopp et al., 2012). Both self-reported health and partner self-

reported health were used in analyses (Health:  $M= 3.85$ ,  $SD= .82$ ; Partner health:  $M= 3.85$ ,  $SD= .82$ ).

**Measurement of telomere length.** Saliva samples were assayed for telomere length, an indicator of cellular aging, at Colorado State University. DNA was isolated from each 200 ul of saliva with the DNeasy Blood and Tissue Kit (QIAGEN®, Valencia, CA). Multiplexed quantitative polymerase chain reaction measurements of telomere length were performed using a Bio-Rad CFX96 Real-Time PCR analysis machine (Hercules, CA).

**Demographics.** Participants reported their age as well as their sexual orientation, relationship duration, ethnicity, financial stress, and highest level of education. Given the limited diversity in the sample, sexual orientation and ethnicity were dummy coded as ‘heterosexual’ versus ‘other sexual orientation’ and ‘white’ vs. ‘non-white’ for the purposes of analyses. Participants also scored their level of financial stress on a scale from 1 (‘not at all stressful’) to 10 (‘extremely stressful’). These demographic variables were included as covariates in analyses.

### **Statistical Plan**

MPM-Compassion/Acceptance, self/partner telomere length, age, and education were significantly non-normal and were thus log-transformed. Analyses investigated links among mindful partnering and physical health as well as telomere length. I hypothesized that higher levels of mindful partnering are associated with: (1) greater ratings of self and partner overall health, and (2) longer telomere lengths for both self and partner. Along with total mindful partnering, each subscale of mindful partnering, including mindful awareness in attention and action toward partner and having intentional acceptance and compassion for ones’ partner, was hypothesized to be uniquely predictive of both health and telomere length. Total mindful

partnering was tested in models separately from the subscale scores, which were all tested in the same model.

The data in this sample violated the assumption of independence, given that participants were nested within couples. As such, the use of methods to account for this nonindependence was used to correct for the bias that such clustering may have on standard errors; such biases artificially reduce standard error values and therefore inflate the type I error rate (Long & Ervin, 2000; White, 1980). To prevent such errors from occurring, cluster robust standard errors (McNeish Stapleton, & Silverman, 2017) were used by utilizing the sandwich estimator in Mplus (version 7.11, Muthen & Muthen, 2013). With the sandwich estimator in Mplus, covariances between cluster standard errors were set at a value of zero; standard errors between clusters (i.e., between couples) were thus allowed to be correlated (Wooldridge, 2016). Sandwich estimation adjusts the biased standard errors of partners within couples by adjusting standard errors for nesting (McNeish Stapleton, & Silverman, 2017).

The sample size of this study was relatively small; whereas analyses included traditional significance tests, I recognize that a lack of power may inhibit my ability to detect associations among mindful partnering and physical health as well as telomere length. As such, I also included estimates of effect sizes and confidence intervals as a way to test my hypotheses. Research indicates that a small-to-moderate effect size is usually characteristic of the association between intrapersonal mindfulness and better health (Grossman et al., 2004) and a small effect size is usually characteristic of the association between marital quality and better health (Robles et al., 2014), as reviewed. As such, we expected to find a small or moderate positive effect in the association between mindful partnering (total and subscale scores) and overall physical health. As the literature suggests small effects for associations among intrapersonal mindfulness and

cellular mortality risk (Schutte & Malouff, 2014), between better marital quality and mortality risk (Robles et al., 2014), and lack of social support and telomere length (Carroll et al., 2013), I expected to find small effect sizes in a positive association between mindful partnering and telomere length. STDYX standardized regression coefficients were used as a measure of effect size (.1 to .3, small effect; .3 to .5, moderate effect; .5 large effect, Cohen, 1988). In addition, confidence intervals were calculated in order to estimate the degree of uncertainty of such associations.

## **Results**

### **Bivariate Correlations**

Table 6 shows the bivariate correlations for study variables. All mindful partnering variables were significantly positively associated. All mindful partnering variables were also positively associated with self-reported health. Telomere length was positively associated with self-reported health, as well as partner telomere length, and partner self-reported health was positively associated with partner telomere length.

### **Results of Regression Analyses**

Tables 8 shows unstandardized and standardized regression coefficients, standard errors, *p*-values, and confidence intervals for regression analyses regarding associations among mindful partnering variables and health. Total mindful partnering was significantly associated with self-reported health. In addition, MPM-Acceptance/compassion was significantly associated with individual health and associated at trend levels with partner health. These associations were in the positive direction, and effects were small. MPM-Mindful awareness did not uniquely predict any health variables. Greater-than-trivial effect sizes were seen for all tested health associations with the exception of MPM-Mindful awareness with partner health.

Table 8 shows the results of the regression analyses regarding telomere length. There were no significant associations among mindful partnering variables and telomere length. There was a small effect size for MPM-Mindful awareness predicting both self telomere length (negative direction) and partner telomere length (positive direction). MPM-Acceptance/compassion also showed a small effect size in the positive association with self telomere length.

### **Discussion**

This study investigated associations between mindful partnering with physical health and cellular aging. Results suggested that self-health was associated with total mindful partnering and MPM-Acceptance/compassion, which was also associated at trend levels with partner health. Greater-than-trivial/small, positive effect sizes were also seen for links of total mindful partnering and MPM-Acceptance/compassion with health variables, as well as between MPM-Mindful awareness and partner health. Whereas the associations between MPM and telomere length did not reach significance, there were greater-than-trivial effect sizes for associations between self telomere length and MPM-Mindful awareness in the negative direction and MPM-Acceptance/compassion in the positive direction. Partner telomere length showed a small positive effect with MPM-Mindful awareness. This is the first investigation of how the novel construct of mindful partnering is associated with physical health and cellular aging, an important contribution to the mindfulness, relationships, and health literature.

In line with hypotheses, total mindful partnering and MPM-Acceptance/compassion were both associated with better self-reported health. Consistent with research that finds that practicing intrapersonal mindfulness and compassion meditation can lead to reduced stress (Csaszar, Curry, & Lastrapes, 2018), better mental health (Shonin, Van Gordon, Compare,

Zangeneh, & Griffiths, 2015; Totzeck et al., 2020), and health benefits (e.g., longer telomere length, Hoge et al., 2013; less chronic back pain, Carson et al., 2005; better cardiovascular health, Kemper, Powell, Helms, & Kim-Shapiro, 2015), it may be that the same benefits can be gained from practicing *interpersonal* mindfulness and compassion. Interpersonal mindfulness and compassion may relieve stress by focusing one's attention on the here and now of another with compassionate awareness, similar to intrapersonal mindfulness, and this reduced stress may lead to less allostatic load and thus better health. However, mindful awareness alone did not predict health. It may be that full attention and presence with one's partner is not enough to cause repeated physiological soothing of the self, without the element of practicing acceptance and compassion toward others. Such a finding is consistent with research that suggests that mindful observing alone is not enough to improve mental health without accepting and compassionate attention (Baer et al., 2006). It may be that interpersonal mindfulness in the couple relationship that involves the practice of acceptance and compassion improves health through reducing stress.

In contrast, the direction of causality may be the opposite, with better health predicting more mindful partnering (total and MPM-Acceptance/compassion), as my study design does not permit the drawing of causal conclusions. It may be that those with better health are able to be more present, accepting, and compassionate with their partners than those who struggle with health problems due to suffering from less stress themselves. This idea is consistent with research that finds that extradyadic stress (i.e., stress from outside of the relationship) can contribute to more negative conflict (e.g., verbal aggression, hostility, blame, criticism, anger) in relationship as well as lower relationship satisfaction (for review, see Cooper, May, & Fincham, 2019). In particular, extradyadic stress from illness has been linked to less positivity and more

negativity in couple interaction (Iida et al., 2013). As such, it may be that better health causes more mindful partnering rather than the other way around.

Interestingly, all significant results between mindful partnering and health highlighted associations between one's behavior and one's own health; although MPM-Acceptance/compassion was associated at trend levels with partner health (with a small effect), this was not a significant association. It may be that the effect of practicing mindful partnering oneself is more powerful for one's own health than the health of one's partner, as practicing interpersonal mindfulness may have similar health effects to practicing mindful meditation (see Grossman et al., 2004). In contrast, this finding could be due to the fact that this sample was in relatively short-term relationships, as the average number of years living together was 6.12 years. It may be that health effects of mindful partnering take a number of years to become evident for one's partner, as it may take years for the stress of not having a mindful partner to cause enough wear and tear on the body to affect telomere length. Still, a trend association and small effect size suggest that there may potentially be a biological stress-soothing effect of MPM-Acceptance/compassion on one's partner and thus an effect on health, which would be consistent with research that suggests that couple communication can impact partners' stress systems (Seiter, Lucas-Thompson, & Henry, 2019), and that higher quality relationships are associated with better health (Burman & Margolin, 1992). It would be a helpful contribution to the literature for future studies to investigate these associations in a sample of couples who have been living together for longer periods of time to truly understand the impact of mindful partnering on allostatic load. All effect sizes for mindful partnering variables in predicting health were small, consistent with previous literature (Robles, Slatcher, Trombello, & McGinn, 2014), with the exception of MPM-Mindful awareness only having a trivial effect with partner health.

Greater-than-trivial, small effect sizes for MPM-Mindful awareness (negative direction) and MPM-Acceptance/compassion (positive direction) in predicting self telomere length and for MPM-Mindful awareness (positive direction) in predicting partner telomere length suggest that there may be effects of mindful partnering on telomere length that were not detected because of a relatively small sample size; future studies may seek to investigate these associations in a larger sample. These small effect sizes are consistent with literature that suggests small effects in the association between social variables (e.g., lack of social support) and telomere length (e.g., Carroll et al., 2013). If future studies support these associations, it could be that greater MPM-Acceptance/compassion affects telomere length in a similar manner to the how it may impact health, through allostatic load, and that MPM-Mindful awareness has a similar biological soothing effect on partner telomere length. However, the negative direction of the effect between MPM-Mindful awareness and telomere length suggests that there may actually be a stress-inducing effect of practicing mindful partnering that affects telomere length, similar to findings of study 2 suggesting that practicing mindful awareness actually showed effects suggestive of biological stress during the couple interaction. Future studies should test these associations in larger samples, and with longitudinal designs that promote the drawing of causal conclusions regarding the direction of associations.

It is important to note the limitations of this study. The sample was comprised of primarily Caucasian, middle-class, highly educated heterosexual couples in relatively short-term relationships. It is important that further research test these associations in larger samples with more diverse populations (e.g., LGBTQ+ couples, couples with minority race) to be able to expand the generalizability of results. Future studies should employ a longitudinal design, which would enable us to more fully understand the causal relationship between mindful partnering and

health or telomere length by tracking the relationship between mindful partnering and health over time. This study may have also been strengthened by a measure of health that was more detailed or objective than the one-item measure of general health that was used (e.g., longer scales to measure more specific health problems, biological indicators of health such as hormone levels).

In conclusion, this study found significant associations among mindful partnering variables and health, and greater-than-trivial effect sizes among mindful partnering variables and telomere length. The findings of this study have implications for intervention. Mindful partnering may be a beneficial construct to target in couples therapy and other interventions for couples to improve long-term health. Couples therapists may integrate exercises to build interpersonal mindful awareness or acceptance/compassion into their therapy work (e.g., through loving kindness meditations, eye-gazing exercises, and mindful/compassionate listening and speaking exercises). A mindful partnering program that includes didactic lessons, experiential exercises, and home practice may be warranted to improve the health of couples and families.

## Tables

**Table 5**  
*Descriptive Statistics for Both Samples Used to Test Study Hypotheses*

	Sample of those who Completed Questionnaires Only (N= 166)	Sample of those who Returned Saliva Samples (N= 86)
<b>Age</b>		
<i>M</i>	37.76	38.99
<i>SD</i>	11.77	14.05
<b>Gender N(%)</b>		
Male	73(44%)	38(44.2%)
Female	88(53%)	43(50%)
Not reported	5(3%)	5(5.8%)
<b>Sexual Orientation N(%)</b>		
Heterosexual	129(77.7%)	72(83.7%)
Gay	2(1.2%)	0
Lesbian	5(3%)	3(3.5%)
Bisexual	19(11.4%)	7(8.1%)
Pansexual	5(3%)	0
Not reported	6(3.6%)	4(4.7%)
<b>Income</b>		
<i>M</i>	\$50,001-\$100,000	\$35,001- \$50,000
<i>SD</i>	\$10,000 or less	\$10,000 or less
<i>Range</i>	\$10,000 or less to \$150,000 or more	\$10,000 or less to \$150,000 or more
<b>Education N(%)</b>		
High School diploma/GED	5(3%)	0
Some college	18(10.8%)	5(5.8%)
Technical degree or certification	2(1.2%)	1(1.2%)
Associate's degree	6(3.6%)	4(4.7%)
College Graduate	51(30.7%)	26(30.2%)
Graduate School	79(47.6%)	47(54.7%)
Not reported	5(3%)	3(3.5%)
<b>Ethnicity N(%)</b>		
American Indian/Pacific Islander	1(.6%)	0
Asian	12(7.2%)	5(5.8%)
Black	8(4.8%)	3(3.5%)
Caucasian	119(71.7%)	62(72.1%)
Hispanic	13(7.8%)	9(10.5%)
Other or Mixed Race	8(4.8%)	5(5.8%)
Not reported	5(3%)	2(2.3%)

**Table 6***Bivariate Correlations for Mindful Partnering, Physical Health, Telomere Length, and Demographic Control Variables*

	1	2	3	4	5	6	7	8	9	10	11	12	13
1.MPM-Total	X	.89**	.84**	.23**	-.02	-.04	-.04	.15	.03	-.12	-.03	-.04	.04
2.MPM-Mindful awareness		X	.63**	.24**	.00	-.02	-.03	.14	-.01	-.10	.01	-.10	-.01
3.MPM-Acceptance/compassion			X	.20*	-.01	-.02	-.02	.13	.01	-.09	-.09	-.05	.06
4 Overall Health-Self				X	-.01	.30**	-.04	.01	.13	-.10	.13	.09	-.18*
5.Overall Health-Partner					X	-.05	.23*	-.02	-.03	-.03	-.02	-.01	-.03
6.Telomere Length-Self						X	.79**	-.04	-.06	.13	-.04	-.04	-.05
7.Telomere Length-Partner							X	-.04	-.06	.13	-.04	-.04	-.05
<u>Demographic Control Variables</u>													
8. Ethnicity								X	.04	-.05	-.01	-.08	-.05
9. Age									X	-.40**	.21**	.70**	-.09
10. Financial Stress										X	-.21**	-.28**	.08
11. Education											X	.23**	-.05
12. Years Living Together												X	-.17*
13. Sexual Orientation													X

<sup>+</sup>  $p < .10$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . Bivariate correlations reflect those of the full sample that completed questionnaires ( $N = 166$ ), with the exception of statistics regarding telomere lengths, which only included those who returned saliva samples ( $N = 90$ ). Education was coded as the following: (1) less than high school, (2) high school or GED, (3) some college but no degree, (4) technical degree or certification, (5) associate's degree, (6) bachelor's degree, (7) graduate school, (8) prefer not to answer. Ethnicity was coded as follows: (1) American Indian, (2) Asian Pacific Islander, (3) Asian-American, (4) Caucasian, (5) other.(6) Hispanic. Sexual orientation was coded as the following: (1) Heterosexual, (2) Gay, (3) Lesbian, (4) Bisexual, (5) Pansexual

**Table 7**

*Results of Regression Analyses Testing Mindful Partnering Variables as Predictors of Physical Health Controlling for Demographics*

	Unstandardized Results				STDYX Standardized Results			
	<i>b</i>	<i>SE</i>	<i>p</i>	95% CI [LL,UL]	$\beta$	<i>SE</i>	<i>p</i>	95% CI [LL,UL]
<b>Physical Health</b>								
1.MPM-Total	.02	.01	.00	[.01, .03]	.25	.08	.00	[.09, .41]
2.MPM-Mindful awareness	.02	.02	.17	[-.01, .05]	.12	.09	.16	[-.05, .29]
3.MPM-Acceptance/compassion	1.09	.53	.04	[.04, 2.13]	.19	.09	.04	[.00, .37]
<b>Partner Physical Health</b>								
1.MPM-Total	.01	.01	.23	[.00, .02]	.11	.09	.23	[-.07,.28]
2.MPM-Mindful awareness	.00	.02	.92	[-.03, .04]	.01	.10	.92	[-.18,.20]
3.MPM-Acceptance/compassion	.98	.57	.09	[-.14, 2.10]	.17	.10	.09	[-.03,.36]

*Note:* Separate models were used for (1) total mindful partnering and (2) mindful partnering subscales in predicting health variables.

**Table 8**

*Results of Regression Analyses Testing Mindful Partnering Variables as Predictors of Telomere Length Controlling for Demographics*

	Unstandardized Results				STDYX Standardized Results			
	<i>b</i>	<i>SE</i>	<i>p</i>	95% CI [LL,UL]	$\beta$	<i>SE</i>	<i>p</i>	95% CI [LL,UL]
<b>Telomere Length</b>								
1.MPM-Total	0	0	.79	[0, 0]	-.02	.07	.79	[-.14, .11]
2.MPM-Mindful awareness	-.01	.01	.33	[-.02, 0]	-.11	.12	.32	[-.34, .11]
3.MPM-Acceptance/compassion	.27	.22	.22	[-.16, .70]	.13	.10	.21	[-.07, .33]
<b>Partner Telomere Length</b>								
1.MPM-Total	0	0	.77	[0, 0]	-.01	.04	.77	[-.08, .06]
2.MPM-Mindful awareness	.01	.01	.27	[-.01, .02]	.13	.12	.28	[-.12, .37]
3.MPM-Acceptance/compassion	-.07	.26	.79	[-.58, .44]	-.03	.13	.79	[-.28, .21]

*Note:* Separate models were used for (1) total mindful partnering and (2) mindful partnering subscales in predicting telomere length.

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## Appendix

### Mindful Partnering Measure (MPM)- Original

Please answer the following questions regarding how you typically interact with your intimate partner.

1. I find myself listening to my partner with one ear because I am busy doing or thinking about something else at the same time.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

2. When I'm upset with my partner, I notice how I am feeling before I take action.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

3. I notice how changes in my partner's mood affect my mood.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

4. I listen carefully to my partner's ideas, even when I disagree with them.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

5. I often react too quickly to what my partner says or does.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

6. I am aware of how my moods affect the way I treat my partner.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

7. Even when it makes me uncomfortable, I allow my partner to express their feelings.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

8. When I am upset with my partner, I calmly tell them how I am feeling.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

9. I rush through activities with my partner without being really attentive to my partner.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

10. I have difficulty accepting my partner's independence.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

11. How I am feeling tends to affect how I behave with my partner, but I do not realize it until later.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

12. It is hard for me to tell what my partner is feeling.

- 1, never true
- 2, rarely true
- 3, sometimes true
- 4, often true
- 5, always true

13. When I am doing things with my partner, my mind wanders off and I am easily distracted.

- 1, never true
- 2, rarely true
- 3, sometimes true
- 4, often true
- 5, always true

14. When my partner makes me upset I say or do things I later regret.

- 1, never true
- 2, rarely true
- 3, sometimes true
- 4, often true
- 5, always true

15. I tend to be hard on myself when I make mistakes as a partner.

- 1, never true
- 2, rarely true
- 3, sometimes true
- 4, often true

5, always true

16. When my partner is going through a difficult time, I try to give them the nurturing and caring they need

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

17. When times are really difficult with my partner, I tend to blame myself.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

18. When I do something as a partner that doesn't go as I hoped, I can accept it and move on

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

19. I am often so busy thinking about other things that I realize I am not really listening to my partner.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

20. When I do something as a partner that I regret, I try to give myself a break.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

21. In difficult situations with my partner, I pause without immediately reacting.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

22. It is easy for me to tell when my partner is worried about something.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

23. I tend to criticize myself for not being the kind of partner I want to be.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

24. I pay close attention to my partner when we are spending time together.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

25. I am kind to my partner when they are upset.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

26. When I am having a hard time in my relationship with my partner, I feel like other couples must have an easier time of it

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

27. When my partner does something that upsets me, I try to keep my emotions in balance

- 1, never true
- 2, rarely true
- 3, sometimes true
- 4, often true
- 5, always true

28. I try to understand my partner's point of view, even when their opinions do not make sense to me.

- 1, never true
- 2, rarely true
- 3, sometimes true
- 4, often true
- 5, always true

29. When something my partner does upsets me, I get carried away with my feelings

- 1, never true
- 2, rarely true
- 3, sometimes true
- 4, often true
- 5, always true

30. I can tell what my partner is feeling even if they do not say anything.

- 1, never true
- 2, rarely true
- 3, sometimes true
- 4, often true
- 5, always true

31. I try to be understanding and patient with my partner when they are having a hard time.

1, never true

2, rarely true

3, sometimes true

4, often true

5, always true

### **SCORING INFORMATION:**

**Add up scores for all items in a subscale to get a score for that subscale.**

- **For MPM- Compassion/acceptance, add scores for items:**
  - **4, 7, 16, 25, 27, 28, 31**
- **For MPM-Mindful awareness, AFTER REVERSE-SCORING ALL, add scores for items:**
  - **1, 5, 9, 11, 13, 14, 19, 29 (AFTER REVERSE-SCORING ALL ITEMS IN THIS SUBSCALE)**
- **For MPM- Nonreactivity, add scores for items:**
  - **2, 12**
- **For MPM- Emotional Awareness:**
  - **22, 30**
- **For MPM-Self Compassion, AFTER REVERSE-SCORING ALL ITEMS IN THIS SUBSCALE, add scores for items:**
  - **15, 17, 23 (AFTER REVERSE-SCORING ALL ITEMS IN THIS SUBSCALE)**

**Add up the scores for all subscales to get a Total Mindful Partnering score.**

**When scored as above, higher scores reflect greater levels of mindful partnering in one's relationship.**

## Mindful Partnering Measure (MPM)- Final

Please answer the following questions regarding how you *typically* interact with your intimate partner.

1. I find myself listening to my partner with one ear because I am busy doing or thinking about something else at the same time.

1. never true
2. rarely true
3. sometimes true
4. often true
5. always true

2. When I'm upset with my partner, I notice how I am feeling before I take action.

1. never true
2. rarely true
3. sometimes true
4. often true
5. always true

3. I listen carefully to my partner's ideas, even when I disagree with them.

1. never true
2. rarely true
3. sometimes true
4. often true
5. always true

4. I often react too quickly to what my partner says or does.

1. never true
2. rarely true
3. sometimes true

- 4. often true
- 5. always true

5. Even when it makes me uncomfortable, I allow my partner to express their feelings.

- 1. never true
- 2. rarely true
- 3. sometimes true
- 4. often true
- 5. always true

6. I rush through activities with my partner without being really attentive to my partner.

- 1. never true
- 2. rarely true
- 3. sometimes true
- 4. often true
- 5. always true

7. How I am feeling tends to affect how I behave with my partner, but I do not realize it until later.

- 1. never true
- 2. rarely true
- 3. sometimes true
- 4. often true
- 5. always true

8. When I am doing things with my partner, my mind wanders off and I am easily distracted.

- 1. never true

2. rarely true
3. sometimes true
4. often true
5. always true

9. When my partner makes me upset I say or do things I later regret.

1. never true
2. rarely true
3. sometimes true
4. often true
5. always true

10. I tend to be hard on myself when I make mistakes as a partner.

1. never true
2. rarely true
3. sometimes true
4. often true
5. always true

11. When my partner is going through a difficult time, I try to give them the nurturing and caring they need

1. never true
2. rarely true
3. sometimes true
4. often true
5. always true

12. When times are really difficult with my partner, I tend to blame myself.

1. never true
2. rarely true
3. sometimes true
4. often true
5. always true

13. I am often so busy thinking about other things that I realize I am not really listening to my partner.

1. never true
2. rarely true
3. sometimes true
4. often true
5. always true

14. In difficult situations with my partner, I pause without immediately reacting.

1. never true
2. rarely true
3. sometimes true
4. often true
5. always true

15. It is easy for me to tell when my partner is worried about something.

1. never true
2. rarely true
3. sometimes true
4. often true
5. always true

16. I tend to criticize myself for not being the kind of partner I want to be.

1. never true
2. rarely true
3. sometimes true
4. often true
5. always true

17. I am kind to my partner when they are upset.

1. never true
2. rarely true
3. sometimes true
4. often true
5. always true

18. When my partner does something that upsets me, I try to keep my emotions in balance

1. never true
2. rarely true
3. sometimes true
4. often true
5. always true

19. I try to understand my partner's point of view, even when their opinions do not make sense to me.

1. never true
2. rarely true
3. sometimes true
4. often true
5. always true

20. When something my partner does upsets me, I get carried away with my feelings

1. never true
2. rarely true
3. sometimes true
4. often true
5. always true

21. I can tell what my partner is feeling even if they do not say anything.

1. never true
2. rarely true
3. sometimes true
4. often true
5. always true

22. I try to be understanding and patient with my partner when they are having a hard time.

1. never true
2. rarely true
3. sometimes true
4. often true
5. always true

### **SCORING INFORMATION:**

**Add up scores for all items in a subscale to get a score for that subscale.**

- **For MPM- Compassion/acceptance, add scores for items:**
  - **3, 5, 11, 17, 18, 19, and 22**

- **For MPM-Mindful awareness, AFTER REVERSE-SCORING ALL, add scores for items:**
  - **1, 4, 6, 7, 8, 9, 13, 20 (AFTER REVERSE-SCORING ALL ITEMS IN THIS SUBSCALE)**
- **For MPM- Nonreactivity, add scores for items:**
  - **2, 14**
- **For MPM- Emotional Awareness:**
  - **15, 21**
- **For MPM-Self Compassion, AFTER REVERSE-SCORING ALL ITEMS IN THIS SUBSCALE, add scores for items:**
  - **10, 12, 16 (AFTER REVERSE-SCORING ALL ITEMS IN THIS SUBSCALE)**

**Add up the scores for all subscales to get a Total Mindful Partnering score.**

**When scored as above, higher scores reflect greater levels of mindful partnering in one's relationship.**