The Influence of Anxiety and Mindfulness on Relationship Quality:
An Investigation of Comparative and Dyadic Effects

by

Carolyn Cape Hermes

A thesis submitted to the Graduate Faculty of
Auburn University
in partial fulfillment of the
requirements for the Degree of
Master of Science

Auburn, Alabama
August 4, 2018

Keywords: relationship quality, anxiety, mindfulness, dyadic effects

Approved by

Francesca Adler-Baeder, Professor of Human Development and Family Studies
Julianne McGill, Research Assistant Professor of Human Development and Family Studies
Scott Ketring, Associate Professor of Human Development and Family Studies

Abstract

The primary concern of all social scientists is to better quantify domains of human functioning in order to elucidate pathways for the effective pursuit of human flourishing. Relationship functioning has been consistently shown to directly impact individual functioning, therefore, the study of intimate relationships has long captivated researchers intent on maximizing human flourishing. The current study serves to assist in the pursuit of greater human flourishing by advancing understandings of how anxiety and trait mindfulness influence relationship quality over time. Using an actor-partner interdependence model in an ethnically and economically diverse sample of 217 heterosexual couples ($N = 434$), we examined the relative predictability of anxiety and mindfulness and the influences of both actors and partners on reports of relationship quality six months later. Results indicate that the actor's level of trait mindfulness at baseline was significantly related to both men's and women's relationship quality six months later and women's levels of trait mindfulness predicted partners' relationship quality six months later. Additionally, women's levels of general anxiety were significantly and positively related to their own relationship quality six months later. Overall, it appears that women's baseline mindfulness is the comparatively strongest predictor of relationship quality reported by both individuals in a couple, influencing both their own and their partner's relationship quality six months later. These findings suggest that mindfulness exerts a significant influence on relationship quality for both individuals and their partners and is thus an important point of intervention for maximizing relationship functioning. The current study advances both

clinical and prevention literatures as it is guided explicitly by theory and it utilizes a large, diverse sample of couples. Suggestions for preventionists, interventionists, and researchers are discussed.

Acknowledgments

With a heart overflowing with gratitude and admiration, I thank Dr. Francesca Adler-Baeder, Dr. Julianne McGill, and Dr. Scott Ketring for accompanying me on this journey, investing in me, and modeling so well for me the pursuit of excellence in your professional lives. To my cohort-mates who have been in my corner for the past two years, it has been an honor to learn from and grow with you–growing pains and all. To my parents, thank you for everything. Thank you for loving, nurturing, and believing in me from day one and every day after that. Finally, to my teammate for life, thank you Evan. Here's to a lifetime ahead of us of learning to embrace and live holy the present moment together. 'To the greater glory of God' through the intersession of St. Teresa of Kolkata.

Table of Contents

List of Tables

List of Figures

Introduction

For decades, researchers have endeavored to unravel the secrets of sustaining happy intimate relationships because of the link between relational health and individual functioning. Happy intimate relationships have long been associated with positive psychological and physiological health outcomes (Chandra, Szklo, Goldberg, & Tonascia, 1983; Johnson, Backlund, Sorlie, & Loveless, 2000; Gallo, Troxel, Matthews, & Kuller, 2003), while unhappy intimate relationships–particularly those marked by high degrees of conflict–have been associated with negative psychological and physiological health outcomes (Holt-Lunstad, Birmingham, & Jones, 2008; Orth-Gomer, Wamala, Horsten, Schenck-Gustafsson, Schneiderman, & Mittleman, 2000; Kiecolt-Glaser & Newton, 2001).

Historically, one of the areas of study that has repeatedly been linked to relational health is the domain of psychopathology. Various mental health indicators have been found to have significant associations with relationship quality, one of which is anxiety symptoms (McLoed, 1994; Whisman, 1999; Whisman, Sheldon, & Goering, 2000; Whisman, 2007; Pankiewicz, Majkowicz, & Krzykowski, 2012). Evidence suggests a bidirectional relationship between individual mental health symptoms and relationship quality (Whisman, 2001; Mead, 2002; Davila, Karney, Hall, & Bradbury, 2003; Whisman & Uebelacker, 2009). However, there is debate whether relationship quality or mental illness have primary influence in the bidirectionality. Several researchers suggest that relationship distress is predictive of individual mental health functioning over time as indicated by onset of anxiety symptoms (Overbeek,

1

Vollebergh, de Graaf, Scholte, de Kemp, & Engels, 2006), while others find support for individual mental illness primarily impacting relationship functioning over time (Davila, Bradbury, Cohan, & Tochluk, 1997; Fincham, Beach, Harold, & Osborne, 1997).

While anxiety symptoms and disorders have long been linked to relationship quality, only recently has a similar association been made between mindfulness and relationship quality. Mindfulness, which is the ability to be fully attentive and aware of the present experiences and events (Brown & Ryan, 2003), was first shown to provide physical and mental health benefits for individuals (Grossman, Niemann, Schmidt, & Walach, 2004). These early findings prompted continued study of mindfulness and its influence on various domains of functioning. A recent meta-analysis of 10 studies found a significant association between mindfulness and relationship satisfaction (McGill, Adler-Baeder, & Rodriquez, 2016), thus propelling mindfulness research into the scope of relational health as well. Emerging evidence has begun to extend the research on mindfulness also to include positive, dyadic effects by which an individual's level of mindfulness is shown to affect his or her partner's relationship satisfaction (Zamir, Gewirtz, Zhang, 2017; Adair, Boulton & Algoe, 2017; Montes-Maroto, Rodriquez-Munoz, Antino & Gil, 2017).

Both anxiety and mindfulness are variables that have separately been related to relationship quality, but they have not yet been considered together in research–especially in the context of dyadic effects. This, however, is an important area of exploration because, according to family systems theory, a family's shared context–which is made up of these and many other variables–is essential for thoroughly understanding individual as well as relational outcomes over time. The current study centered on a test of the relative influence of both anxiety and mindfulness as well as the influences of both actors and partners on relationship quality.

Theoretical Perspective

Stress Generation Theory

Two leading systemic theories have been used to explain the connection between individual mental health variables and relationship quality–the stress generation theory (Hammen, 1991) and the marital discord theory (Beach, Sandeen, & O'Leary, 1990). These two theories are distinguished from one another by their suggested direction of effects between mental health symptoms and relationship quality levels. In a recent intervention study of 250 participants in a couples' relationship education intervention, Bradford and colleagues explored how improvements in depressive symptoms and relationship quality over time were related to each other by setting up a competing theories test between the stress generation and marital discord theories (Bradford, Adler-Baeder, Ketring, Bub, Pittman & Smith, 2014). Their results showed that the better fitting model indicated that decreases in depressed affect predicted increased relationship quality, thus providing support for the stress generation model, which posits that changes in individual mental health symptoms precede changes in relationship quality.

Hammen originally proposed the stress generation theory in a study of women diagnosed with depression (1991). Hammen observed that women diagnosed with depression were exposed to more cumulative stress than women with bipolar disorder, chronic medical illness, or no illness or disorder. Hammen proposed, therefore, that the stress accompanying a diagnosis of depression leads to increased interpersonal distress, which can be quantified as decreased relationship quality over time. This theory therefore suggests an ongoing cycle in which depressive symptoms lead to marital distress, which can, in turn, lead to increased depressive symptoms.

Hammen's stress generation theory was later tested in a year-long longitudinal study of newlywed couples (Davila et al., 1997). Davila and colleagues hypothesized that depressive symptoms would lead to increased marital stress, which would, in turn, lead to increased depressive symptoms, and their results provided support for this hypothesis. They found that for wives, marital stress was related to a perceived lack of social support from their husbands, which then in turn, was related to the generation of stress (1997). These results provide evidence for the stress generation theory by highlighting the cyclical course of depression and stress among newlywed wives.

Taken together with Bradford and colleagues' results, these studies provide empirical support for Hammen's stress generation model, which posits that changes in individual mental health symptoms precede changes in relationship quality (1991). While depression has been the mental health disorder most frequently examined in stress generation research to date, there has been a call for researchers to expand current findings by testing stress generation in other disorders as well (Uliaszek, Zinbarg, Mineka, Craske, Griffith, Sutton & Hammen, 2012). Due to the high comorbidity and overlapping features with depression, the category of anxiety disorders is a good candidate for similar study (Kessler, Chiu, Demler & Walters, 2005; Mineka, Watson & Clark, 1998). Accordingly, the stress generation theory is applied by the current study to the evaluation of the link between anxiety and relationship.

Family Stress Theory

While the stress generation theory offers a framework for understanding the connection between anxiety and relationship quality, the family stress theory does the same for the connection between mindfulness and relationship quality. This theory assumes that stress is inevitable and unavoidable, but that the magnitude of the impact that stressors have on a family

depends on the positive resources possessed by that family (Boss, 1988). This theory suggests that certain protective factors or skills can buffer the adverse effects of stress on a family. This is an appropriate theory for framing a discussion of mindfulness since individuals who have reported higher levels of mindfulness have also consistently reported lower levels of stress (Brown & Ryan, 2003; Kabat-Zinn, 1990). Mindfulness has been considered a stress-reduction skill as evidenced by the fact that the leading mindfulness intervention teaches "mindfulness-based stress reduction strategies." Application of the family stress theory suggests that mindfulness can act as a buffer from the potential negative effects of stress on a family. Since relationship functioning is indicative of overall family functioning (Kiecolt-Glaser & Newton, 2001), this buffer effect is observable in the positive impact that mindfulness has been shown to have on relationship quality (McGill et al., 2016). In other words, an individual's mindfulness practices and skills may serve to enhance both the individual's and other family members' sense of health and well-being in a variety of domains with the current study focusing on the impact of mindfulness on the domain of relationship quality.

Family Systems Theory

The current study takes the influence of both anxiety and mindfulness on relationship quality into consideration according to a family systems theory framework (Bowen, 1966). Family systems theory posits that individual family members and the contexts in which they exist comprise a family system, in which change anywhere will have reverberating effects on other parts. This theory provides theoretical support for including both anxiety and mindfulness in the current study because they are both variables that relate to the context in which a family exists. This theory also provides theoretical support for evaluating both actor and partner effects, as both are members of an overarching family system in which they exert mutual influence.

Because family systems theory considers the influences among family members as well as the influence of the greater context in which those family members live, this is an appropriate theory to use for framing the current study overall. By considering mindfulness and anxiety together in relation to relationship quality and exploring dyadic influences within the couple, a family's shared context is more able to be thoroughly understood, thus allowing for a fuller understanding of both individual and relational outcomes over time.

The current study, therefore, is framed by three theories. The stress generation theory provides support for the anticipated connection between anxiety and relationship quality while the family stress theory does the same for the anticipated connection between mindfulness and relationship quality. Family systems theory is used to frame the current study overall by providing support for the simultaneous examination of both anxiety and mindfulness and the evaluation of both actor and partner effects. The theoretical model informed by the stress generation theory, family stress theory, and family systems theory is depicted in Figure 1.

Anxiety and Relationship Quality

The body of clinical research concerning psychiatric diagnoses began advancing a general understanding of the interpersonal consequences of psychiatric symptoms and diagnoses in 1955 when researchers first described associations between mental health symptoms and relationship functioning (Clausen & Yarrow, 1955; Yarrow, Clausen, & Robbins, 1955; Yarrow, Schwartz, Murphy, & Deasy, 1955). Forty years later, in a landmark study, McLeod was the first to specifically evaluate the association between marital functioning and anxiety disorders (1994). McLeod concluded that marital distress is significantly associated with elevated anxiety. This finding was later confirmed in a population-based epidemiological study (Whisman, 1999). Since then, research has continued to validate the association between the presence of anxiety

disorders and decreased relationship quality (Whisman et al., 2000; Whisman, 2007; Pankiewicz et al., 2012).

While cross-sectional associations between relationship quality and individual mental health symptoms including anxiety have been established, longitudinal research is required to evaluate the direction of effects between these two variables. Some researchers posit that the relationship between individual mental health symptoms and relationship quality is bidirectional (Whisman, 2001; Mead, 2002; Davila et al., 2003; Whisman & Uebelacker, 2009). Currently, there is evidence that relationship distress is predictive of subsequent mental health problems including increased symptoms of depression over time (Beach, Katz, Kim, & Brody, 2003; Proulx, Helms, & Buehler, 2007) as well as subsequent anxiety disorders (Overbeek et al., 2006). Historically, however, individual mental health functioning has been found to have significant negative effects on subsequent relationship functioning (Davila et al., 1997; Fincham et al., 1997), which is the direction of effects posited by the stress generation theory (Hammen 1991). Recently, there has been more evidence accumulating for this direction of effects specifically in intervention studies (Bradford et al., 2014). Additional research evaluating the effect of individual mental health indicators on relationship quality is warranted to expand upon current evidence. Further, since most related studies have used depressive symptoms as the specified indicator of mental health functioning (see Whisman & Baucom, 2012), the evaluation of other mental health indicators such as anxiety is also needed to strengthen current understandings of how mental health disorders besides depression relate to relationship functioning, thus increasing applicability of related research.

Partner Effects

In the context of intimate relationships, individuals' anxious symptoms have been shown to affect not only their own ratings of relationship quality, but also their partners' ratings of relationship quality over time (Dehle & Weiss, 2002; Zaider, Heimberg, & Iida, 2010; Rehman, Evraire, Karimiha, & Goodnight, 2015). Empirical studies using longitudinal designs have found significant partner effects of anxiety on relationship quality, thus evidencing a significant dyadic influence of anxiety on relationship quality. However, the results have been conflicting with regards to gender differences. For example, Dehle and Weiss (2002) found that in a sample of 45 heterosexual couples, only husbands' anxiety was associated with decreases in both their own and their wives' relationship quality three months later. Rehman et al. (2015) came to a similar conclusion through their report of significant actor effects of anxiety for both partners, but, only a significant partner effect from husbands' levels of anxiety to wives' levels of relationship quality over time. However, Zaider and colleagues (2010) found significant associations between wives' anxiety and both partners perceptions of relationship quality and not for husbands'. These differing findings suggest that further study of dyadic influences, specifically over time, is warranted.

Mindfulness and Relationship Quality

While the literature about anxiety and relationship quality is fairly established, emerging evidence suggests a similar association between mindfulness and relationship quality. Mindfulness, which is the ability to be fully attentive and aware to the present experiences and events (Brown & Ryan, 2003), has been the subject of a surge of research over the past 20 years precipitated by early indications of health benefits (Kabat-Zinn, Lipworth, Burney, & Sellers, 1987; Rosenzweig, Reibel, Greeson, Brainard, & Hojat, 2003). One meta-analysis of 20 studies that evaluated the Mindfulness-Based Stress Reduction (MBSR) program, which is the most

common training program for mindfulness, showed improvements for mental health conditions including anxiety, depression, and binge eating disorder, as well as physical health conditions including chronic pain, fibromyalgia, and cancer (Grossman et al., 2004).

Recently, the scope of benefits of mindfulness has been expanded beyond individual health outcomes to include relational benefits as well (Barnes, Brown, Krusemark, Campbell, & Rogge, 2007; Burpee & Langer, 2005; Karremans, Schellekens, & Kappen, 2015; Wachs & Cordova, 2007; Kozlowski, 2013). A recent meta-analysis of 10 studies found a significant association between mindfulness and relationship satisfaction (McGill et al., 2016). These studies indicate that the influence of mindfulness, although an individual practice or trait, transcends individual functioning to include a much wider scope of influence, one that has yet to be fully evaluated or understood.

Partner Effects

Emerging evidence from three recently published studies extends the research on mindfulness to include positive, interpersonal, dyadic effects (Zamir et al., 2017; Adair et al., 2017; Montes-Maroto et al., 2017). In a sample of military couples after deployment of the male partner, significant, positive actor and partner effects of greater levels of mindfulness on marital quality were found for both men and women (Zamir et al., 2017). Similar results were found when evaluating mindfulness level at work and romantic partner relationship satisfaction (Montes-Maroto et al., 2017). Finally, Adair et al. (2017) published some preliminary evidence that the dyadic effects of mindfulness on relationship satisfaction are mediated by partners' levels of perceived responsiveness to one another. These studies are limited, however, by their cross-sectional designs as well as by their use of small, unrepresentative samples. Further research is needed to corroborate and extend the results of these recent studies.

9

The Current Study

The current study tested the relative predictability of anxiety and mindfulness and the influences of both actors and partners on reports of relationship quality six months later. Guided explicitly by theory, this study advances both clinical and prevention literature and utilizes a large, diverse sample of couples, which is also novel in this area of research. Individual hypothesized relationships (i.e., positive or negative) between variables are indicated in the conceptual model depicted in Figure 1. The following research questions were explored.

RQ1: What is the relative influence of individuals' baseline scores of trait mindfulness and anxiety symptoms on their own and their partner's relationship quality over time?

RQ 2: Are there differences in the influence of trait mindfulness and anxiety on the individual and their partner based on gender?

Review of the Literature

Relationship Quality

The study of intimate relationships and their profound effects on individual functioning has captivated researchers since strong social ties were first linked to decreased mortality rates (Berkman & Syme, 1979; House, Landis, & Umberson, 1988) and social isolation found to be an independent risk factor for morbidity and prognosis after such serious health threats as a heart attack (Case, Moss, Case, McDermott, & Eberly, 1992). This narrative of the consequential influence of intimate relationships on health continued to unfold as marriage, the closest of intimate relationships, was specifically found to be associated with reliably lower morbidity and mortality for a variety of health conditions. Being married was found to be associated with lower mortality rates from cancer and heart attacks (Chandra et al., 1983; Goodwin, Hunt, Key, & Samet, 1987) as well as an overall decreased relative risk of death in a study comparing married persons to non-married persons (Johnson et al., 2000). These findings underscored Burman and Margolin's conclusion in their 1992 review of the literature that marital variables do indeed affect health status.

Once intimate relationships became understood as consequential for health, researchers turned their attention to the impact of the relative quality of those relationships. Kiecolt-Glaser and Newton compiled findings from 64 marital interaction studies and concluded that being in a marital relationship is just part of the story of how intimate relationship impact individual functioning. Relationship functioning comprising both positive and negative dimensions has a

direct impact on individual functioning (2001). This is evident in the findings of one study that reported that among married individuals, high marital quality was associated with lower ambulatory blood pressure, lower stress, less depression, and higher satisfaction with life. By contrasting unmarried persons from those in marriages of reported low quality, however, single individuals were found to have lower ambulatory blood pressure than married persons who reported low levels of relationship quality, thus suggesting that being married is not universally beneficial (Holt-Lunstad et al., 2008).

The understanding that the relative influence that intimate relationships have on individual functioning depends on the quality of those relationships has been reinforced by studies linking measures of marital functioning to rates of psychiatric disorders, blood pressure, coronary heart disease, and congestive heart failure (Williams, Takeuchi, & Adair, 1992; Baker, Paquette, Szalai, Driver, Perger, Helmers, O'Kelly, & Tobe, 2000; Grewen, Girdler, & Light, 2005; Orth-Gomer et al., 2000; Coyne, Rohrbaugh, Shoham, Sonnega, Nicklas, & Cranford, 2001). Overall, the literature indicates that relationships with high satisfaction confer lower levels of biological, lifestyle, and psychosocial risk factors than less satisfying relationships (Gallo et al., 2003). In turn, these findings that emphasize the importance of studying relationship quality confer motivation to researchers to disentangle how intimate relationship of higher quality are set apart from those of lower quality. This area of study, therefore, has attracted much interest as researchers have continued to explore the considerable influence of intimate relationships on individual functioning.

Anxiety and Relationship Quality

The influence of intimate relationships on mental health functioning has been a targeted area of study for researchers since 1955 when psychiatric symptoms and diagnoses were

associated with marital and social relations (Clausen & Yarrow, 1955; Yarrow et al., 1955a; Yarrow et al., 1955b). These trailblazing researchers were the first to describe how the effects of one spouse's psychiatric diagnosis transcend individual functioning to affect marital functioning as well. The profound relational impact of individual mental health functioning was echoed by findings by McLeod in a representative sample of couples living together in a suburban area of the Detroit metropolitan region (1994). McLeod's study evaluated marital quality among couples in which neither, one, or both spouses met criteria for an anxiety disorder, and in doing so enhanced existing understandings of the relational impact of mental health functioning by adding an increased degree of specificity.

The results of McLeod's study outlined associations between anxiety disorders including phobias, panic disorders, and generalized anxiety and lower ratings of marital quality. Specifically, within the sample of heterosexual, married couples, husbands with a phobic disorder and their wives reported the poorest marital quality of any of the spouses. The presence of a panic disorder for either the husband or wife similarly was related with low ratings of perceived marital quality for both partners. Wives with generalized anxiety disorder reported lower marital quality. However, this effect was not found in their husbands, and the effect of husbands' generalized anxiety disorders was strong only in the presence of comorbid depression or alcohol or drug dependence. Finally, spouse concordance was related to more favorable marital reports only for phobias.

Whisman corroborated McLeod's conclusions with further convincing evidence of an association between marital dissatisfaction and anxiety disorders (1999). McLeod and Whisman's specific evaluation of anxiety disorders contributed to a growing literature evaluating the relational impact of individual mental health functioning that had previously been dominated

by studies of depression and substance-abuse disorders. This association between anxiety disorders and relationship quality has been repeatedly documented by studies that have endeavored to broaden understandings of the relational impact of anxiety (Whisman et al., 2000; Whisman, 2007; Pankiewicz et al., 2012).

One such study tested the specificity of the association between psychiatric disorders including anxiety and relationship dissatisfaction by testing whether this association was indicative of some general social dissatisfaction across relationships (Whisman et al., 2000). Whisman and colleagues found that the associations between psychiatric disorders and marital dissatisfaction remained significant when controlling for the quality of other social relationships, indicating that there is indeed a unique impact made by individual mental health on marital functioning. Further, in this study, marital dissatisfaction was most strongly associated with a diagnosis of generalized anxiety disorder. Whisman reiterated a similar finding in 2007 when, after testing whether gender or age moderated the associations between marital distress and psychiatric disorders in a study with no upper age exclusionary criterion, he concluded that there was no evidence of such moderating effects. However, he described generalized anxiety disorder as, again, one of the psychiatric disorders with the strongest association with marital distress.

While these initial studies describing the association between anxiety and relationship functioning provide convincing evidence for a relational impact of anxiety, their conclusions are limited by their cross-sectional study designs. After preliminary studies relating relationship functioning to individual mental health functioning like these were circulated, however, longitudinal studies–which are required to evaluate the direction of effects between two variables–followed suit, which both expanded and complicated understandings of the relational impact of anxiety.

Much of the initial longitudinal research regarding individual mental health functioning and relationship functioning has centered on the effects of relationship distress on depressive symptoms over time (Beach et al., 2003). Beach and colleagues' results revealed that marital quality at Time 1 predicted depressive symptoms at Time 2 for both husbands and wives (2003), and other studies have yielded similar results (Beach & O'Leary, 1993). An epidemiological study conducted in the Netherlands expanded the scope of this research to include psychiatric disorders besides depression and concluded–in agreement with Beach and O'Leary– that marital discord is predictive of subsequent mental health problems for a variety of disorders including anxiety disorders (Overbeek et al., 2006). The results from a 2007 meta-analysis reiterated this conclusion by indicating a statistically significant relationship between marital quality and changes in personal well-being over time, and that this relationship is stronger than the reverse direction of effects (Proulx et al.).

Despite this convincing empirical support, academic communities have found a reason to believe that the score is far from settled. While there were longitudinal studies included in Proulx and colleagues' meta-analysis, a majority of them were cross-sectional in design, therefore shedding some doubt on their findings. Additionally, other researchers have presented differing evidence that suggests a bidirectional relationship between individual mental health symptoms and relationship quality in which these two variables exert mutual influence on one another, as opposed to one predominantly acting as the driving force for change in the other over time (Whisman, 2001; Mead, 2002; Davila et al., 2003; Whisman & Uebelacker, 2009).

Contrary to prior findings, however, the results of a recent study provide evidence that changes in individual mental health symptoms predict changes in relationship quality (Bradford et al., 2014). In a sample of couples who attended community relationship education classes,

Bradford and colleagues examined whether relationally unstable participants reported improvements in depressed affect and relationship quality post-intervention and explored how those improvements were related to each other by setting up a competing theories model (2014). They found that participants did experience improvements in relationship quality as well as decreases in depressed affect. Further, their results indicated that the reductions in depressed affect predicted increased relationship quality, thus providing support for the stress generation model. The stress generation model posits that changes in individual mental health symptoms precede changes in relationship quality.

Bradford et al. are not the first to find evidence for the direction of effects from individual mental health symptoms to relationship functioning (Davila et al., 1997; Fincham et al., 1997). Davila and colleagues presented evidence that wives' depressive symptoms predict their later marital functioning and Fincham and colleagues concluded the same effect for husbands' depressive symptoms on later marital satisfaction (1997; 1997). Taken together with earlier findings, the results from Bradford and colleagues' study justify evaluating the impact of individual mental health indicators on relationship functioning. Further research is needed given the contested nature of related findings in the current literature as well as the minimal amount of studies evaluating the specific effects of anxiety on relationship functioning over time.

Partner Effects

One other blatant limitation in the literature about the association between individual mental health and relationship functioning is that much of the research has focused on the individual, actor effects of mental health indicators on relationship functioning to the exclusion of dyadic partner effects. The limited research that has been done regarding partner effects, once again, originated with studies evaluating depressive symptoms and marital functioning (Beach et

al., 2003; Whisman & Uebelacker, 2009), and has only recently been extended to include the evaluation of anxiety (Dehle & Weiss, 2002; Whisman, Uebelacker, & Weinstock, 2004; Zaider et al., 2010; Rehman et al., 2015).

Whisman and colleagues were some of the first to study actor and partner effects of anxiety on marital functioning in addition to evaluating the impact of depression. Looking at anxiety and depression together, they found that marital satisfaction was predicted by individuals' level of anxiety and depression as well as by their partners' level of depression (2004). This study used cross-sectional data, however, which fails to account for how relationships change over time. A 2015 follow-up study by Rehman and colleagues used both cross-sectional and longitudinal analyses to evaluate the actor and partner effects of depression and anxiety in intimate relationships. Consistent with previous research (Whisman et al., 2004), from their cross-sectional analysis, Rehman et al. found significant actor effects of depression on relationship satisfaction. However, they did not find evidence for actor effects of anxiety on relationship satisfaction. This could be accounted for by the relatively small sample size of 70 couples, which likely prevented the analysis from having enough power to detect the effects of anxiety on concurrent relationship satisfaction.

Of the 70 couples who participated in the baseline data collection of Rehman et al.'s study, 48 also participated in a follow-up, thus providing longitudinal data for additional analysis. The results of the longitudinal analysis included significant actor effects for anxiety as evidenced by a statistically significant decline in relationship satisfaction from Time 1 to Time 2 predicted by anxiety at Time 1 for both men and women. Additionally, partner effects were evident in that husbands' levels of anxiety at Time 1 predicted changes in wives' relationship satisfaction over time. This finding is consistent with previous research that found that in a

sample of 45 heterosexual couples, husbands' anxiety predicted subsequent decreases in both their own and their wives' relationship quality over time (Dehle & Weiss, 2002). Alternatively, there is one study that found significant actor and partner effects of wives' anxiety over time (Zaider et al., 2010). In this study, analyses of 33 heterosexual couples revealed significant associations between wives' anxiety and both partners perceptions of relationship quality. This study, however, is limited both by its small, heterogeneous sample, as well as by the fact that the only couples included in the sample were those in which the wife was diagnosed with an anxiety disorder.

Evidence exists suggesting that in the context of intimate relationships, individuals' anxious symptoms affect not only their own ratings of relationship quality but their partners' ratings of relationship quality as well. The current literature is limited, however, by cross-sectional research designs and small, unrepresentative samples. Additional research is needed to confirm preliminary results, broaden their applicability, and clarify gender differences.

Mindfulness and Relationship Quality

Mindfulness is the ability to be fully attentive and aware of the present experiences and events (Brown & Ryan, 2003). This is a concept with roots that most clearly trace back to Eastern religious philosophy. However, historically, other philosophical traditions including Greek philosophy advanced similar ideas and traditions as well (Brown, Ryan, & Creswell, 2007). The two primary components of mindfulness, attention, and awareness, are the two primary functions of what is described as human consciousness, or the conscious registration of stimuli (awareness) and heightened sensitivity to a narrowed range of those stimuli (attention). A mindful mode for cognitive processing is set apart from other modes of processing in that it requires a person to "be present" to reality by maintaining a receptive state of mind, rather than

allowing oneself to simply react or habitually process both internal and external stimuli (Brown et al., 2007). Mindfulness, therefore, is the practice and quality of being aware and attuned to the present moment both intentionally and nonjudgmentally (Brown & Ryan, 2003; Kabat-Zinn, 1990).

There are two different ways that mindfulness is studied–as a practice and as a quality. When it is studied as a practice, it is referred to as state mindfulness, and when it is studied as a characteristic or quality, it is referred to as trait mindfulness. State mindfulness is situational and usually involves some sort of active practice of mindfulness such as a meditational breath awareness exercise. Trait mindfulness, contrastingly, refers to a disposition related to a high level of present moment awareness often indicated by a sense of calm and by effective affect regulation. For example, individuals with high levels of trait mindfulness often experience a reduction in emotional reactivity, quicker recovery, and a greater tolerance for, and acceptance of, unpleasant states than individuals with lower levels of trait mindfulness (Borkovec, 2002). Since state mindfulness is believed to lead to trait mindfulness, trait mindfulness has been the focus of much-related research to date (Brantley & Millstine, 2008).

Empirical evidence illustrating the influence of mindfulness has come largely from intervention studies of an 8-week Mindfulness-Based Stress Reduction program (MBSR; Kabat-Zinn, 1990). One meta-analysis of 20 studies that evaluated the MBSR program showed improvements for mental health conditions including anxiety, depression, and binge eating disorder, as well as physical health conditions including chronic pain, fibromyalgia, and cancer (Grossman et al., 2004). Other studies have similarly revealed improvements in psychological distress, mood disturbances, and perceived stress (Rosenzweig et al., 2003; Brown & Ryan, 2003). These studies regarding the positive impact of mindfulness on individual functioning

domains of both physical and mental health paved the way for further research exploring other benefits incurred by mindfulness.

One domain in which the scope of benefits of mindfulness has recently expanded to include is the domain of relational health. Burpee and Langer first found that trait mindfulness predicted relationship satisfaction (2005), and Barnes and colleagues replicated this finding in 2007 and then further validated by a meta-analysis of 10 similar studies that reported a significant association between levels of trait mindfulness and relationship satisfaction (McGill et al., 2016). McGill and colleagues used a recent review of the literature (Kozlowski, 2013) to identify studies for inclusion in their meta-analysis, which ultimately resulted in the retention of ten studies. Across those ten studies, three different measures of trait mindfulness were used. They evaluated 12 effect sizes and found an overall effect size of .27 indicating that higher levels of mindfulness are significantly associated with higher levels of relationship satisfaction. Due to the use of different measures of trait mindfulness, future research is warranted to duplicate this association. While the available empirical evidence does justify the study of the relational benefits of mindfulness, it is clear that the magnitude of these benefits and the processes by which they are reached have yet to be fully explored, thus warranting further study.

Partner Effects

As the association between mindfulness and relationship satisfaction continues to be explored, additional research is needed to evaluate the interpersonal, dyadic effects of mindfulness. So far, the majority of related research has focused on individual, actor effects of mindfulness. However, an understanding of the interpersonal, dyadic effects of mindfulness is required due to the reality that relationship satisfaction of one person is intrinsically related to the relationship satisfaction of his or her partner. While few, some research is evaluating both actor

and partner effects of mindfulness–both trait mindfulness and state mindfulness–on relationship functioning (Zamir et al., 2017; Adair et al., 2017; Montes-Maroto et al., 2017).

Zamir and colleagues used an actor-partner interdependence analysis to evaluate trait mindfulness and marital quality in a sample of 228 military couples after husbands' deployments to Iraq or Afghanistan. Results from this study show both significant actor and partner effects for men and women. Thus, this study indicates that greater mindfulness is associated with higher marital quality for oneself and one's partner. Similar results were found by Montes-Maroto and colleagues, who contrastingly used a measure of state mindfulness to evaluate the dyadic impact of one spouse's mindfulness level at work on their partner's relationship satisfaction (2017). This study included a sample of 60 dual-earner couples and the specific hypothesis for which support was found was that partners of employees who are more mindful at work are more satisfied with their relationship. Finally, Adair et al. (2017) published some of the only evidence explaining a potential process by which mindfulness may affect partners' relationship satisfaction. Adair and colleagues used a sample of 127 heterosexual couples to explore whether partners' levels of perceived responsiveness to one another mediates the mindfulness and relationship satisfaction association. Findings from this study provide preliminary evidence that mindfulness may indeed facilitate relationship satisfaction through the heightened perception of partners' responsiveness both within and across dyads. These three studies are limited by their small, unrepresentative samples, their use of differing mindfulness measures, as well as by their cross-sectional study designs. Their cumulative findings, however, do provide a foundation for continued study of dyadic effects of mindfulness on relationship quality.

Methods

Procedure

Participants were recruited as couples by ten community resource centers in a southeastern state to participate in a randomized control trial evaluating the efficacy of two different evidence-informed relationship education programs. Recruitment methods included announcements on agencies' websites and social media accounts, paper flyers posted across communities throughout the state, and word of mouth. Before they were randomly assigned to participate in one of three groups, study respondents signed an informed consent and completed baseline surveys that included questions about demographic information as well as knowledge of, attitudes towards, and behaviors related to individual and couple functioning. Two of the groups to which respondents were randomly assigned received a six-week long relationship education curriculum. The third group was a control group that received no relationship education. Only respondents from this third group, the control group, were utilized in the current study so that normative associations of the study variables over time could be examined.

Approximately six months after the baseline data collection was completed, study respondents were given a follow-up survey to monitor individual and couple functioning. Each respondent received $50 compensation per survey completed, and all surveys were completed online via Qualtrics. Recruitment for this study was done in five cohorts, but only respondents from the first four cohorts were utilized in the current study because 6-month follow-up data collection for the fifth cohort had not yet been completed. There were 490 individuals randomly

assigned to the control group. Even if only one individual in the couple completed the baseline survey, both were randomly assigned to the control group. Of the 490 individuals in the control group, 472 (96%) completed the baseline survey, and 398 (81%) completed the follow-up survey six months later.

Participants

The analytic sample, which was drawn from an existing dataset, was comprised of 434 adult respondents in couple relationships across the state of Alabama who completed a baseline survey as well as a follow-up survey six months later. Of the 217 couples included, 69% reported being married at baseline. Only heterosexual couples were included in the analytic sample because they were distinguishable dyads. Therefore, data from three same-sex couples were excluded. The mean age was 38.15 years (*Range* = 18 – 78). The sample was ethnically diverse: European American (60%), African American (35%), and 5% reported another racial/ethnic category. The sample was educationally and economically diverse. Regarding education level, 8% reported having no diploma or degree, 25% hold a high school diploma or GED, 17% reported having completed some college but no degree completion, 12% hold an associate's degree or a vocation/technical certification, and 38% hold a bachelor's degree or higher. Regarding socioeconomic status, 28% reported a household income of less than $25,000; 47% reported an income between $25,000 and $75,000; and 25% reported an income above $75,000.

Measures

Relationship Quality. The Quality of Marriage Index (QMI; Norton, 1983) was used to assess respondents' reports of relationship quality. The reduced scale consists of 3 items and is similar to the abbreviated measure used in previously published studies (McGill, Adler-Baeder, Bradford, Kerpelman, Ketring & Sollie, 2016; Adler-Baeder, Calligas, Skuban, Keiley, Ketring

& Smith, 2013; Rauer, Adler-Baeder, Lucier-Greer, Skuban, Ketring & Smith, 2014). The items include, "We have a good relationship," "Our relationship is strong," and "My relationship makes me happy." Possible responses range from 1 *(very strongly agree)* to 7 *(very strongly disagree)*. Mean scores were used with higher scores indicating higher levels of relationship quality. The Cronbach's alpha coefficients for internal consistency were $\alpha = .97$, and $\alpha = .97$ at six month follow up for men and women, respectively.

General Anxiety. The General Anxiety Disorder Scale (GAD; Spitzer, Kroenke, Williams, & Löwe, 2006) was used at baseline to assess respondents' reports of anxiety symptoms. The scale consists of 7 items. Example items include, "How often over the last two weeks have you experienced feeling nervous, anxious, or on edge?" and "How often over the last two weeks have you become easily annoyed or irritable?" Possible responses range from 0 (*not at all*) to 3 (*nearly ever day*). Mean scores were used with higher scores indicating higher levels of anxiety symptoms. The Cronbach's alpha coefficients for internal consistency were $\alpha = .95$ and $\alpha = .93$ at baseline for men and women, respectively.

Trait Mindfulness. The Reduced Five Factor Mindfulness Questionnaire (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006) was used at baseline to assess respondents' reports of trait mindfulness. The reduced scale consists of 15 items (Baer, Carmody & Hunsinger, 2012; Tran, Glück & Nader, 2013). Example items include, "I am easily distracted" and "I perceive my feelings and emotions without having to react to them." Possible responses range from 1 (*never or very rarely true*) to 5 (*very often or always true*). This measure can be used to assess five different facets of mindfulness including observing, describing, acting with awareness, non-reactivity to inner experience, and non-judging of inner experience through the use of subscales, or it can be used as an overall construct of mindfulness (Baer et al., 2006). For the purposes of

this study, mean scores from three of the five subscales (awareness, non-reactivity, and non-judgment) were used as a comprehensive measure of mindfulness (Baer et al., 2012). Some items were reverse coded so that higher scores indicate higher levels of trait mindfulness. The Cronbach's alpha coefficients for internal consistency were $\alpha = .80$ and $\alpha = .84$ at baseline for men and women, respectively.

Control variables. Several variables that have previously been linked to relationship functioning were included in the model as potential controls including ethnicity, income, relationship status, parenting status, and age. Ethnicity was dichotomously coded as non–European Americans (coded as 0; which includes, for example, African American, Asian American, Hispanic or Latino) and European Americans (coded as 1). Income was assessed as a continuous variable using the respondents' reported annual household income. Preprogram reports of marital status were dichotomously coded as married (coded as 1) and unmarried (coded as 0). Preprogram reports of parenting status were similarly dichotomously coded as parent (coded as 1) and not-parent (coded as 0). Age in years, as reported by participants at baseline, was used as a continuous variable. If any of these variables were not significant related to the outcome, however, they were not included in the final model.

Analytic Strategy

Path Analysis. The software system AMOS was used to test the influence of individuals' initial anxiety symptoms and trait mindfulness levels on relationship quality 6-months later for the respondents and their partners. Specifically, a path analysis and Actor-Partner Interdependence Model (APIM) design was utilized to assess intra-individual and cross-partner influences of anxiety and mindfulness on relationship quality over time. This analytic strategy allows researchers to determine how variables are related (Francis, 1988). Further, AMOS uses

full information maximum likelihood (FIML) which utilizes all available information from the data to limit missing values and the deletion of cases.

Actor-Partner Independence Model (APIM). An actor-partner interdependence model is a model of dyadic relationships that uses path analysis to assess variables that vary between (i.e., actor effects) and within a dyad (i.e., partner effects). Based on a conceptual view of interdependence, this analytic strategy is able to assess both intra-individual effects on self and cross-partner effects on others (Cook & Kenny, 2005). Since the goal of this study was to understand individual and relational dynamics within the couple context, the use of this analytic strategy was appropriate.

Goodness of Fit. For the purposes of this study, multiple goodness-of-fit indices were used to assess the consistencies and differences between the data and the model (Kenny, 2014). First, the Chi-Square Test of Model Fit, which is the most commonly utilized goodness-of-fit test was used, with a small chi-square value and a significant p-value ($p > .05$) indicating that the model fits well. Other tests also were used, however, because this test can be misleading for large sample sizes. The Comparative Fit Index (CFI) was used, with a value of 1 indicating an excellent model fit. Finally, the Root Mean Square Error of Approximation (RMSEA), which is a more general goodness of fit index, was used with a value of .01, .05, and .08 indicating excellent, good, and acceptable fit, respectively (MacCallum, Browne, & Sugawra, 1996).

When examining coefficients in testing RQ1, positive and negative associations between predictor and outcome variables were evident based on whether the coefficient was positive or negative. Further, a statistical significance level, as indicated by a p-value less than or equal to .05, indicated that variables were statistically significantly related to one another. It was evident which variables (e.g.. men's mindfulness, men's anxiety, women's mindfulness, or women's

anxiety) were more potent predictors of relationship quality over time based on size of the standardized coefficients. Comparisons of coefficients for men and women for testing RQ2 indicated whether there was a stronger relationship for men or women, with larger beta standardized coefficients indicating a stronger relationship.

Results

Preliminary Analyses

Descriptive statistics are presented for men and women in Table 1. Before testing specific research questions, variables were analyzed for normal distribution of data. Based on skewness and kurtosis statistics, it was determined that all variables were normally distributed. An independent samples t-test conducted at baseline revealed significant gender differences for anxiety ($t(429) = 2.88$, $p = .004$) whereby women report higher levels of anxiety than men ($M_{men} = .72$; $M_{women} = .95$) and mindfulness ($t(430) = -2.65$, $p = .008$) whereby men report higher levels of mindfulness than women ($M_{men} = 3.51$; $M_{women} = 3.36$). There were no differences based on gender for relationship quality ($t(428) = -.92$, $p = .36$). Two tailed Pearson's correlations were conducted between predictor and outcome variables as well as between potential covariates (see Table 2). The results of the bivariate correlations suggest several linear relationships amongst predictor and outcomes variables, the strongest of which are between men and women's relationship quality ($r(185) = .54$, $p < .001$), men's mindfulness and men's anxiety ($r(216) = -.52$, $p < .001$), and women's mindfulness and women's anxiety ($r(215) = -.44$, $p < .001$). Bivariate correlations also indicated significant relationships between relationship quality and ethnicity, SES, and parenting status; therefore, these three covariates were included in the model. However, when accounting for all else in the model, they were not found to be significant predictors of relationship quality, so they were ultimately excluded from the final model. Finally, a paired samples *t*-test revealed that reports of relationship quality at Time 1 were not

significantly different from relationship quality at Time 2 for men ($t(165) = -.13$, $p = .90$) or women ($t(183) = .02$, $p = .98$) indicating stability across the time points. Therefore, relationship quality reports at baseline were excluded from the model and baseline anxiety and mindfulness were included as the predictors of relationship quality at six months.

RQ1: What is the relative influence of individuals' baseline scores of trait mindfulness and anxiety symptoms on their own and their partner's relationship quality six months later?

A path analysis model was fit to address RQ1 to test the influence of individuals' baseline levels of anxiety symptoms and trait mindfulness on relationship quality six months later for the respondents and their partners. Parameter estimates for the model assessing the linear relationship between actor and partner general anxiety and trait mindfulness and actor and partner relationship quality six months later are presented in Table 4 and Figure 2. The goodness-of-fit indices for the model indicate an acceptable fit ($\chi^2 = 4.98$, df = 2, $p = .08$; RMSEA = .08, $p = .20$; CFI = .98). The model predicts 9.6% of the variance in men's and 6.6% of the variance in women's relationship quality at six-month follow-up. Actor and partner effects of general anxiety and trait mindfulness, therefore, significantly account for variance in relationship quality six months later.

General Anxiety. Accounting for all other variables in the model, women's level of general anxiety was significantly and positively related to their own relationship quality six months later ($\beta = .16$, $p = .049$), indicating higher anxiety was related to higher relationship quality 6 months later; there were no actor effects of anxiety on relationship quality six months later for men ($\beta = -.07$, $p = .41$). In addition, neither men's nor women's baseline levels of general anxiety predicted partners' reports of relationship quality six months later (for men, $\beta = -$

.01, $p = .86$; for women $\beta = .04$, $p = .64$), indicating no significant relationship between partners' anxiety and relationship quality six months later.

Trait Mindfulness. Accounting for all other variables in the model, the actor's level of trait mindfulness at baseline was significantly and positively related to both men's ($\beta = .22$, $p = .01$) and women's ($\beta = .26$, $p = .002$) relationship quality six months later, whereby men and women's higher ratings of mindfulness at baseline were associated with their reports of higher relationship quality six months later. In addition, women's levels of trait mindfulness uniquely and positively predicted partners' relationship quality six months later ($\beta = .18$, $p = .03$), accounting for all else in the model; however, there was no partner effect for men's mindfulness on their partners' relationship quality six months later ($\beta = .10$, $p = .21$).

Comparisons of coefficients indicate that the most potent predictor of both men's and women's relationship quality six months later is their baseline levels of mindfulness (for men, $\beta = .22$, $p = .01$; for women, $\beta = .26$, $p = .002$). One's level of mindfulness, therefore, is a more potent predictor of relationship quality six months later than one's baseline anxiety or partner's baseline mindfulness or anxiety.

RQ 2: Are there differences in the influence of trait mindfulness and anxiety on the individual and their partner based on gender?

There was a significant positive association between general anxiety at baseline and relationship quality six months later for women ($\beta = .16$, $p = .049$), whereas there was no significant association for men ($\beta = -.07$, $p = .41$), thus evidencing a stronger relationship between anxiety and relationship quality for women. There were no significant partner effects of anxiety found, so the magnitudes of the associations were not compared based on gender.

Comparisons of coefficients for men and women indicate that the relationship between actor's levels of mindfulness at baseline and relationship quality six months later was slightly stronger for women ($\beta = .26$, $p = .002$) than men ($\beta = .22$, $p = .007$). Therefore, the actor influence of mindfulness on relationship quality appears to be slightly stronger for women than for men. The only significant partner effect that was found was for the positive link between women's level of mindfulness at baseline and partners' relationship quality six months later ($\beta = .18$, $p = .03$). Men's mindfulness at baseline did not uniquely account for variance in their partners' relationship quality six months later, accounting for all else in the model ($\beta = .10$, $p = .21$). Overall, it appears that women's baseline mindfulness is the comparatively stronger predictor of relationship quality reported by both individuals in a couple, influencing both their own and her partner's relationship quality six months later.

Discussion

The primary concern of all social scientists–both preventionists and interventionists alike–is to better quantify domains of human functioning to elucidate pathways for the effective pursuit of human flourishing. Within these parameters, a narrative that has emerged through empirical evidence that describes an important component of human flourishing is the consequential influence of intimate relationships on overall functioning (Johnson et al., 2000; Burman & Margolin, 1992; Kiecolt-Glaser & Newton, 2001). Although the domain of mental health indicators has been studied extensively in relation to romantic relationships (Clausen & Yarrow, 1955; McLeod, 1994), mindfulness is a domain that has only recently begun to be evaluated within the context of relationship functioning (e.g., Burpee & Langer, 2005; McGill et al., 2016). The current study serves to assist in the pursuit of greater human flourishing by advancing current understandings of changes in relationship quality over time through the examination of the relative influence of anxiety and mindfulness and the influences of both actors and partners ratings of anxiety and mindfulness on relationship quality over time. Findings of the current study are the first to indicate that in a large, diverse sample of couples, mindfulness exerts a significant influence on relationship quality for both individuals and their partners and is thus an important point of intervention for maximizing relationship functioning.

In line with previous studies (Burpee & Langer, 2005; McGill et al., 2016), findings of the current study indicate a robust connection between trait mindfulness and relationship quality for both men and women such that higher levels of trait mindfulness are related to higher levels

of relationship quality over time. While previous research has indicated a significant association between mindfulness and relationship quality using data collected concurrently (Burpee & Langer, 2005; McGill et al., 2016), this is the first to conclude that mindfulness is a significant predictor of relationship quality across timepoints. This finding is consistent with family stress theory which assumes that stress is inevitable and unavoidable, but that the magnitude of the impact that stressors have on a family depends on the positive resources, such as mindfulness, possessed by that family. The buffering effect of mindfulness on family functioning is observable in the current study by the positive impact of mindfulness on relationship quality, which is indicative of overall family functioning (Kiecolt-Glaser & Newton, 2001).

The novelty of this finding is heightened by the fact that not only was mindfulness found to be a significant predictor of relationship quality over time, but also it was found to be a more potent predictor than anxiety–a variable with a much longer history of association with relationship functioning (McLeod, 1994; Whisman, 1999). This is novel because it indicates that enhancing and increasing mindfulness may be an effective point of intervention for both prevention programs such as couples' relationship education (CRE) programs and intervention programs such as couples' therapy. Intervening to decrease anxiety symptoms for the sake of improving couple functioning has long been an intervention point for couples' therapists. This finding suggests, however, that since mindfulness may be an even more potent predictor of relationship quality over time than anxiety, interventions focusing on increasing mindfulness–in addition to focusing on decreasing anxiety symptoms–may lead to more significant improvements in relationship quality over time. This suggestion is validated by the additive design of the model that takes into account the unique contributions of each predictor.

An additional novel piece of the current study is the finding related to a significant dyadic effect across partners. Results from the current study evidence a significant partner effect between women's mindfulness levels and partners' relationship quality over time. This finding is in line with family systems theory which posits that change anywhere in the family system will have reverberating effects on other parts, and it is also in line with significant partner effects found in other initial studies evaluating the dyadic effects of mindfulness (Zamir et al., 2017; Adair et al., 2017; Montes-Maroto et al., 2017). Of note also is that previous findings have been limited by small, unrepresentative samples and cross-sectional study designs. The current study, therefore, is an important contribution to the literature as it corroborates previous evidence of a unique partner effect of mindfulness, particularly for women, in a large, diverse sample of couples.

The evident gender difference in the current study regarding the unique contributions of women's mindfulness on partners' later reports of relationship quality, but men's mindfulness not being found to have a similar unique effect on women's reports of relationship quality requires some processing. This could be explained by the central role that women have been shown to take in maintaining close relationships (Cross & Madson, 1997; Shafer, Jensen, & Larson, 2014; Gottman, Coan, Carrere, & Swanson, 1998) and determining men's assessment of relationship quality (Carr, Freedman, Cornman & Schwarz, 2014). Therefore, it may be that because women have a more central role in maintaining close relationships, their levels of mindful attunement suggest the maintenance of a relationship overall whereby women's levels of mindfulness influence relationship quality to a greater extent than men's. We can speculate that when a woman has higher trait mindfulness and related feelings of higher relationship quality, their partners are also likely to report higher relationship quality. While it was not tested in the

current study, it is possible that this may be the result of men's decreased emotional reactivity in response to women's decreased emotional reactivity, which is tapped through several items on the mindfulness scale. That is, greater trait mindfulness incorporates more control of negative reactivity. In romantic relationships, women's emotion regulation has been shown to have a unique, spillover effect on husband's emotion regulation (Bloch, Haase & Levenson, 2014). Therefore, if a woman's mindfulness is high and, thus, her reactivity is low, then the man may experience less emotional reactivity in response, thus providing some explanation for his higher rating of relationship quality. Future research is needed to replicate the preliminary gender difference found in the current study and investigate other relevant variables in the model that may shed more conclusive light on this preliminary finding.

In addition to the novelty of evaluating both partner and actor effects of mindfulness on relationship quality, the current study is innovative in that the effects of anxiety on relationship quality were simultaneously evaluated. This is novel because despite the fact that mental health and its influence on relationship functioning has been an area of study that has accrued much attention over the years (Clausen & Yarrow, 1955; Yarrow et al., 1955a; Yarrow et al., 1955b), there has been limited diversity of indicators examined within the domain of mental health. While much research has considered depressive symptoms as they relate to relationship quality, fewer studies have considered the similar influence of anxiety (McLeod, 1994; Overbeek et al., 2006) and no previous studies have considered both anxiety and mindfulness as predictors of relationship quality.

The findings of the current study related to anxiety were interesting in that they were counter to our hypothesis. A positive association was found between higher levels of anxiety at baseline and higher levels of relationship quality six months later for women, which is contrary

to much-established literature connecting higher levels of anxiety with lower levels of relationship quality (McLeod, 1994; Whisman, 1999). Because most previous studies assessed the link between these variables at a given timepoint, a post-hoc paired samples t-test was conducted and revealed a significant decrease in anxiety for women from baseline to six months later ($t(188) = 2.26$, $p = .025$). There was no significant change in anxiety symptoms over time for men ($t(167) = 1.26$, $p = .209$). This provides a likely explanation for the positive association found between women's anxiety symptoms at baseline and higher relationship quality six months later, that coincides with a decrease in reported anxiety symptoms six months later. Because this was not an intervention study, we have no explanation for the significant reduction in anxiety symptomology for women in this study; however, finding this pattern helps to explain the unexpected positive association found between baseline anxiety and later relationship quality level.

Due to moderate negative correlations found between anxiety and mindfulness, future research should explore whether a moderating or mediating pathway could better explain how these two variables work together. A significant moderation model might indicate that the strength of the association between anxiety and relationship quality can be explained by that person's level of trait mindfulness. For example, it may be that those with higher anxiety, but who have higher mindfulness report higher levels of relationship quality, indicating an intervening effect of mindfulness. A significant mediation model, however, might indicate that anxiety symptoms predict mindfulness levels, which, in turn, predict relationship quality or that mindfulness level predicts anxiety level, which in turn predicts relationship quality rating. A significant mediating pathway, therefore, would evidence a linear process mechanism for the original association. The current study is an initial step for prospective studies. Future research

should continue to evaluate how anxiety and mindfulness work together over time so as to advance better understandings of the most efficacious ways for maintaining and increasing positive reports of relationship quality over time.

Practical Implications and Future Directions

The findings of the current study are meaningful in their applicability to both prevention and intervention research. Preventionists, including developers, facilitators, and evaluators of relationship education programs, have reason to believe that the inclusion of at least a topical section related to mindfulness in education curricula is likely worthwhile. This has already begun through the development of a new relationship education curriculum called *Couples Connecting Mindfully* (McGill, Ketring & Adler-Baeder, 2016) and through the addition of mindfulness meditations to at least one previously existing curriculum called *ELEVATE: Taking Your Relationship to the Next Level* (Futris, Adler-Baeder, Ketring, Smith, et al., 2014). Preliminary findings on program effects are promising as they indicate treatment effects for both CCM and ELEVATE in key areas of both individual and relationship functioning (Adler-Baeder, McGill, Totura, Cave, Savasuk, Ketring & Smith, 2017). Future evaluative studies of these and other related CRE curricula are needed to test mechanisms of change considering the findings of the current study.

Meanwhile, mental health professionals and other interventionists can glean from the current study that mindfulness might be an effective, strengths-based point of intervention in therapy. Previous studies have suggested this before, and some practitioners have already risen to the challenge of developing therapies that incorporate mindfulness as both a primary and supplemental therapeutic intervention (Gehart, 2012). Mindfulness-Based Cognitive Therapy (MBCT) is one of these therapies (Segal, Williams & Teasdale, 2002). MBCT was designed to

treat depression and depression relapse, and one study has shown that among many different forms of therapy that have been shown to be effective in treating depression, MBCT is the first to show a significant reduction in depression relapse (Ma & Teasdale, 2004). While MBCT has been used to evaluate the effectiveness of incorporating mindfulness into clinical practice for over a decade, a conceptual, clinical framework for adapting mindfulness to family therapy has only recently been developed (Brody, Scherer, Turner, Annett & Dalen, 2017). The expanding literature concentrated on the evident association between mindfulness, and relationship functioning suggests that the evaluation of this and other clinical frameworks for incorporating mindfulness into family therapy could be a promising future direction for the field. Further research could explore the implications of incorporating mindfulness into family therapy and also whether it is more effective for therapists to focus treatment on anxiety or mindfulness first over the course of therapy.

The preliminary gender difference found in the current study corroborates previous research that suggests that men and women's perceptions and experiences within the same relationship are unique (Bernard, 1972). While the current study found that a woman's level of mindfulness appears to be especially important in both her and her partner's later reports of relationship quality, men's levels of mindfulness also predicted unique variance in later reports of relationship quality, making this a tentative finding. As additional studies explore this and other related gender differences, it continues to be important for therapists and educators to keep in mind the importance of gender differences for the sake of minimizing biases that validate one partner's experience to the invalidation of the other's experience.

In the current study, relationship quality was found to be significantly predicted by an overall measure of trait mindfulness. However, in other arenas, mindfulness has begun to be

evaluated not only as an overall construct, but as a construct that is context specific (Duncan, 2007). A new measure of mindful parenting is an example of a recent effort to evaluate mindfulness in a context-specific way (McCaffrey, Reitman & Black, 2017). Mindful parenting has recently emerged in the wake of newer understandings of how mindfulness relates to interpersonal relationships. Researchers have found that using an overall measure of trait mindfulness in the context of mindful parenting is limiting because the existing measures of overall mindfulness focus primarily on the intra-personal components of mindfulness that emphasize an individual's experience of his or her own internal experience to the neglect of unique, inter-personal components of mindfulness in the context of relationship functioning.

To address this limitation, a new construct for measuring mindfulness in the specific context of parenting has been developed called the *Mindfulness in Parenting Questionnaire* (McCaffrey et al., 2017). This measure is a two-factor measure of mindful parenting comprised of mindful discipline and being in the moment with the child. The items of this measure that correspond with mindful discipline address non-reactivity in parenting, parenting awareness, and goal-focused parenting and include such questions as "Did you notice your thoughts about your child's behavior before reacting?" and "Did you consider your child's feelings before disciplining your child?" The items that correspond with being in the moment with the child address present-centered attention to the child, empathic understanding of the child, and acceptance of the child and include such questions as "Did you actively bring your attention back to your child when you noticed you had become distracted?" and "Did you accept your child exactly how he/she is?" In the first evaluative study of this measure, the MIPQ exhibited a positive and weak correlation with a previously established measure of overall mindfulness,

indicating that interpersonal and intrapersonal mindfulness are related yet separate and distinct constructs (McCaffrey et al., 2017).

Following the innovative example of mindful parenting researchers, the limited amount of variance in relationship quality explained in the current study indicates that another potential next step for future research is the development and evaluation of a new measure for assessing relational mindfulness in the context of romantic relationships. While the FFMQ used in the current study assesses acting with awareness, non-reactivity to inner experience, and non-judging of inner experience, it seems possible that this measure falls short of addressing all components of mindfulness at play in the specific domain of romantic relationships. For example, as the MIPQ addresses mindful discipline, perhaps a new measure of relational mindfulness could measure mindful conflict resolution and ask questions such as "Did you ask your partner's opinion?" or "Were you able to calm yourself down when your partner was making you upset?" Additionally, as the MIPQ addresses being in the present moment with the child, a new measure of relational mindfulness could measure being in the present moment with your partner and ask questions such as "Did you carefully listen and tune into your partner when you two were talking?" and "Did you notice the way that your partner responded to your behavior?" It seems possible that mindful conflict resolution and being in the present moment with your partner could predict change in relationship quality over time beyond that which was detected in the current study with a general measure of trait mindfulness. In sum, mindful parenting researchers have forged a new path for themselves by developing a measure that is particularly sensitive to changes in mindfulness as they relate to parenting (Duncan, 2007; McCaffrey et al., 2017), and relational mindfulness research might be apt to follow suit.

Finally, demographic variables such as relationship status, race, and income, have been previously associated with relationship quality. Therefore, one other direction for future research is the assessment of these and other potential demographic moderators of the relationships between both mindfulness and anxiety and relationship quality over time. History of trauma is one other distinguishable characteristics of some individuals with a proved association with relational dynamics that could be considered in future research to further inform practitioners in the most effective tailoring of interventions to specific populations (Nelson & Wampler, 2000).

Limitations

Strengths of the current study include that it is guided explicitly by theory and utilizes a relatively large, diverse sample of couples. The study is limited, however, by several factors. First of all, participants were the control participants taken from a sample recruited into a random control trial assessing the efficacy of two different relationship education curricula. Therefore, study participants may differ in some systematic way compared to other individuals who would not have been interested in such programming, which may limit the generalizability of study findings. Additionally, study participants responded to self-report surveys, which are prone to various biases. Observational and multi-informant methods in addition to a larger random, representative sampling in the future could enhance the validity of study findings. Finally, the practical implications of this study are limited by the small amount of variance in relationship quality explained by women and men's baseline reports of trait mindfulness and anxiety. Since this is the first study to explore this association, further research also is needed to replicate the current findings and to test more complex models that include assessment of specific behaviors that may account for more variance in reports of relationship quality (Bandura, 1989).

Conclusion

Taken together, findings from the current study suggest that mindfulness and its association with relationship functioning consist of an important area for continued study due to the evident association between mindfulness and positive relationship outcomes. This is the first prospective study of this link in a racially and economically diverse sample of couples, therefore, the significant actor effects between mindfulness and relationship quality and partner effect of women's mindfulness and partners' reports of increased relationship quality over time found by the current study are particularly novel. This study advances both prevention and intervention literature by indicating that higher levels of mindfulness contain the potential for influencing not only individuals, but also individuals' partners, thus evidencing an impact of greater magnitude than has yet been fully understood. This study contributes to expanding literature regarding the potential of mindfulness interventions to assist in efforts to help people reach greater degrees of human flourishing.
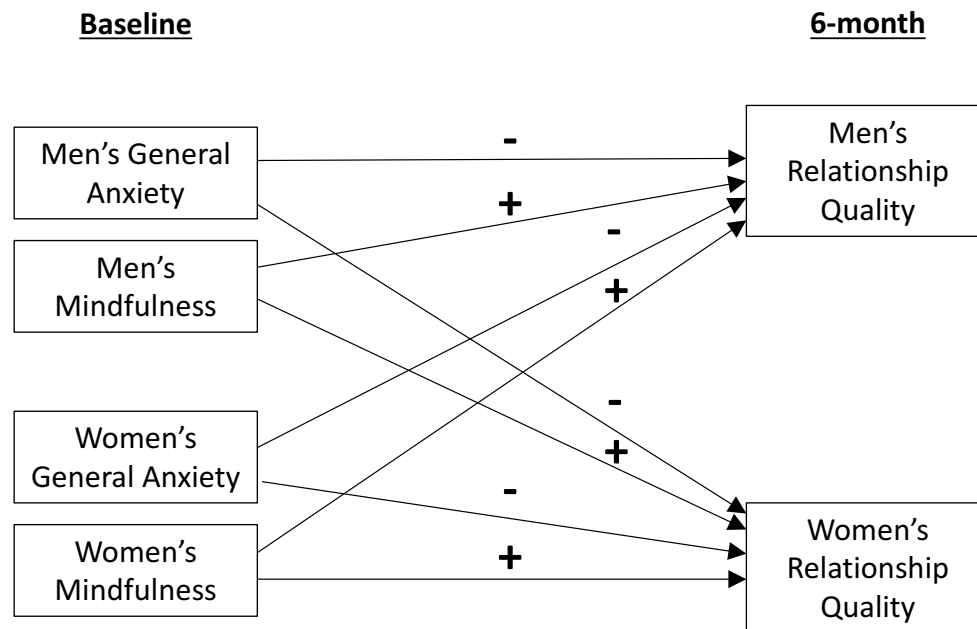
Figure 1. Theoretical model.

Table 1. *Descriptive statistics.*

Variable	N	M (SD)	Min	Max	Skewness (SE)	Kurtosis (SE)	t
General Anxiety (T1)							
Men	215	.72(.81)	.00	3.00	1.35(.17)	1.12(.33)	
Women	216	.95(.81)	.00	3.00	.85(.17)	-.05(.33)	
							2.88**
Trait Mindfulness (T1)							
Men	216	3.51(.54)	2.20	5.00	.28(.17)	-.27(.33)	
Women	216	3.36(.57)	1.67	4.73	-.15(.17)	-.07(.33)	
							-2.65**
Relationship Quality (T2)							
Men	168	5.93(1.16)	1.00	7.00	-1.33(.19)	2.15(.37)	
Women	185	5.78(1.28)	1.00	7.00	-1.32(.18)	2.06(.36)	

*p < .05; **p < .01; ***p < .001; *t* indicates results from independent samples t-test of gender differences

Table 2. *Correlations for predictor and outcomes variables.*

	Men's RQ (T2)	Men's Mindfulness (T1)	Men's Anxiety (T1)	Women's RQ (T2)	Women's Mindfulness (T1)	Women's Anxiety (T1)
Men's RQ (T2)	1					
Men's Mindfulness (T1)	.19**	1				
Men's Anxiety (T1)	.04	-.52**	1			
Women's RQ (T2)	.54**	.20**	-.07	1		
Women's Mindfulness (T1)	.13	.16*	-.10	.27**	1	
Women's Anxiety (T1)	-.05	-.13	.19**	-.20*	-.44**	1

*p < .05; **p < .01; ***p < .001

Table 3. *Correlations for covariates.*

	Ethnicity	Age	SES	Relationship Status	Parenting Status	RQ (T2)
Ethnicity	1					
Age	.10*	1				
SES	.24**	.27**	1			
Relationship Status	.17**	.23**	.42**	1		
Parenting Status	-.06	.35**	.09	.18**	1	
RQ (T2)	.18**	.05	.12*	.03	-.16**	1

*p < .05; **p < .01; ***p < .001

Table 4. *Standardized and unstandardized estimates, standard errors, and significance levels for model in Figure 1 (N = 217 couples).*

	β	b	SE
Structural Model Estimates			
Actor Effects			
T1 Men's Anxiety → T2 Men's RQ	-.07	-.10	.12
T1 Men's Mindfulness → T2 Men's RQ	.22**	.48	.18
T1 Women's Anxiety → T2 Women's RQ	.16*	.26	.13
T1 Women's Mindfulness → T2 Women's RQ	.26**	.59	.19
Partner Effects			
T1 Men's Anxiety → T2 Women's RQ	-.01	-.02	.13
T1 Men's Mindfulness → T2 Women's RQ	.10	.24	.19
T1 Women's Anxiety → T2 Men's RQ	.04	.06	.12
T1 Women's Mindfulness → T2 Men's RQ	.18*	.37	.18
Correlate			
T1 Men's Mindfulness ⇔ T1 Men's Anxiety	-.43***	-.19	.03
T1 Women's Mindfulness ⇔ T1 Women's Anxiety	-.50***	-.23	.04
T1 Women's Mindfulness ⇔ T1 Men's Anxiety	.07	.02	.02
T1 Women's Anxiety ⇔ T1 Men's Mindfulness	.09	.06	.04
R²			
T2 Men's RQ	.096		
T2 Women's RQ	.066		

*p < .05; **p < .01; ***p < .001

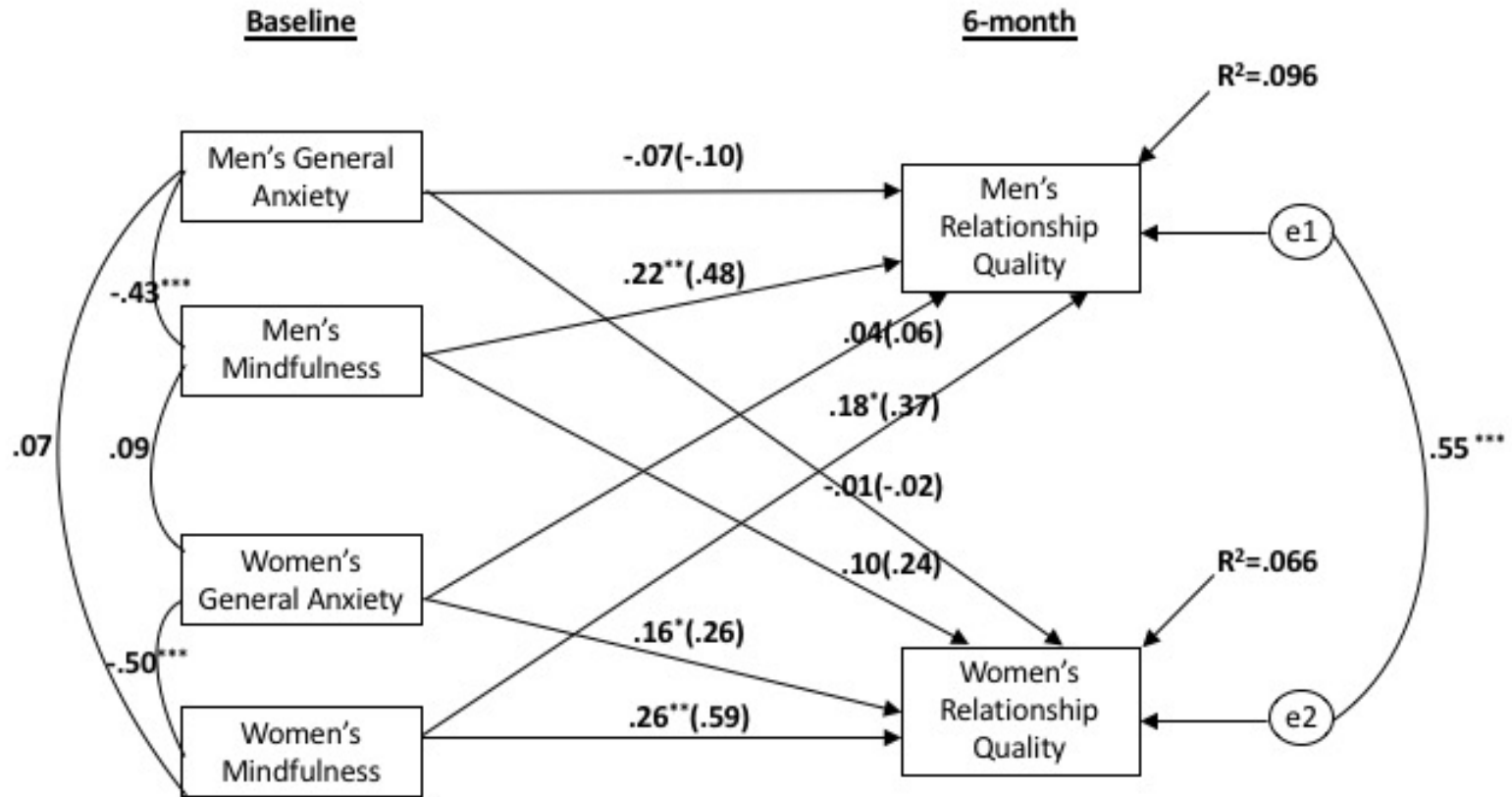Note: χ^2 = 4.98, df = 2, p = .08; RMSEA = .08, p = .20; CFI = .98

Figure 2. *Path model for the actor-partner effects of mindfulness and anxiety on relationship quality including standardized (and unstandardized) estimates.*
*p < .05; **p < .01; ***p < .001

References

Adair, K. C., Boulton, A. J., & Algoe, S. B. (2017). The Effect of Mindfulness on Relationship
    Satisfaction via Perceived Responsiveness: Findings from a Dyadic Study of
    Heterosexual Romantic Partners. *Mindfulness*, 1-13.

Adler-Baeder, F., Calligas, A., Skuban, E., Keiley, M., Ketring, S., & Smith, T. (2013). Linking
    changes in couple functioning and parenting among couple relationship education
    participants. *Family Relations*, *62*(2), 284-297.

Adler-Baeder, F., McGill, J., Totura, C., Cave, C., Savasuk, R., Ketring, S., & Smith, T. (2017,
    November). Initial results from an RCT study of two newly-developed couples education
    programs. Paper presented for the National Council of Family Relations Annual
    Conference, Orlando, FL.

Baer, R. A., Carmody, J., & Hunsinger, M. (2012). Weekly change in mindfulness and perceived
    stress in a mindfulness-based stress reduction program. *Journal of Clinical
    Psychology*, *68*(7), 755-765.

Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report
    assessment methods to explore facets of mindfulness. *Assessment*, *13*(1), 27-45.

Baker, B., Paquette, M., Szalai, J. P., Driver, H., Perger, T., Helmers, K., O'Kelly, B., & Tobe,
    S. (2000). The influence of marital adjustment on 3-year left ventricular mass and
    ambulatory blood pressure in mild hypertension. *Archives of Internal Medicine*, *160*(22),
    3453-3458.

Bandura, A. (1989). Human agency in social cognitive theory. *American psychologist*, *44*(9), 1175.

Barnes, S., Brown, K. W., Krusemark, E., Campbell, W. K., & Rogge, R. D. (2007). The role of mindfulness in romantic relationship satisfaction and responses to relationship stress. *Journal of marital and family therapy*, *33*(4), 482-500.

Beach, S. R., Katz, J., Kim, S., & Brody, G. H. (2003). Prospective effects of marital satisfaction on depressive symptoms in established marriages: A dyadic model. *Journal of Social and Personal Relationships*, *20*(3), 355-371.

Beach, S. R., & O'Leary, K. D. (1993). Marital discord and dysphoria: For whom does the marital relationship predict depressive symptomatology?. *Journal of Social and Personal Relationships*, *10*(3), 405-420.

Beach, S. R., Sandeen, E., & O'Leary, K. D. (1990). *Depression in marriage: A model for etiology and treatment*. Guilford Press.

Berkman, L. F., & Syme, S. L. (1979). Social networks, host resistance, and mortality: a nine-year follow-up study of Alameda County residents. *American journal of Epidemiology*, *109*(2), 186-204.

Bernard, J. (1972). *The future of marriage.* New York, NY: Bantam Books.

Bloch, L., Haase, C. M., & Levenson, R. W. (2014). Emotion regulation predicts marital satisfaction: More than a wives' tale. *Emotion*, *14*(1), 130.

Borkovec, T. D. (2002). Life in the future versus life in the present. *Clinical Psychology: Science and Practice*, *9*(1), 76-80.

Boss, P. (1988). *Family stress management*. Newbury Park, CA: Sage.

Bowen, M. (1966). The use of family theory in clinical practice. *Comprehensive psychiatry*, *7*(5),

345-374.

Bradford, A. B., Adler-Baeder, F., Ketring, S. A., Bub, K. L., Pittman, J. F., & Smith, T. A. (2014). Relationship quality and depressed affect among a diverse sample of relationally unstable relationship education participants. *Family Relations*, *63*(2), 219-231.

Brantley, J., & Millstine, W. (2008). *Daily meditations for calming your anxious mind*. New Harbinger Publications.

Brody, J. L., Scherer, D. G., Turner, C. W., Annett, R. D., & Dalen, J. (2017). A Conceptual Model and Clinical Framework for Integrating Mindfulness into Family Therapy with Adolescents. *Family process*.

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology, 84*, 822–848.

Brown, K. W., Ryan, R. M., & Creswell, J. D. (2007). Mindfulness: Theoretical foundations and evidence for its salutary effects. *Psychological inquiry*, *18*(4), 211-237.

Burman, B., & Margolin, G. (1992). Analysis of the association between marital relationships and health problems: An interactional perspective. *Psychological bulletin*, *112*(1), 39.

Burpee, L. C., & Langer, E. J. (2005). Mindfulness and marital satisfaction. *Journal of Adult Development*, *12*(1), 43-51.

Carr, D., Freedman, V. A., Cornman, J. C., & Schwarz, N. (2014). Happy marriage, happy life? Marital quality and subjective well-being in later life. *Journal of Marriage and Family*, *76*(5), 930-948.

Case, R. B., Moss, A. J., Case, N., McDermott, M., & Eberly, S. (1992). Living alone after myocardial infarction: impact on prognosis. *Jama*, *267*(4), 515-519.

Chandra, V., Szklo, M., Goldberg, R., & Tonascia, J. (1983). The impact of marital status on

survival after an acute myocardial infarction: a population-based study. *American Journal of Epidemiology*, *117*(3), 320-325.

Clausen, J. A., & Yarrow, M. R. (1955). Introduction: Mental illness and the family. *Journal of Social Issues*, *11*(4), 3-5.

Cook, W. L., & Kenny, D. A. (2005). The actor–partner interdependence model: A model of bidirectional effects in developmental studies. *International Journal of Behavioral Development*, *29*(2), 101-109.

Coyne, J. C., Rohrbaugh, M. J., Shoham, V., Sonnega, J. S., Nicklas, J. M., & Cranford, J. A. (2001). Prognostic importance of marital quality for survival of congestive heart failure. *American Journal of Cardiology*, *88*(5), 526-529.

Cross, S. E., & Madson, L. (1997). Models of the self: Self-construals and gender. *Psychological bulletin*, *122*(1), 5.

Davila, J., Bradbury, T. N., Cohan, C. L., & Tochluk, S. (1997). Marital functioning and depressive symptoms: Evidence for a stress generation model. *Journal of personality and social psychology*, *73*(4), 849.

Davila, J., Karney, B. R., Hall, T. W., & Bradbury, T. N. (2003). Depressive symptoms and marital satisfaction: Within-subject associations and the moderating effects of gender and neuroticism. *Journal of Family Psychology*, *17*(4), 557.

Dehle, C., & Weiss, R. L. (2002). Associations between anxiety and marital adjustment. *The Journal of psychology*, *136*(3), 328-338.

Duncan, L. G. (2007). *Assessment of mindful parenting among parents of early adolescents: Development and validation of the Interpersonal Mindfulness in Parenting scale*. The Pennsylvania State University.

Fincham, F. D., Beach, S. R., Harold, G. T., & Osborne, L. N. (1997). Marital satisfaction and

    depression: Different causal relationships for men and women?. *Psychological*

    Science, *8*(5), 351-356.

Francis, D. J. (1988). An introduction to structural equation models. *Journal of Clinical and*

    Experimental Neuropsychology, *10*(5), 623-639.

Futris, T. G., Adler-Baeder, F., Ketring, S., Smith, T., et al. (2014). *ELEVATE: Taking Your*

    Relationship to the Next Level. Published by the Alabama Cooperative Extension System

    (Alabama A&M and Auburn Universities: Publication No. FCS-2047) and the University

    of Georgia Cooperative Extension (Publication No. HDFS-E-161). Available

    at http://www.nermen.org/ELEVATE.php

Gallo, L. C., Troxel, W. M., Matthews, K. A., & Kuller, L. H. (2003). Marital status and quality

    in middle-aged women: Associations with levels and trajectories of cardiovascular risk

    factors. *Health Psychology*, *22*(5), 453.

Gehart, D. R. (2012). *Mindfulness and acceptance in couple and family therapy*. Springer

    Science & Business Media.

Goodwin, J. S., Hunt, W. C., Key, C. R., & Samet, J. M. (1987). The effect of marital status on

    stage, treatment, and survival of cancer patients. *Jama*, *258*(21), 3125-3130.

Gottman, J. M., Coan, J., Carrere, S., & Swanson, C. (1998). Predicting marital happiness and

    stability from newlywed interactions. *Journal of Marriage and the Family*, 5-22.

Grewen, K. M., Girdler, S. S., & Light, K. C. (2005). Relationship quality: effects on ambulatory

    blood pressure and negative affect in a biracial sample of men and women. *Blood*

    pressure monitoring, *10*(3), 117-124.

Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004). Mindfulness-based stress

reduction and health benefits: A meta-analysis. *Journal of psychosomatic research*, *57*(1), 35-43.

Hammen, C. (1991). Generation of stress in the course of unipolar depression. *Journal of abnormal psychology*, *100*(4), 555.

Holt-Lunstad, J., Birmingham, W., & Jones, B. Q. (2008). Is there something unique about marriage? The relative impact of marital status, relationship quality, and network social support on ambulatory blood pressure and mental health. *Annals of behavioral medicine*, *35*(2), 239-244.

House, J. S., Landis, K. R., & Umberson, D. (1988). Social relationships and health. *Science*, *241*(4865), 540-545.

Johnson, N. J., Backlund, E., Sorlie, P. D., & Loveless, C. A. (2000). Marital status and mortality: the national longitudinal mortality study. *Annals of epidemiology*, *10*(4), 224-238.

Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness.* New York, NY: Delacorte.

Kabat-Zinn, J., Lipworth, L., Burney, R., & Sellers, W. (1987). Four-year follow-up of a meditation-based program for the self-regulation of chronic pain: treatment outcomes and compliance. *The Clinical Journal of Pain*, *3*(1), 60.

Karremans, J. C., Schellekens, M. P., & Kappen, G. (2015). Bridging the sciences of mindfulness and romantic relationships: a theoretical model and research agenda. *Personality and Social Psychology Review*, *21*(1), 29-49.

Kenny, D. A. (2014). Measuring model fit.

Kessler, R. C., Chiu, W. T., Demler, O., & Walters, E. E. (2005). Prevalence, severity, and

comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey

Replication. *Archives of general psychiatry*, *62*(6), 617-627.

Kiecolt-Glaser, J. K., & Newton, T. L. (2001). Marriage and health: his and hers. *Psychological bulletin*, *127*(4), 472.

Kozlowski, A. (2013). Mindful mating: Exploring the connection between mindfulness and relationship satisfaction. *Sexual and Relationship Therapy*, *28*(1-2), 92-104.

Logan, D. E., Claar, R. L., & Scharff, L. (2008). Social desirability response bias and self-report of psychological distress in pediatric chronic pain patients. *Pain*, *136*(3), 366-372.

Ma, S. H., & Teasdale, J. D. (2004). Mindfulness-based cognitive therapy for depression: replication and exploration of differential relapse prevention effects. *Journal of consulting and clinical psychology*, *72*(1), 31.

MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological methods*, *1*(2), 130.

McCaffrey, S., Reitman, D., & Black, R. (2017). Mindfulness in parenting questionnaire (MIPQ): development and validation of a measure of mindful parenting. *Mindfulness*, *8*(1), 232-246.

McGill, J., Ketring S., & Adler-Baeder, F. (2016). *Couples connecting mindfully*.

McGill, J., Adler-Baeder, F., Bradford, A. B., Kerpelman, J., Ketring, S. A., & Sollie, D. (2016). The role of relational instability on individual and partner outcomes following couple relationship education participation. *Family Relations*, *65*(3), 407-423.

McGill, J., Adler-Baeder, F., & Rodriguez, P. (2016). Mindfully in love: A meta-analysis of the

association between mindfulness and relationship satisfaction. *Journal of Human Sciences and Extension Volume*, *4*(1).

McLeod, J. D. (1994). Anxiety disorders and marital quality. *Journal of Abnormal Psychology*, *103*(4), 767.

Mead, D. E. (2002). Marital distress, co-occurring depression, and marital therapy: A review. *Journal of marital and family therapy*, *28*(3), 299-314.

Mineka, S., Watson, D., & Clark, L. A. (1998). Comorbidity of anxiety and unipolar mood disorders. *Annual review of psychology*, *49*(1), 377-412.

Montes-Maroto, G., Rodríguez-Muñoz, A., Antino, M., & Gil, F. (2017). Mindfulness Beyond the Individual: Spillover and Crossover Effects in Working Couples. *Mindfulness*, 1-10.

Nelson, B. S., & Wampler, K. S. (2000). Systemic effects of trauma in clinic couples: An exploratory study of secondary trauma resulting from childhood abuse. *Journal of Marital and Family Therapy*, *26*(2), 171-184.

Norton, R. (1983). Measuring marital quality: A critical look at the dependent variable. *Journal of Marriage and the Family*, 141-151.

Orth-Gomer, K., Wamala, S. P., Horsten, M., Schenck-Gustafsson, K., Schneiderman, N., & Mittleman, M. A. (2000). Marital stress worsens prognosis in women with coronary heart disease: The Stockholm Female Coronary Risk Study. *Jama*, *284*(23), 3008-3014.

Overbeek, G., Vollebergh, W., de Graaf, R., Scholte, R., de Kemp, R., & Engels, R. (2006). Longitudinal associations of marital quality and marital dissolution with the incidence of DSM-III-R disorders. *Journal of Family Psychology*, *20*(2), 284.

Pankiewicz, P., Majkowicz, M., & Krzykowski, G. (2012). Anxiety disorders in intimate

partners and the quality of their relationship. *Journal of Affective Disorders*, *140*(2), 176-180.

Parent, J., Clifton, J., Forehand, R., Golub, A., Reid, M., & Pichler, E. R. (2014). Parental mindfulness and dyadic relationship quality in low-income cohabiting Black stepfamilies: Associations with parenting experienced by adolescents. *Couple and Family Psychology: Research and Practice*, *3*(2), 67.

Proulx, C. M., Helms, H. M., & Buehler, C. (2007). Marital quality and personal well-being: A meta-analysis. *Journal of Marriage and family*, *69*(3), 576-593.

Rauer, A. J., Adler-Baeder, F., Lucier-Greer, M., Skuban, E., Ketring, S. A., & Smith, T. (2014). Exploring processes of change in couple relationship education: Predictors of change in relationship quality. *Journal of Family Psychology*, *28*(1), 65.

Rehman, U. S., Evraire, L. E., Karimiha, G., & Goodnight, J. A. (2015). Actor-partner effects and the differential roles of depression and anxiety in intimate relationships: A cross-sectional and longitudinal analysis. *Journal of clinical psychology*, *71*(7), 715-724.

Rosenzweig, S., Reibel, D. K., Greeson, J. M., Brainard, G. C., & Hojat, M. (2003). Mindfulness-based stress reduction lowers psychological distress in medical students. *Teaching and learning in medicine*, *15*(2), 88-92.

Segal, Z. V., Teasdale, J. D., Williams, J. M., & Gemar, M. C. (2002). The mindfulness-based cognitive therapy adherence scale: Inter-rater reliability, adherence to protocol and treatment distinctiveness. *Clinical Psychology & Psychotherapy*, *9*(2), 131-138.

Shafer, K., Jensen, T. M., & Larson, J. H. (2014). An Actor-Partner Model of Relationship Effort and Marital Quality. *Family Relations*, *63*(5), 654-666.

Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing

generalized anxiety disorder: the GAD-7. *Archives of internal medicine*, *166*(10), 1092-
1097.

Tran, U. S., Glück, T. M., & Nader, I. W. (2013). Investigating the Five Facet Mindfulness
Questionnaire (FFMQ): Construction of a short form and evidence of a two-factor higher
order structure of mindfulness. *Journal of Clinical Psychology*, *69*(9), 951-965.

Uliaszek, A. A., Zinbarg, R. E., Mineka, S., Craske, M. G., Griffith, J. W., Sutton, J. M., ... &
Hammen, C. (2012). A longitudinal examination of stress generation in depressive and
anxiety disorders. *Journal of abnormal psychology*, *121*(1), 4.

Wachs, K., & Cordova, J. V. (2007). Mindful relating: Exploring mindfulness and emotion
repertoires in intimate relationships. *Journal of Marital and Family therapy*, *33*(4), 464-
481.

Whisman, M. A. (1999). Marital dissatisfaction and psychiatric disorders: Results from the
national comorbidity survey. *Journal of abnormal psychology*, *108*(4), 701.

Whisman, M. A. (2001). The association between depression and marital dissatisfaction. In S. R.
H. Beach (Ed.), *Marital and family processes in depression: A scientific foundation for
clinical practice* (pp. 3-24). Washington, DC, US: American Psychological Association.

Whisman, M. A. (2007). Marital distress and DSM-IV psychiatric disorders in a population-
based national survey. *Journal of Abnormal Psychology*, *116*(3), 638.

Whisman, M. A., & Baucom, D. H. (2012). Intimate relationships and psychopathology. *Clinical
child and family psychology review*, *15*(1), 4-13.

Whisman, M. A., Sheldon, C., & Goering, P. (2000). Psychiatric disorders and dissatisfaction
with social relationships: Does type of relationship matter?. *Journal of abnormal
psychology*, *109*(4), 803.

Whisman, M. A., & Uebelacker, L. A. (2009). Prospective associations between marital discord and depressive symptoms in middle-aged and older adults. *Psychology and aging*, *24*(1), 184.

Whisman, M. A., Uebelacker, L. A., & Weinstock, L. M. (2004). Psychopathology and marital satisfaction: The importance of evaluating both partners. *Journal of Consulting and Clinical Psychology*, *72*, 830–838.

Williams, D. R., Takeuchi, D. T., & Adair, R. K. (1992). Marital status and psychiatric disorders among blacks and whites. *Journal of Health and Social Behavior*, 140-157.

Yarrow, M. R., Clausen, J. A., & Robbins, P. R. (1955). The social meaning of mental illness. *Journal of Social Issues*, *11*(4), 33-48.

Yarrow, M. R., Schwartz, C. G., Murphy, H. S., & Deasy, L. C. (1955). The psychological meaning of mental illness in the family. *Journal of Social Issues*, *11*(4), 12-24.

Zaider, T. I., Heimberg, R. G., & Iida, M. (2010). Anxiety disorders and intimate relationships: A study of daily processes in couples. *Journal of Abnormal Psychology*, *119*(1), 163.

Zamir, O., Gewirtz, A. H., & Zhang, N. (2017). Actor–Partner Associations of Mindfulness and Marital Quality After Military Deployment. *Family Relations*, *66*(3), 412-424.