

**Individual Mental Health and Couple Functioning: Exploring Changes among Couple
Relationship Education Participant Outcomes**

by

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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: couple relationship education, mental health, relationship quality, process of change

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Abstract

The current study uses a randomized control trial design to test the efficacy of two couple relationship education (CRE) programs in a diverse sample of 722 couples. Taking theoretical assumptions from Hammen's (1991) stress generation theory, this study also adds to the small body of research exploring the processes of change in CRE by assessing whether changes in individual mental health predict subsequent changes in couple functioning. Findings suggest that treatment effects are consistent among outcomes for both men and women in depressive symptoms, general anxiety, relationship quality and relationship adjustment. Findings from the structural equation model also support the stress generation model, suggesting that immediate changes in individual mental health predict changes in couple functioning six months later for both men and women. This study provides support for continued incorporation of self-care and individual mental health targets in CRE curricula and potentially other areas of family life education. Practical implications and future directions are discussed.

Acknowledgements

I would like to first thank my committee members for investing so much time and effort to help me grow both academically and personally over the last two years. Dr. Scott Ketring, thank you for consistently pushing me out of my comfort zone and showing me how absolutely necessary stepping out of that comfort zone is in order to be a good clinician. Over time I am learning the willingness to do so is not only a characteristic needed to be a good clinician, but is also an important aspect of being a human being overall. To my co-chairs, Dr. Julianne McGill, thank you for the constant support, guidance, and reassurance you have provided throughout the last two years. I feel so lucky to have you as a support and mentor. Dr. Francesca Adler-Baeder, I cannot put into words the gratitude I have for your guidance, patience, and encouragement through this process. I am honored to have each of you as a role model both academically and personally. Thank you for the time and effort you have invested into me. I am looking forward to continuing work with you all over the next few years.

I would also like to thank my cohort members, classmates, colleagues and friends I have made in Auburn. Thank you for always reminding me I am never alone. A special thanks to Carlie Cave and C.C. Hermes. I am especially grateful for your unconditional friendship and support.

Lastly, I would like to thank my father and late mother, Curtis and Marcia. Mama, I so wish you could be here with us to celebrate these accomplishments, but I know you are watching

these moments and smiling. You both inspire me to be my best and truest self. Thank you for your unwavering and everlasting support and encouragement.

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Introduction

The association between individual mental health and couple functioning is seen in both clinical and non-clinical samples, making the investigation of this link relevant to a wide range of individuals. Individuals' mental health can be influenced by, as well as have an impact on, several domains of one's life, including romantic relationships (Coyne, Thompson, & Palmer, 2002; Dew & Bromet, 1991). There is ample literature focused on the associations between an individual's mental health and his or her couple functioning. For example, clinically depressed women report more relational distress and engage in less positive and more negative ways of managing conflict (Coyne, Thompson & Palmer, 2002). Similarly, individuals with clinical levels of anxiety also tend to report higher relational distress and use significantly less positive verbal and nonverbal communication (e.g., Chambless, Fauerbach, Floyd, Wilson, Remen, & Renneberg, 2002). Furthermore, higher levels of non-clinical depressive and anxious symptoms have been associated with lower levels of relationship satisfaction, and for women, higher levels of depressive and anxious symptoms have been associated with lower levels of received social support (Porter & Chambless, 2014).

A great deal of work is focused on methods for enhancing the quality of couple relationships, both through therapeutic interventions and community-based couple relationship education (CRE). While some efforts have been made in the study of marital therapy to incorporate assessments of mental health indicators as well as assessments of couple interactions and relationship quality (O'Leary & Beach, 1990; Jacobson, Dobson, Fruzzetti, Schmaling, & Salusky, 1991), limited attention has been given to this link in the study of CRE. Typically, studies of CRE assess concurrent changes in a range of factors related to couple functioning and relationship quality (e.g., Hawkins, Blanchard, Baldwin, & Fawcett, 2008; Blanchard, Hawkins,

Baldwin, & Fawcett, 2009; Hawkins & Erickson, 2015). Few studies have explored the associations among changes in distinct outcome areas. The goal of family life education in the context of CRE is to use preventative and family systems perspectives to provide knowledge on healthy family development and skills to help families function to the best of their ability (National Council on Family Relations, n.d.).

The current study takes a prevention science framework to build on the few previous studies of CRE that include consideration of individual well-being and couple functioning to explore the process of how CRE lowers risk and can prevent clinical levels of individual mental health conditions as well as improve overall couple functioning. Using the stress generation model (Hammen, 1991) that assumes the association between individual mental health functioning and relationship functioning is bidirectional, this study assesses changes in depressive symptoms and anxiety symptoms, changes in relationship adjustment and couple quality, and the relationship between these changes. This study serves to enhance our understanding of the process of change for the individual and the couple following participation in CRE.

Interventions and Couple Well-Being

The relationship between an individual's mental health and his or her couple functioning is bidirectional; however, research shows more support for the impact of couple-based interventions on both individual and couple functioning compared to individual-based interventions. For example, research has shown that intervention methods such as marital therapy have not only a positive impact on couple satisfaction, but also yield improvements in individual mental health (O'Leary & Beach, 1990; Jacobson et al., 1991). On the other hand, much literature reports that while marital therapy is effective in treating depression, individual-based

therapies are not as successful in treating relational distress (O’Leary and Beach, 1990; Whisman and Baucom, 2012).

Similarly, a few studies provide evidence that couple relationship education (CRE) improves both domains (i.e., individual and couple functioning) among a diverse group of participants (Adler-Baeder et al., 2010; Lucier-Greer, Adler-Baeder, Ketring, Harcourt, & Smith, 2012; Braithwaite & Fincham, 2011). When comparing scores from before and after CRE, participants show improvements in individual mental health indicators such as individual empowerment and depressive symptoms, as well as couple functioning indicators such as conflict management skills, couple quality, positive interactions, trust, and stability (Adler-Baeder et al., 2010). This study will expand upon these findings in a rigorous randomized control design and test whether participation in a CRE program is efficacious in affecting change in depressive symptoms and anxiety and relationship adjustment and quality.

Processes of Change in CRE

While there is support that CRE is effective in promoting positive individual as well as couple outcomes across diverse populations (Adler-Baeder et al., 2010; Blanchard, Hawkins, Baldwin, & Fawcett, 2009; Lucier-Greer & Adler-Baeder, 2012), scant studies have examined the process by which change occurs in individuals and couples following CRE participation. One study (Rauer et al., 2014) examined the process of change of behavior, commitment, and relationship quality by exploring path models based on differing theories of relationship change: social learning theory, which posits that cognitions and behaviors concurrently work together to produce change in relationships; behavioral theory, which posits that positive change in behaviors will lead to change in the way one thinks about their relationship, which then improves relationship quality; and lastly, interdependence theory, which posits that a change in attitudes

about one's relationship would lead to positive behavior change, and the relationship quality would improve. Rather than positive changes in commitment alone as some researchers suggest, Rauer and colleagues found that increases in positive interaction predicted positive changes in commitment, which then predicted increases in relationship quality, supporting a behavioral model of change.

To get a better grasp on the sequence of CRE outcomes related to individual (i.e., depressive symptoms) and couple functioning, one study, tested competing models. It utilized two theories to understand simultaneous changes in depressive symptoms and couple quality among relationally unstable CRE participants: the stress generation model, which suggests that changes in individual functioning predict changes in couple functioning (Hammen, 1991), versus the marital discord model, which alternatively suggests that changes in couple functioning predict changes in individual functioning (Beach, Sandeen, & O'Leary, 1990). In addition to the consistent findings in couples' therapy studies that changes in the couple relationship drive changes in the individual, Bradford and colleagues' (2014) results were most consistent with the stress generation model finding that for men and women, decreased depressed affect also predicted increased relationship quality. The current investigation provides further consideration among a broader group of CRE participants and the consideration of other indicators of mental health (i.e., anxiety) and relationship functioning (i.e., relationship adjustment) over time.

While these two studies begin to explore the processes of change during CRE, the order in which individual functioning and couple functioning improvements occur is still unclear. This study seeks to bring greater clarity to the sequencing of these changes after CRE participation by exploring the relationships among individual mental health indicators and relationship functioning indicators over time.

Gender Differences

The literature also suggests differences based on gender regarding mental health symptomology and the influence of individual mental health on couple functioning. Women tend to report higher levels of chronic stress as well as daily stressors in general compared to men (Matud, 2004). Further, women are about twice as likely as men to experience both depression and anxiety (Noel-Hoeksema, 1990; Weissman et al., 1996). Bernard (1972) suggests that although male and female partners are in the same relationship, they interpret interactions and couple dynamics differently and thus experience their relationships very distinctively. Research also supports these claims. Some studies suggest that men are better able to differentiate individual stressors from relational contexts than women (Schnittger & Bird, 1990).

Specifically, when men and women are experiencing the same stressor, women tend to report lower couple satisfaction than their male counterparts (Oliver, 1999). Johnson and Jacob (1997) found that wives' depression was linked to greater marital discord than husbands' depression. Because women tend to be more influenced by these types of mental health conditions, we can expect it influences how they interact in their relationships. In Bradford and colleagues' study (2014), they found that there were statistically significant decreases in depressive symptoms for women after a CRE program; however, for men, decreases in depressive symptoms were less pronounced and only marginally significant. There were no gender differences in the association between depressed affect and relationship quality, however, suggesting there are no differences based on gender in how mental health changes influence relational health changes in the context of CRE. Because of these differing findings, there is reason to expect that the process of change among mental health indicators and relationship functioning may differ by gender. For example, if the changes in individual mental health

indicators are enhanced for women, then it may be that the association between individual mental health and couple functioning is stronger for women.

Theoretical Assumptions

Theoretical assumptions taken from family stress theory, the stress generation model, and a prevention science framework inform the design of our study questions. Family stress theory (Boss, 1988) holds that families will inevitably experience various stressors and some families will persevere and remain intact while others deteriorate. For example, the diminished mental health of an individual in a couple may infiltrate the couple and family system and lead to decreased couple functioning and relationship satisfaction.

Much work supports the notion that stressors influence relational distress through depressive symptoms, which reflects the stress generation model (Hammen, 1991). It posits that not only does couple functioning influence individual mental health, but the relationship is bidirectional: stressors and depressive symptoms also predict functioning in family relationships and interactions. For the current study, applying this model suggests that changes in individual mental health indicators should precede subsequent changes in relationship functioning after participation in CRE.

Further, a prevention science framework (Coie et al., 1993) is utilized in the current study. The prevention science framework suggests attuning to what can be done to lower risk and to prevent negative outcomes such as clinical levels of depression and anxiety, conflict, and relationship dissatisfaction. The assumption is that participating in a program or intervention focused on improving indicators of healthy functioning will help prevent such outcomes.

The Current Study

The extant research on the directional effects of mental health and relationship functioning in clinical populations is mixed, and only one study of the direction of effects among CRE participants exists. Bradford and colleagues' (2014) study found support for the stress generation model in a sample of relationally unstable CRE participants. The current study replicates and extends that study by incorporating measures of anxiety and relationship adjustment, in addition to measures of depressive symptoms and relationship quality and explores gender differences. Also, the current study utilizes longitudinal data from baseline pre-program to immediate 8-week follow-up to six-month post-program follow-up, whereas the few studies exploring processes of change in CRE examine concurrent change. Therefore, the purpose of this study is to add to the research on CRE effectiveness and explore the relationships among changes in individual outcomes (depressive and anxious symptoms) and couple outcomes (relationship quality and adjustment).

Based on the extant literature and a prevention science approach, we expected that depressive and anxious symptoms would decrease after participation in CRE and that couple quality and relationship adjustment would improve for participants compared to nonparticipants. We also expected that changes in individual mental health immediately post-program would predict changes in couple functioning for both men and women at six months post program and that the association between changes in individual mental health indicators and couple functioning outcomes would be stronger for women than for men.

Literature Review

Links between Individual Mental Health and Couple Functioning

Depression and couple functioning. The association between individual mental health indicators such as depression and romantic relationship functioning has been well documented. Much of the research focuses on the impact of wives' symptoms (Chambless et al., 2002; Coyne, Thompson, & Palmer, 2002), as depression is more common in women than in men.

Coyne and colleagues explored differences in marital quality and conflict management in couples with a depressed wife comparing a clinical sample and a control group. Each woman in the clinical sample was diagnosed with current major depressive disorder according to the *Diagnostic and Statistical Manual of Mental Disorders*. Both groups completed questionnaires including measures of psychological distress, marital distress, ways of coping with conflict, and other variables including behaviors and ideas about their relationship. ANOVAs were used to examine group differences for each gender separately. The authors found significant differences for wives with clinical levels of depression compared to wives in the control group on psychological distress, marital distress, constructive and destructive conflict tactics, marital complaints, regret over marriage, expressions of affection, and adverse childhood experiences such that depressed wives had worse outcomes. For the husbands of these clinically depressed wives, significant differences were found in marital distress, marital complaints, and marital affection such that husbands of depressed wives had worse outcomes than husbands of wives that were not clinically depressed. No differences were found in constructive and destructive coping, regret over marriage, or adverse childhood experiences. The results of this study document the association between depression and poorer couple functioning.

Anxiety and couple functioning. Likewise, anxiety and anxiety disorders influence relationship functioning. An early study (McLeod, 1994) examined the association between various anxiety disorders and marital quality. The anxiety disorders examined were phobic disorders, panic disorder, and general anxiety disorder. Wives of phobic husbands reported significantly less positive perceptions of their marriages than wives of non-phobic husbands. Husbands also reported less satisfaction in their marriage when meeting criteria for a phobic disorder than did wives who met the criteria. Wives' phobia did not appear to influence perceived marital quality significantly. Results were similar but weaker for marriages with one partner who met the criteria for panic disorder. Husbands who met the criteria and their wives reported less quality marriages than couples with no panic disorder. However, for generalized anxiety disorder (GAD), wives who met the criteria reported significantly less quality marriages than those who did not have generalized anxiety disorder. Their husbands' ratings, however, were not significantly impacted by their clinical level symptoms. Further, husbands' GAD did not influence self or partner marital quality. This article provided general support for the influence of anxiety disorders' relationship with couple functioning, particularly for women. However there are some limitations to this study, including the use of a small clinical population of white couples.

In a more recent study, Porter and Chambless (2014) examined depression and social anxiety and their impact on romantic relationships. They examined social anxiety's link to relationship satisfaction, and the amount of social support one receives from their partner. Correlation and multiple regression analyses were used to examine these associations, and the authors found that for women, there was a significant relationship between depression and social anxiety and relationships satisfaction. For men, however, depression was the only significant

predictor of relationship dissatisfaction. Women's social anxiety and depression both predict women's perceived amount of social support received. This finding supports the stress generation model, which posits that symptoms are not only caused by one's experiences, but the experiences can be shaped by one's symptoms.

Chambless and colleagues (2002) also explored a specific anxiety diagnosis, agoraphobia, and found similar outcomes, supporting the association between anxious symptoms and couple functioning. The authors posit that high expressed emotion, lower frequency of positive problem solving and coping skills, and decreased levels of social support in this clinical population contribute to this association. In their study, they were specifically interested in agoraphobic women and their husbands. They explored whether these couples have more distressed marriages than control couples and the role of expressed emotion, problem-solving and coping skills, and social support. Authors utilized a clinical sample including women who meet the current *Diagnostic and Statistical Manual for Mental Disorders* at the time of the study's criteria for agoraphobia and a control, nonclinical sample. Using behavioral and self-report measures, authors found that clinical and nonclinical couples are different in couple interactions. Husbands of clinical couples were more critical, and clinical couples displayed less positive problem-solving behaviors. Taking into consideration this study's strengths in the utilization of a comparison sample, behavioral observations as well as self-report measures, and control variables such as marital satisfaction and depression, it strongly demonstrates the relationship between this specific set of anxiety symptoms and couple functioning.

It is important to note that the current study does not utilize a clinical sample, and these populations cannot necessarily be compared. Because there is limited background information regarding the associations among individual mental health and relationship functioning in non-

clinical samples, many of the studies utilized as the background and foundation of the current study use clinical samples as indicated by clinical cut-offs established by the measurements utilized, those in treatment for depressive and anxious symptoms, or those who meet diagnostic criteria. Less studies have been conducted utilizing non-clinical samples. Since CRE is used by a broad range of couples, there is a need for examination of nonclinical samples and levels of symptoms and their association with couple functioning as well.

Interventions and Individual and Couple Well-Being

Intervention research provides consistent evidence that couple interventions positively influence mental health; however, there is less evidence that individual interventions positively influence couple functioning (O’Leary & Beach, 1990; Whisman and Baucom, 2012; Baucom, Shoham, Mueser, Daiuto, & Stickle, 1998). For example, O’Leary and Beach (1990) randomly assigned 36 relationally distressed couples with depressed wives to either behavioral marital therapy, cognitive therapy, or a control group to explore changes. Women in both marital therapy and cognitive therapy groups showed significant changes in depressive symptoms. However only women in marital therapy showed change in marital satisfaction. Women in cognitive therapy, a primarily individual approach, did not show change in marital satisfaction. An early review of intervention literature also found that multiple couple and family interventions were successful in treating diverse individual mental disorders (Baucom et al., 1998). Further, Whisman and Baucom (2012) explored the present research on interventions and psychopathology and concluded that relationship discord does not usually improve after individual-based treatments for psychopathology. However they discuss the success that couple-based treatments have for psychological disorders.

Few CRE studies also indicate improvements in both couple and individual functioning factors. Adler-Baeder and colleagues (2010) examined various individual and couple functioning indicators in a diverse sample of CRE participants and explored the influence demographic factors have on both baseline levels and change in individual and couple functioning outcomes after CRE programs. Specifically, couple quality, happiness in couple relationship, positive interactions, and adjustment were examined as couple functioning variables. Trust and stability were examined as relationship confidence variables. Lastly, conflict management, individual empowerment, and depression were examined as individual functioning variables. Structural equation modeling demonstrated that positive change occurred in both men and women for all couple functioning, relationship confidence, and individual functioning outcomes in a demographically diverse sample.

More recent studies of CRE indicate associations between CRE and improvements in individual outcomes as well. Bradford and colleagues' (2014) study demonstrate that there are improvements in depressed affect after a CRE program. Further, McGill and colleagues (2016) examine the role of relational instability on individual and couple outcomes, noting improvements in depressive symptoms as well.

Processes of Change in CRE

As previously stated, much of the literature involving CRE has shown support for its effectiveness across diverse groups for various couple outcomes (Hawkins et al., 2008; Blanchard et al., 2009). However, less work has investigated the processes and sequencing of these changes after CRE programming. Wadsworth and Markman (2012) indicate a strong need for the next step in CRE research to focus on the process of change and how these interventions are shown to be effective. The following studies have begun this investigation in the processes of

change, and one, in particular, has provided a foundation for the significance of the current study.

Rauer and colleagues (2014) used three widely supported theories as the basis for their hypotheses in examining these processes. Using social learning theory, behavioral theory, and interdependence theory these authors explored how behavior, commitment, and relationship quality worked together to show change after CRE participation. Social learning theory (Thibault and Kelley, 1959; Bandura, 2001) posits that individuals work through cognitions and behaviors along with their environments to produce a change in their experiences. Thus both cognitions and behaviors play an equal part in changing relationship quality after CRE participation. A behavioral theory posits that cognitions and behaviors do not work evenly to produce change, but instead increases in positive behaviors primarily drive the change in relationship quality through the overall increase of positive evaluations of the relationship (Hawkins et al., 2004). Rauer and colleagues (2014) also utilize a commitment model to explore processes of change rooted in interdependence theory and the investment model (Rusbult, Coolsen, Kirchner, & Clarke, 2006; Stanley et al., 2010) which emphasize the importance of cognitions or a mindset towards a relationship and how it is the driving force behind change in relationship quality. The idea is that those who are more committed to their relationship are more likely to engage in positive behaviors and less negative behaviors, which improves the overall quality of the relationship.

Rauer and colleagues utilized a path analysis to determine which model best fit the data to demonstrate the processes of change shown among a diverse group of CRE participants. Authors found support for a behavioral model of change (Hawkins et al., 2004). Specifically, they found that positive changes in partner interaction (behaviors) predicted positive changes in commitment to the relationship, which then predicted increases in relationship quality. This work

is exceptionally important, as it demonstrates what aspects of CRE curriculum should emphasize to produce the most change. This study suggests developing communication skills and improving interactions may be the most optimal point for producing change in couple relationships.

To answer questions regarding the sequencing of changes after CRE participation, Bradford and colleagues (2014) emphasized the focus on processes of change by using a competing models approach. They were interested in individual and couple factors and how they drove change in each other in relationally unstable couples. They utilized stress generation theory (Hammen, 1991) and marital discord theory (Beach, Sandeen, & O'Leary, 1990) and tested competing models of the direction of effects. Specifically, they investigated the association between changes in depressive affect and relationship quality. As previously discussed, the marital discord model (Beach, Sandeen, & O'Leary, 1990), which has a substantial amount of support in the literature, posits that changes in relationship factors (i.e., relationship quality) drives the change in individual factors (depressed affect). On the other hand, the stress generation model posits that the causal association is bidirectional: changes in individual factors also drive change in relationship factors. For both men and women, Bradford and colleagues found more support for the stress generation model, in that changes in depressed affect predicted changes in relationship quality. In order to test and expand the stress generation model, the current study utilizes a broader sample of relationally stable and unstable couples as well as adds individual and couple variables and considers gender differences.

Theoretical Assumptions

A prevention science framework (Coie et al., 1993) is utilized in the current study. The prevention science framework drives research questions by focusing on what can be done to prevent negative outcomes. For example, if research informs what causes marital discord and

conflict to develop and be maintained, educators can equip individuals and couples with information and tools needed to prevent depression, anxiety, conflict, and relationship dissatisfaction from reaching clinical levels. For the current study in particular, if stress generation model is supported, this suggests that CRE and potentially other areas of family life education areas should have components addressing individual mental health as well as interpersonal functioning.

Theoretical assumptions are taken from family stress theory (Boss, 1988) inform the design of our study questions. Family stress theory holds that families will inevitably experience various stressors and some families will persevere and remain intact while others deteriorate. For example, the diminished mental health of an individual in a couple may infiltrate the couple and family systems and lead to decreased couple functioning and relationship satisfaction. Furthermore, Hammen (1991) questioned the established direction of causality between stressors and depressive symptoms. Previously, this was that stressors predicted symptoms. Hammen explored the question of reverse causality despite the methodological issue of controlling for the effects of prior symptoms. Hammen argued that depressed individuals shape their environment, as well as respond to them, making this stressor-symptom relationship bidirectional. She sought particular answers about the causal relationship between depressive symptoms and interpersonal stressors. She found support for her theory, the stress generation model. For the current study, applying this model suggests that changes in individual mental health indicators should predict a change in relationship functioning after CRE.

The stress generation theory has been expanded on since Hammen's pivotal article (1991), in which it was only used in conceptualizing stress and depressive symptoms. There is limited support for a stress generation effect in anxiety symptoms (Conway, Hammen, &

Brennan, 2012; Meyer & Curry, 2017), despite the fact that depression is often comorbid with anxiety. However, Conway and colleagues (2012) propose clearly distinguishing different anxiety disorders, panic in particular, when examining the effects of stress generation on anxious symptoms, and documenting the support for applying the stress generation model across diagnoses and symptoms. This notion is reflected in the literature examining anxiety's association with relationship functioning, as much of the research has been conducted with specific diagnoses, not only anxious symptoms in general (Porter & Chambless, 2014; Chambless et al., 2002).

In summary, a clear association between individual mental health and couple functioning has been established throughout the literature and specifically in intervention and CRE research. However, there is more limited research on individual outcomes, associations among outcomes, and processes of change in CRE literature. The current study addresses these by exploring individual outcomes (depressive symptoms and general anxiety) and couple functioning outcomes (relationship quality and relationship adjustment) and their associations. Based on the extant literature and a prevention science approach, we hypothesized (H1) that depressive symptoms and general anxiety would decrease after participation in CRE and that relationship quality and relationship adjustment would improve after participation in CRE for program participants compared to control participants. Based on the stress generation theory and Bradford and colleagues' findings, we also hypothesized (H2) that changes in depressive symptoms and general anxiety would predict changes in relationship quality and relationship adjustment for both men and women. Based on the extant literature, we also hypothesized (H3) that the association between changes in individual mental health indicators and couple functioning outcomes would be stronger for women than for men. We note that results from this study may

have implications for CRE curricula target areas. For example, if the stress generation model is further supported, suggestions that self-care is an important component of CRE (Futris & Adler-Baeder, 2013) are further validated. While CRE curricula, including ones used in the current study, include content focused on mental health and self-care, most do not.

Methods

Procedure

This study utilized control and program groups to examine treatment effects and associations among changes in program participants. Couples were recruited across 10 sites in a southeastern state to enroll in a study of the efficacy of two evidence-informed CRE programs: *ELEVATE: Taking Your Relationship to the Next Level* and *Couples Connecting Mindfully*. The sites consisted of family resource centers and community agencies that provide their communities with resources and services such as educational programs to strengthen individuals and families. Participants were recruited from the community in a number of ways including via sites' web pages, social media, flyers posted across communities, and word of mouth. Study respondents signed an informed consent and completed a baseline survey that included demographic information and individual and couple functioning information. After baseline survey completion, couples were randomly assigned to participate in one of three groups: (1) the group receiving the *ELEVATE* curriculum (2) the group receiving the *Couples Connecting Mindfully* curriculum, and (3) the control group receiving no curriculum.

The *ELEVATE* curriculum was derived from the National Extension Relationship and Marriage Education Model (NERMEM) (Futris & Adler-Baeder, 2013), and focuses on providing information and skills training in seven areas that research shows are central to relationship success (i.e., care for self, choosing to prioritize relationship, skills for enhancing emotional connection and knowledge of partner, behaviors to show affection, skills for developing ability to spend and enjoy quality time with partner, conflict management skills, and skills for developing and enhancing social support systems). *Couples Connecting Mindfully* emphasizes mindfulness-based approaches to reducing stress for individuals and couples in

addition to traditional couples' skills training.

Those who were assigned to a curriculum met weekly for 6 weeks for approximately 2 hours. Classes met at either the family resource center in their community or another community meeting place. Trained facilitators at each site presented the curricula. Of those participants who were randomly assigned to a class, 69% attended half or more, and the average attendance rate was 64%. Approximately 8 weeks after baseline data collection was completed and after the program concluded, study participants were given a follow-up survey to assess post-program changes in individual and couple functioning. Another follow-up survey was given to participants six months after program participation. Each participant received \$50 in compensation per survey they completed.

Participants

The analytic sample consists of 1470 adult study participants in heterosexual couple relationships across the state of Alabama who completed a pre-, immediate post-, and six month follow up survey. Of the 1470 individuals (722 couples), 52% are female, and 48% are male. One-third of the sample participated in ELEVATE, one-third of the sample participated in Couples Connecting Mindfully, and one third did not participate in a CRE class. The mean participant age is 38.01 years. The sample is racially diverse: European American (64%); 30% African American; and 6% reported another racial/ethnic category (e.g., Asian American, American Indian/Alaska Native, etc.). The sample is also diverse in educational attainment and income. Five percent report having no diploma or degree, 21% hold a high school diploma or GED, 20% percent report having completed some college but no degree completion, 13% hold an associate's degree or a vocation/technical certification, and 41% hold a bachelor's degree or higher. Thirty-one percent reported a household income of less than \$25,000, 44% reported

between \$25,000 and \$75,000, and 25% reported above \$75,000. Statistical test reveals no significant differences on any demographic variables between groups, validating the random assignment procedure.

Measures

Relationship Quality. Relationship quality was measured using three items from the Quality of Marriage Index (Norton, 1983). Example items include, “We have a good relationship,” and “My relationship makes me happy.” Response anchors range from 1 to 7, with a 1 being “Very strongly disagree,” and a 7 being “Very strongly agree.” Means of these responses were taken to create a composite score used for analyses. The Cronbach’s alpha coefficient for internal consistency was $\alpha = .95$ at baseline, $\alpha = .96$ at immediate follow-up, and $\alpha = .97$ at six month follow up, indicating excellent reliability.

Relationship Adjustment. The communication subscale of the Revised Dyadic Adjustment Scale (Busby, Christensen, Crane, & Larson, 1995) was used to assess relationship adjustment. This subscale consists of 5 items measuring the level of couple arguments related to a particular topic. For example, “Please indicate the approximate extent of agreement or disagreement between you and your partner for handling finances,” “parenting,” and “ways of dealing with family/relatives.” Response anchors range from 1 to 5, with 1 indicating “Always disagree,” and 5 indicating “Always agree.” Means of these responses were used to create a composite score used for analyses. The alpha coefficient for internal consistency is $\alpha = .80$ at baseline, $\alpha = .86$ at immediate follow-up, and $\alpha = .85$ at six month follow up, indicating acceptable reliability.

General Anxiety. Anxious symptoms were measured by using the General Anxiety Disorder (GAD) Scale (Spitzer, Kroenke, Williams, & Löwe, 2006). 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 experienced trouble relaxing?” Response anchors range from 1 to 4, 1 being “Not at all,” and 4 being “Nearly every day.” Means of these responses were used to create a composite score used for analyses in order to address the issue of missing data in some participants. The alpha coefficient for internal consistency is $\alpha = .93$ at baseline, $\alpha = .93$ at immediate follow up, and $\alpha = .94$ at six month follow up, indicating excellent reliability.

Depressive Symptoms. Depressive symptoms were measured using items from the Center for Epidemiologic Studies – Depression scale (Radloff, 1977). The reduced scale used in previously published studies consists of 3 items (Adler-Baeder et al., 2010; Bradford et al., 2014; McGill et al., 2016). Because the scale was reduced to three items from the original measure, clinical cut-offs were not utilized. The measure asks how often the respondent “felt sad,” “felt depressed” and “felt that I could not shake off the blues even when the help from my family and friends” in the past week. Response anchors range from 0 to 3, 0 being “Rarely or none (less than 1 day),” and 3 being “Most of the time (5-7 days).” Means of these responses were used to create a composite score used for analyses. The alpha coefficient for internal consistency is $\alpha = .88$ at baseline, $\alpha = .90$ at immediate follow up, and $\alpha = .90$ at six month follow up, indicating good reliability.

Analytic Strategy

To test Hypothesis 1 that there are treatment effects for depressive symptoms, anxious symptoms, relationship quality, and relationship adjustment, mixed between-within repeated measures analysis of covariance (RMANCOVAs) were conducted. Specifically, I tested if depressive and anxious symptoms decreased and relationship functioning increased more for the

program groups than the control group after program participation. These differences were tested separately for men and women to address the issue of dependence, as most of these individuals comprised couples.

To test Hypothesis 2 that changes in depressive and anxious symptoms at immediate post follow up predicts changes in relationship quality and relationship adjustment at six month follow up for both men and women, structural equation models utilizing AMOS software were fit. Because relationship quality and relationship adjustment were moderately correlated at all time points, they were used to create a latent construct of overall couple functioning. Although depressive symptoms and general anxiety are moderately correlated, as well, and there may be an interaction effect when the two occur together, the analysis plan kept depressive symptoms and general anxiety distinct in order to see how changes in each were distinctly associated with changes in couple functioning. Post-test scores represented residual change in each outcome because baseline levels were accounted for in the model (Singer & Willett, 2003). For all tests, models for men and women were fit simultaneously to account for dependency in couples and to test Hypothesis 3 that the association between changes in individual mental health indicators and couple functioning outcomes would be stronger for women than for men.

Goodness of fit indices were calculated to assess how well the data used fits the structural equation model, or how consistent the data is with the given model. The current study utilizes common tests for model fit: the chi-square test of model fit, comparative fit index (CFI), and the root mean square error of approximation (RMSEA) to examine goodness of fit. Larger values for the chi-square test of model fit indicate poorer fit. For CFI, values of .95 or higher indicate good model fit, .90-.95 indicate acceptable model fit, and values .90 or lower indicate poor model fit. An RMSEA value of .01 indicates an excellent model for, .05 indicates good model fit, and .08

indicates good model fit. Further, for the RMSEA, a non-significant p-value indicates an acceptable model fit.

For the test of gender differences, men's and women's models were constrained to be equal, and a delta chi-square test was conducted. A delta chi-square value was obtained by calculating the difference between the chi-square value and degrees of freedom. The chi-square table was then used to determine if the calculated delta chi-square value was greater than the critical chi-square value provided by the table. If the calculated delta chi-square value was greater than the critical value, the models would be considered significantly different.

Results

Preliminary Analyses

Table 1 displays descriptive statistics of all variables in program participant and control groups for men and women. The variables are normally distributed in the overall sample, as the kurtosis and skewness statistics fall between -2 and +2 (George & Mallery, 2010). Therefore, no variables required transformations. There were no significant differences between control and participant groups at baseline for depressive symptoms ($t(1422) = 0.86, p = .39$), general anxiety ($t(1435) = 0.45, p = .65$), relationship quality ($t(1416) = 1.50, p = .13$), and relationship adjustment ($t(1406) = .06, p = .96$). There were significant differences between men and women in all outcomes at baseline (see Table 2), such that men reported better individual and couple functioning.

Correlations (see Table 3) were run prior to primary analyses to assess the bivariate relationships of all variables. Depressive symptoms and general anxiety were correlated at baseline ($r(1430) = .67, p < .001$), immediate post-program ($r(1299) = .65, p < .001$), and six month follow up ($r(1163) = .72, p < .001$). Relationship quality and relationship adjustment were moderately correlated at baseline ($r(1404) = .56, p < .001$), immediate post-program ($r(1289) = .57, p < .001$), and six month follow up ($r(1132) = .61, p < .001$), and were used to create a latent construct of couple functioning in the final models.

Establishing Treatment Effects

Mixed between-within repeated measures analyses of variance (RMANOVAs) were used to determine whether there were statistically significant differences in change in depressive symptoms, general anxiety, relationship quality, and relationship adjustment between the control and program groups from baseline to immediate post-program follow-up and from baseline to

six-month follow-up. Analyses were run separately for men and women to address the issue of interdependence of couples in the dataset. If there were significant interaction effects or main effects, we used post hoc paired sample t-tests and one way analysis of variance at specific time points to gain a better understanding of patterns of changes for each group.

Women's Depressive Symptoms. No treatment effects were found for women's depressive symptoms ($F(1, 674) = 0.29, p = .59$) *from baseline to immediate post follow up*. There was a significant main effect for time for depressive symptoms ($F(1, 675) = 10.96, p = .01$), suggesting all study participants demonstrated similar change. In order to double-check this, post hoc paired samples *t*-tests were conducted and demonstrate significant changes in the desired direction for depressive symptoms for program participants ($t(451) = 2.96, p < .01, d = .16$), but not for the control group ($t(223) = 1.53, p = .13$). While initial treatment effects test and post hoc analyses seem inconsistent, in the current sample, the program group ($n = 993$) is about twice as large as the control group ($n = 477$) since the two groups were combined, based on preliminary results indicating no differences between groups (Adler-Baeder, et al., 2017). Therefore, it is more difficult to detect significant treatment effects using a RMANOVA, and for this reason, post hoc analyses results are prioritized. There was significant improvement in women's depressive symptoms for program participants only *from baseline to immediate post program follow up*. No treatment effects were found for women's depressive symptoms ($F(1, 606) = .00, p = .99$) *from baseline to six month follow up*. There was also no significant main effect for time for women's depressive symptoms ($F(1, 607) = 2.47, p = .12$). Paired samples *t*-tests indicate no significant improvements in the program ($t(399) = 1.34, p = .18$) or control group ($t(207) = .84, p = .40$). Results indicate that while there were a significant change in both

program and control groups immediately post-program, there were no sustaining effects after six months. See Figure 1 for a plot of means at each time point.

Women's General Anxiety. RMANOVAs demonstrate marginal treatment effects ($F(1, 676) = 2.79, p = .10$) for women's general anxiety *from baseline to immediate post follow up*. Post hoc paired samples *t*-tests confirmed that program participants showed significant improvements ($t(452) = 5.26, p < .001, d = .20$), whereas the control group did not ($t(224) = 1.59, p = .11$). Analyses demonstrated no treatment effects ($F(1, 609) = .039, p = .84$) but there were significant main effects for time ($F(1, 610) = 16.60, p < .001$) for women's general anxiety *from baseline to six month follow up*. Post hoc paired samples *t*-tests demonstrate that program participants ($t(402) = 3.47, p = .001, d = .20$) and control group ($t(207) = 2.16, p = .03, d = .17$) showed significant improvements. See Figure 2 for a plot of means at each time point.

Women's Relationship Quality. Results from the RMANOVAs demonstrate a significant treatment effect *from baseline to immediate post follow up* for women's relationship quality ($F(1, 667) = 5.19, p < .05$). Results from post hoc paired samples *t*-tests demonstrated significant changes in the desired direction for program participants ($t(442) = 4.17, p < .001, d = .19$); while, results for the control group demonstrated no significant changes ($t(225) = .28, p = .78$). A marginal treatment effect was demonstrated for women's relationship quality ($F(1, 590) = 3.16, p = .08$) *from baseline to six month follow up*. Results from post hoc paired samples *t*-tests demonstrated significant changes in the desired direction for program participants ($t(389) = 3.43, p = .001, d = .21$) *from baseline to six month follow up*; while results for the control group demonstrate no significant changes ($t(201) = .40, p = .69$). This indicates that program participants demonstrate both immediate and sustained improvement in relationship quality compared to nonparticipants. See Figure 3 for a plot of means at each time point.

Women's Relationship Adjustment. Marginally significant treatment effects ($F(1, 661) = 3.32, p = .07$) were found for women's relationship adjustment from *baseline to immediate post follow up*, such that program participants showed significant improvements ($t(439) = 4.81, p < .001, d = .22$), whereas the control group did not ($t(222) = 1.25, p = .21$) according to post hoc paired samples *t*-tests. No significant treatment effects ($F(1, 582) = .78, p = .38$) were demonstrated for women's relationship adjustment from *baseline to six month follow up*. There were significant main effects of time ($F(1, 583) = 25.02, p < .001$) found for women's relationship adjustment from *baseline to six month follow up*, such that both program participants ($t(387) = 3.56, p < .001, d = .21$) and control respondents ($t(195) = 3.62, p < .001, d = .08$) showed significant improvements immediately post-program when using post hoc paired samples *t*-tests. Results demonstrate that there are immediate post program benefits for participants only, and they maintain for the program group up to six months. The control group demonstrates a delayed positive change at the six month mark. See Figure 4 for a plot of means at each time point.

Men's Depressive Symptoms. Results from the RMANOVAs demonstrate no significant treatment effects from *baseline to immediate post follow up* for depressive symptoms ($F(1, 597) = 0.00, p = .99$); however, there were significant main effects ($F(1, 598) = 7.86, p < .01$). Post hoc paired samples *t*-tests demonstrated significant changes in the desired direction for depressive symptoms for program participants ($t(396) = 2.18, p < .05, d = .13$), and marginal changes for the control group ($t(201) = 2.78, p = .07, d = .21$). Results from the RMANOVAs demonstrate no significant treatment effects from *baseline to six month follow up* for men's depressive symptoms ($F(1, 533) = .09, p = .77$) and marginal main effects ($F(1, 534) = 3.31, p = .07$). Post hoc paired samples *t*-tests demonstrated marginal changes in the desired direction for

men's depressive symptoms *from baseline to six month follow up* for program participants ($t(358) = 1.69, p = .09, d = .16$), and no significant changes for the control group ($t(175) = .77, p = .44$). Men in the program group demonstrate improvements at both immediate post-program and at six months, while men in the control group show a marginal positive shift only at the immediate post-program point. See Figure 5 for a plot of means at each time point.

Men's General Anxiety. Results from the RMANOVAs demonstrate no significant treatment effects *from baseline to immediate post follow up* for men's general anxiety ($F(1, 599) = 0.77, p = .38$). There were significant main effects for general anxiety *from baseline to immediate post follow up* ($F(1, 600) = 19.09, p < .001$). Post hoc paired samples *t*-tests demonstrated significant changes in the desired direction for program participants ($t(397) = 4.20, p < .001, d = .20$), and marginal changes for the control group ($t(202) = 1.72, p = .09, d = .16$). Results demonstrate no significant treatment effects *from baseline to six month follow up* for men's general anxiety ($F(1, 536) = 1.25, p = .26$), but significant main effects ($F(1, 537) = 18.18, p < .001$). Post hoc paired samples *t*-tests, however, demonstrated significant changes in the desired direction for program participants ($t(361) = 4.44, p < .001, d = .26$), and no significant changes for the control group ($t(175) = 1.35, p = .18$). Men in the program group demonstrated improvement in their anxiety level immediately post program and at the six month follow-up, while men in the control group showed a marginal improvement only at the immediate post-program point. See Figure 6 for a plot of means at each time point.

Men's Relationship Quality. Results from the RMANOVAs demonstrate no significant treatment effects *from baseline to immediate post follow up* for men's relationship quality ($F(1, 588) = .42, p = .52$); however, there was a significant main effect for time ($F(1, 589) = 3.88, p < .05$). Post hoc paired samples *t*-tests demonstrated significant changes in the desired direction for

relationship quality for program participants ($t(387) = 2.04, p = .04, d = .13$), but no significant changes for the control group ($t(201) = 0.59, p = .55$). Results from the RMANOVAs demonstrate no significant treatment effects *from baseline to six month follow up* for men's relationship quality ($F(1, 523) = 1.61, p = .21$) nor significant main effect for time ($F(1, 524) = 1.66, p = .20$). Men in the program group reported improvements in relationship quality immediately after program completion, whereas men in the control group reported no change at either follow-up time point. See Figure 7 for a plot of means at each time point.

Men's Relationship Adjustment. Results from the RMANOVAs demonstrate no significant treatment effects *from baseline to immediate post follow up* for men's relationship adjustment ($F(1, 583) = 0.71, p = .40$). There was a main effect for time *from baseline to immediate post follow up* for relationship adjustment ($F(1, 584) = 11.94, p = .001$). However, results from post hoc paired samples *t*-tests demonstrate a significant change in the desired direction for relationship adjustment only for the program group ($t(383) = 3.26, p = .001, d = .17$), and no change for the control group ($t(200) = 1.67, p = .17$). Results from the RMANOVAs demonstrate no significant treatment effects *from baseline to six month follow up* for men's relationship adjustment ($F(1, 515) = .67, p = .41$). There was a main effect for time *from baseline to six month follow up* for men's relationship adjustment ($F(1, 516) = 28.57, p < .001$). Results from post hoc paired samples *t*-tests confirm a significant change in the desired direction for relationship adjustment for the program group ($t(347) = 4.74, p < .001, d = .25$), and significant changes for the control group ($t(168) = 2.51, p = .01, d = .16$). Results suggest that men in the program group report enhanced relationship adjustment immediately following program completion and at six months follow-up; men in the control group report enhanced relationship

adjustment only at the six month follow up. See Figure 8 for a plot of means at each time point.

Establishing Associations between Individual and Couple Changes

Structural equation modeling using AMOS software was used to test Hypothesis 2 that immediate change in depressive symptoms and general anxiety separately would predict change in couple functioning over 6 months for program participants. After fitting the original model and allowing for co-variance between related variables, we could not achieve an acceptable model fit ($\chi^2 = 691.76$, $df = 39$, $p < .001$; RMSEA = .13, $p < .001$; CFI = .79). Because the correlations between depressive symptoms and general anxiety were highly correlated at baseline ($r(1430) = .67$, $p < .001$), immediate post-program ($r(1299) = .65$, $p < .001$), and six month follow up ($r(1166) = .72$, $p < .001$), we explored the use of a latent construct of mental health to enhance the fit of the model to the data.

Confirmatory factor analyses were conducted to determine how well the factors loaded onto each latent construct. Depressive symptoms and general anxiety loaded well onto the mental health latent construct for both baseline and immediate post follow up for both men and women. Relationship quality and relationship adjustment loaded well onto the latent construct for both baseline and six month follow up for both men and women. See Table 4 for loadings.

Utilizing the latent constructs for mental health and relationship functioning resulted in acceptable model fit as indicated by several goodness-of-fit indices ($\chi^2 = 309.03$, $df = 48$, $p < .001$; RMSEA = .075, $p < .001$; CFI = .92). Models for men and women were fit simultaneously to address the issue of dependency in the dataset. The conceptual model and results for H2 is displayed in Figure 9 and immediate post-program and six month follow up scores represent residual change (i.e., immediate post-program or six month follow up accounting for baseline levels).

For women participants in CRE, greater decreases in individual mental health challenges from baseline to immediate follow up significantly predicted greater improvements in couple functioning from baseline to six month follow up ($\beta = -.09, p < .05$), controlling for all else in the model. Similarly, results for men participating in CRE indicate that greater decreases in individual mental health challenges predicted greater positive change in couple functioning from baseline to six month follow up ($\beta = -.22, p < .001$), controlling for all else in the model.

Testing Differences by Sex

Finally, the pathway between changes in mental health indicators predicting change in relationship functioning for women and men was constrained to be equal, and a delta chi-square test was conducted to test differences between the constrained and freely estimated models. It was hypothesized that the association between immediate changes in individual mental health and subsequent changes couple functioning six months later would be stronger for women than for men. The hypothesis was not supported, as results demonstrated no significant differences in the predictive path from immediate improvements in mental health to later improvements in relationship functioning for men and for women ($\Delta\chi^2 (1) = 2.14$, critical $\chi^2 = 3.84$, $p = .14$), suggesting the model functions similarly for both males and females.

Discussion

The current study added to the literature on CRE evaluations by examining changes over a six month period in mental health and relationship functioning indicators among couples randomly assigned to a participant group. Further, a main focus of the study was to explore the process of change between these variables and compare the patterns of change between men and women. Overall, the evidence indicates that program participants experienced greater improvements in both individual and couple outcomes than control participants. For women, these differences between groups were even more pronounced. Importantly, this study is the first to find evidence that for program participants even subtle immediate improvements in individual mental health indicators influence later reports of improvements in couple quality indicators. Contrary to expectations that this link over time may be stronger for women, there were no differences in this pattern by gender.

The Process of Change following CRE

While there are decades of research and several meta-analyses that explore the change in a variety of outcomes following CRE, very limited research has answered the call to begin more exploration of the processes of change following CRE (Markman & Rhodes, 2012). A few studies have tested the influence among variables theoretically and analytically (i.e., finding the best fitting model) using data collected concurrently (e.g., Bradford et al., 2014; Rauer et al., 2014); however, the current study—like only one previous studies (Adler-Baeder, Garneau, Vaughn, McGill, Harcourt, Ketring, & Smith, 2018)—explores how changes in one area at one time point influences change in another area at a later time point. Additionally only one study has examined how concurrent change in individual mental health indicators and couple functioning influence each other after participating in a CRE program (Bradford et al., 2014);

however, as noted, these data were collected concurrently. The current study sought to support and extend their findings by adding an additional measure of individual mental health and of couple functioning. Further, the current study utilized longitudinal data to examine the influence of individual mental health indicators on later couple functioning indicators, providing a more accurate test of the “spillover” process (Adler-Baeder et al., 2018). Consistent with the stress generation hypothesis (Hammen, 1991) and the results of a previous and related study (Bradford et al., 2014), we found that immediate reported improvements in anxiety and depressive symptoms predict later reported improvements in couple quality and adjustment. Importantly, this link over time was found even though shifts in indicators of mental health were subtle for women and men. From the comparison of changes between program participants and the control sample, treatment effects were more pronounced for relationship functioning, particularly for women.

This finding suggests that even if there is minimal evidence that CRE participants are demonstrating significant improvements in mental health indicators, shifts in these indicators play a role in enhancing reports of couple quality over time. There have been suggestions by an increasing number of CRE scholars to assess individual well-being indicators and to integrate a focus on individual mental health support and self-care practices in CRE curricula since, traditionally, programs have focused more exclusively on couple functioning (e.g., Adler-Baeder et al., 2010; Futris & Adler-Baeder, 2013; Bradford et al., 2014; McGill et al., 2016). This study provides support for targeting individual mental health as well in CRE programming. This knowledge is helpful not only to program developers but also facilitators. For example, facilitators can highlight the importance of addressing both domains and the association between the two when presenting program content.

Some program developers have begun integrating individual mental health factors into couple relationship education curricula. The *National Extension Relationship and Marriage Education Model* (NERMEM) (Futris & Adler-Baeder, 2013) discusses care for self as a critical core element of CRE curricula and emphasizes the need for an individual's physical, emotional, and spiritual needs to be met in order to care for their relationship. The *ELEVATE* curriculum used in the current study emphasizes care for self by teaching brief mindfulness practices to help individuals regulate physiological responses to emotional arousal. Similarly, the other curriculum utilized in the current study, *Couples Connecting Mindfully*, focuses extensively on mindfulness-based stress reduction techniques to address individual stress and promote healthy emotion regulation and communication in relationships. Research shows that mindfulness buffers effects of depressive symptoms (Buitron, Hill, & Pettit, 2017; Martin, Blair, Clark, Rock, & Hunter, 2018), is associated with reductions in various anxious and depressed symptoms (Kabat-Zinn, Massion, Kristeller, Peterson, Fletcher, Pbert, Santorelli, 1992; Desrosiers, Klemanski, & Nolen-Hoeksema, 2013), and is associated with enhanced relationship satisfaction (Kozlowski, 2013; McGill, Adler-Baeder, & Rodriguez, 2016). Incorporating self-care skills such as mindfulness into CRE curricula may be an essential goal program developers continue to pursue.

Further, since support was indicated for the spillover effect from individual mental health to couple functioning in the current study, it may also be that a similar spillover process occurs in other programming areas such as therapy, parenting education, youth social and relationship skills programs, respite care programs, and others involving interpersonal functioning. In fact, mindfulness-based stress reduction as a practice promoting individual mental health is being incorporated to a variety of programs such as school programs for children, and various types of

therapies and clinical interventions for individuals, couples, and families (Greenberg & Harris, 2012).

How Gender Influences Program Experiences

Although other research supports the notion that the association between individual mental health and couple functioning would be stronger for women than for men (H3) (Schnittger & Bird, 1990; Johnson & Jacob, 1997; Oliver, 1999), this hypothesis was not supported in this study and associations among changes in individual mental health and couple functioning were similar for men and women. It is notable that although our hypothesis was not supported, this is not necessarily an unfavorable finding. It can be considered a positive finding that both men and women demonstrated similar spillover effects from early improvements in mental health indicators to later reported improvements in relationship quality. It is also of note that the curricula used in the current study include explicit information on the link between individual mental health and self-care practices and relationship functioning. Therefore, respondents may have been more likely to report improvements in both areas. Further, the previous literature provided for support of gender differences in the strength of the link between individual mental health and relationship quality did not involve interventions. This study explored the influence between these domains over time, and that process appears to be similar for the men and women in this study who participated in the CRE programs. It still may be that the link between mental health indicators and relationship quality indicators may be stronger at a given time point for women compared to men in this study. That remains a testable question and was not the focus of this study.

Exploring CRE Efficacy

This study, similar to previous studies, first explored the efficacy of the programs for effecting improvements for the participants relative to patterns of change for a control sample. Notably, this is one of the few studies to use a random control design and include a more diverse sample of participants. We find limited evidence for treatment effects of the program: there was a significant treatment effect on relationship quality and a marginally significant treatment effect on relationship adjustment for women at the immediate post-program point. Explorations with post hoc analyses find more subtle differences in change patterns between groups. Women in participant groups reported improvements in relationship quality and relationship adjustment at six months, while women in the control groups reported improvements only in relationship adjustment at the six-month mark. Women and men participants reported significant improvements in depression immediately, and in anxiety symptoms immediately and at six-month follow-up, while women and men in the control group did not. Men in programs reported improvements in relationship quality immediately and in relationship adjustment immediately and at six-month follow-up, while men in control groups only reported improvements in relationship adjustment at six-month follow-up.

Several factors likely influence these results. First, it can be challenging to document changes in mental health indicators in a general, nonclinical sample of couples. Means for men and women for both mental health indicators were less than one on a scale of 0 to 3 at baseline, indicating that depressive symptoms and general anxiety had limited room to decrease, resulting in a “floor effect.” Secondly, there was an imbalance in the number of program and control participants. Since previous reports did not find differences between program group participants (Adler-Baeder et al., 2017), the two curriculum groups in this sample were combined for

analyses. The program group ($n = 993$) was about twice as large as the control group ($n = 477$), making interaction effects more difficult to detect. We were more likely to find main effects for time; however, these results were suspect because the larger program group most likely drives these results. Our posthoc analyses confirmed this suspicion and found that out of the 8 individual tests of change (i.e., each of 4 measures baseline-post program and baseline to six months), women participants reported statistically significant improvement in 7/8 compared to 1/8 for controls and men reported statistically significant improvement in 6/8 compared to 1/8 for controls.

There did appear to be a slight gender difference in the change reported, with women reporting improvements more consistently across measures and time. A similar finding was also noted in Bradford and colleagues' (2014) study, indicating that women showed significant changes in depression while men did not. According to research in psychotherapy, some studies show that client factors related to involvement, participation, and motivation for change may influence outcomes (Orlinsky et al., 2004), and that women tend to be more distressed, more motivated to change, and change quicker than husbands in couples' treatment (Doss, Atkins, & Christensen, 2003; Tambling & Johnson, 2008). This could be why we observed more pronounced treatment effects for women. As in clinical research, it would be beneficial in CRE research to explore variables related to motivation for change and how these influence outcomes. There are certainly other process variables that can be explored for their influence on outcomes, such as motivation for class attendance, a sense of efficacy in implementing learned skills, group participation, and class climate.

The measures of mental health indicators can also be considered. It has been suggested that gender differences that may appear in depressive symptoms may be due to the measurement

clinicians and researchers often employ (Salokangas et al., 2002). Depressive symptoms often look different for men and women, and the measure utilized for this study - the Center for Epidemiologic Studies--Depression Scale - screens for symptoms that are more consistent with women's symptoms (e.g., felt sad, felt depressed). Men's symptoms can include withdrawal but are often times more consistent with verbal aggression and externalizing behaviors, such as drug and alcohol use (Schudlich, Papp, and Cummings, 2004). This could explain the more limited evidence this, and previous studies find for improvements in men's depressive symptoms (Bradford et al., 2014). The possible limitations of the measure also restricts the application of our findings regarding the association between changes in individual mental health and changes in couple functioning in men. It is likely that using measures that assess men's mental health may find even more robust evidence between improvements in mental health and improvements in couple functioning over time.

We do note that both men and women in the control group reported significant improvements in relationship adjustment after six months. These items refer to the level of conflict in specific areas, and it appears that couples may improve in conflict experiences naturally over time. These patterns may look different for healthy couples compared to more unstable couples; however, the current study did not consider or compare the patterns of change based on baseline start points. A recent study of CRE reported that higher baseline relational instability was associated with larger decreases in women's depressive symptoms. Additionally, enhancements in relationship quality were evident for women who reported higher relationship quality and higher relationship instability before the program (McGill et al., 2016). This provides support that there may be group differences in outcomes, and this is recommended for future research.

Limitations

While there are many strengths inherent in the current study through its use of a large, diverse sample of couples, random assignment to program and control groups, and the use of three time points for testing prospective relationships between variables, there are some limitations that can be considered. A limitation of the current study is the use of self-report measures. The use of only self-report measures allows for biases such that the data used may not completely reflect true experiences of participants at baseline and during their time in the program. Likewise, a limitation involves the depression measure used in the current study, as some suggest depression manifests differently based on gender. The measure used reflects symptoms more often associated with women's symptoms (Salokangas et al., 2002; Schudlich, Papp, and Cummings, 2004). Further, the interventions in this study, Elevate and Couples Connecting Mindfully, used CRE programming that included self-care and individual mental health content, so results may be different for programs that do not include an emphasis on individual mental health. Similarly, program experience may differ depending on the severity of depressive and anxious symptoms of participants. Means for these individual mental health measures were low at all time points in the current study, resulting in a "floor effect," so it may be that more pronounced improvements may be found in samples with clinical levels of individual mental health indicators. It may also be that baseline levels of individual mental health indicators moderate the link between changes in individual mental health and couple functioning, such that more distressed individuals and couples may demonstrate greater improvements (McGill et al., 2016). Future work should explore these group differences with a sample with greater variation in mental health indicators, and consider the influence of individual mental health at baseline.

Future Directions and Conclusions

The current study provides some evidence that a diverse group of couples randomly assigned to CRE experience improvements in individual and couple outcomes as compared to nonparticipants. Importantly, this study is the first to present evidence that improvements in mental health experienced immediately post-program predict related positive change in couple functioning six months later for both men and women. The curricula used in the study emphasize individual self-care, as well as couple relationship skills; therefore, we can suggest that integrating content shown to improve individual mental health into CRE provides benefits for participants in the individual and couple domains. This study represents a first step in these types of explorations of processes of change over time. Future studies should continue to examine associations in individual mental health, and couple functioning or skills, as well as other processes and mechanisms of change by which changes in individual and relational health occur. Likely this is a dyadic and contextual process, and both research and practice will benefit from further explorations that test even more complex models of change.

Table 1. *Descriptive Statistics for Key Variables.*

Variable		Program Participants						Control Group					
		<i>N</i>	<i>M</i> (SD)	Min	Max	Skewness (SE)	Kurtosis (SE)	<i>N</i>	<i>M</i> (SD)	Min	Max	Skewness (SE)	Kurtosis (SE)
Depressive Symptoms	Time 1	502	.65 (.80)	.00	3.00	1.31(.11)	.96 (.22)	239	.69 (.80)	.00	3.00	1.35 (.16)	1.34 (.31)
		464	.49 (.71)	.00	3.00	1.73 (.11)	2.59 (.23)	229	.53 (.75)	.00	3.00	1.46 (.16)	1.36 (.32)
	Time 2	455	.52 (.74)	.00	3.00	1.65 (.11)	2.20 (.23)	226	.59 (.73)	.00	3.00	1.52 (.16)	2.02 (.32)
		400	.40 (.68)	.00	3.00	2.05 (.12)	3.85 (.24)	204	.39 (.60)	.00	3.00	1.77 (.17)	2.88 (.34)
	Time 3	403	.52 (.75)	.00	3.00	1.59 (.12)	1.88 (.24)	209	.62 (.79)	.00	3.00	1.37 (.17)	1.21 (.34)
		362	.38 (.64)	.00	3.00	2.15 (.13)	4.89 (.26)	178	.41 (.63)	.00	3.00	2.04 (.18)	4.47 (.36)
General Anxiety	Time 1	502	.93 (.82)	.00	3.00	.92 (.11)	-.05 (.22)	239	.97 (.83)	.00	3.00	.81 (.16)	.70 (.31)
		467	.72 (.72)	.00	3.00	1.13 (.11)	.70 (.23)	228	.73 (.81)	.00	3.00	1.35 (.15)	1.36 (.32)
	Time 2	455	.77 (.75)	.00	3.00	1.13 (.11)	.67 (.23)	227	.88 (.78)	.00	3.00	.97 (.16)	.35 (.32)
		399	.58 (.69)	.00	3.00	1.53 (.12)	1.95 (.24)	205	.61 (.66)	.00	3.00	1.50 (.17)	2.29 (.34)
	Time 3	406	.77 (.79)	.00	3.00	1.10 (.12)	.40 (.24)	209	.83 (.79)	.00	3.00	1.11 (.17)	.62 (.34)
		362	.54 (.65)	.00	3.00	1.53 (.13)	2.15 (.26)	179	.57 (.65)	.00	3.00	1.43 (.18)	1.89 (.36)
Relationship Quality	Time 1	493	5.57 (1.35)	1.00	7.00	-1.02 (.11)	.91 (.22)	240	5.69 (1.23)	1.00	7.00	-.96 (.16)	.70 (.31)
		456	5.72 (1.18)	1.00	7.00	-.88 (.11)	.52 (.23)	228	5.82 (1.22)	1.00	7.00	-1.13 (.16)	1.36 (.32)
	Time 2	449	5.81 (1.20)	1.00	7.00	-1.10 (.12)	1.10 (.23)	227	5.76 (1.15)	1.00	7.00	-.74 (.16)	-.11 (.32)
		399	5.87 (1.21)	1.00	7.00	-1.44 (.12)	2.84 (.24)	205	5.92 (1.04)	1.00	7.00	-.84 (.17)	.29 (.34)
	Time 3	396	5.84 (1.21)	1.00	7.00	-1.01 (.12)	.78 (.25)	203	5.80 (1.28)	1.00	7.00	-1.32 (.17)	2.01 (.34)
		356	5.92 (1.13)	1.00	7.00	-1.30 (.13)	2.46 (.26)	177	5.90 (1.16)	1.00	7.00	-1.22 (.18)	1.83 (.36)
Relationship Adjustment	Time 1	491	3.61 (.77)	1.00	5.00	-.419 (.11)	.15 (.22)	237	3.59 (.76)	1.00	5.00	-.69 (.16)	.84 (.32)
		453	3.70 (.70)	1.00	5.00	-.28 (.12)	-.15 (.23)	226	3.73 (.67)	1.00	5.00	-.60 (.16)	.88 (.32)
	Time 2	446	3.78 (.79)	1.00	5.00	-.71 (.12)	.70 (.23)	227	3.68 (.77)	1.00	5.00	-.51 (.16)	.22 (.32)
		395	3.82 (.70)	1.00	5.00	-.36 (.12)	.28 (.25)	205	3.81 (.74)	1.00	5.00	-.57 (.17)	.56 (.34)
	Time 3	395	3.77 (.74)	1.00	5.00	-.50 (.12)	.17 (.25)	198	3.80 (.77)	1.00	5.00	-.57 (.17)	.07 (.34)
		354	3.87 (.69)	1.00	5.00	-.37 (.13)	-.24 (.26)	173	3.84 (.72)	1.00	5.00	-.69 (.19)	1.23 (.37)

Men's results in bold.

Table 2
Differences at Baseline between Women and Men

Variable	Women		Men		<i>t</i>
	N	M (SD)	N	M (SD)	
Depressive Symptoms	741	.66 (.80)	693	.50 (.72)	-3.93***
General Anxiety	741	.95 (.83)	695	.72 (.75)	-5.32***
Relationship Quality	733	5.61 (1.31)	684	5.75 (1.19)	-2.14*
Relationship Adjustment	723	3.60 (.77)	679	3.71 (.69)	-2.73**

*** $p < .001$, ** $p < .01$, * $p < .05$

Table 3
Correlations among Key Variables

	Dep1	Dep2	Dep3	Anx1	Anx2	Anx3	RQ1	RQ2	RQ3	RA1	RA2	RA3
Dep1	1											
Dep2	.55***	1										
Dep3	.53***	.53***	1									
Anx1	.67***	.45***	.46***	1								
Anx2	.51***	.65***	.49***	.65***	1							
Anx3	.67***	.47***	.72***	.58***	.63***	1						
RQ1	-.36***	-.21***	-.20***	-.29***	-.18***	-.16***	1					
RQ2	-.28***	-.28***	-.23***	-.20***	-.23***	-.21***	.62***	1				
RQ3	-.24***	-.20***	-.28***	-.17***	-.18***	-.21***	.61***	.66***	1			
RA1	-.30***	-.16***	-.18***	-.30***	-.20***	-.22***	.56***	.48***	.48***	1		
RA2	-.27***	-.23***	-.22***	-.21***	-.26***	-.26***	.43***	.57***	.46***	.60***	1	
RA3	-.25***	-.20***	-.28***	-.23***	-.22***	-.29***	.42***	.46***	.61***	.60***	.59***	1

*** $p < .001$

Table 4
Factor loadings onto latent constructs according to CFA

		Variables	Loadings	
Women	Time 1	<i>Individual Mental Health</i>		
		Depressive Symptoms	.91***	
		General Anxiety	.91***	
			<i>Couple Functioning</i>	
			Relationship Quality	.88***
			Relationship Adjustment	.88***
	Time 2		<i>Individual Mental Health</i>	
			Depressive Symptoms	.91***
			General Anxiety	.91***
Time 3		<i>Couple Functioning</i>		
		Relationship Quality	.89***	
		Relationship Adjustment	.89***	
Men	Time 1	<i>Individual Mental Health</i>		
		Depressive Symptoms	.92***	
		General Anxiety	.92***	
			<i>Couple Functioning</i>	
			Relationship Quality	.89***
			Relationship Adjustment	.89***
	Time 2		<i>Individual Mental Health</i>	
			Depressive Symptoms	.91***
			General Anxiety	.91***
Time 3		<i>Couple Functioning</i>		
		Relationship Quality	.90***	
		Relationship Adjustment	.90***	

*** $p < .001$

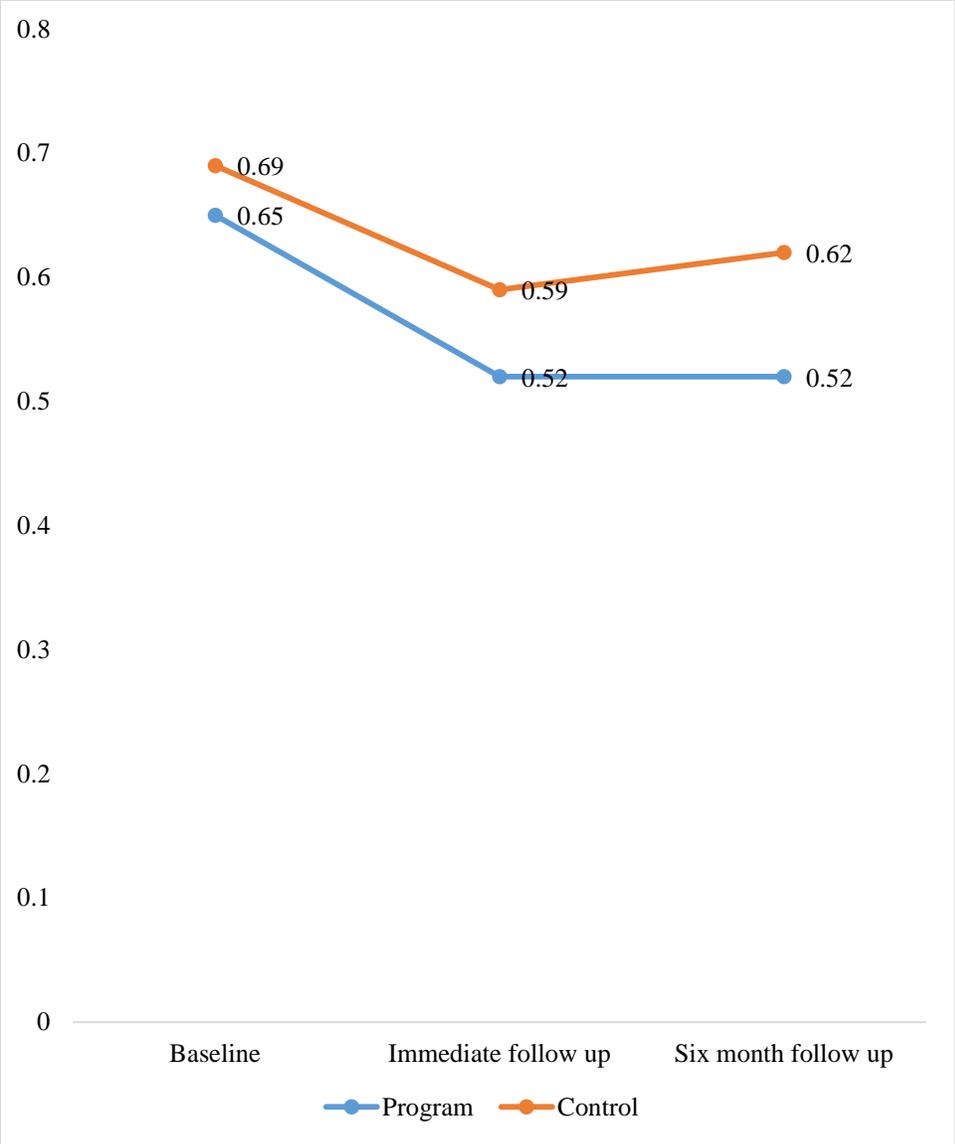


Figure 1. Means over time for women’s depressive symptoms.

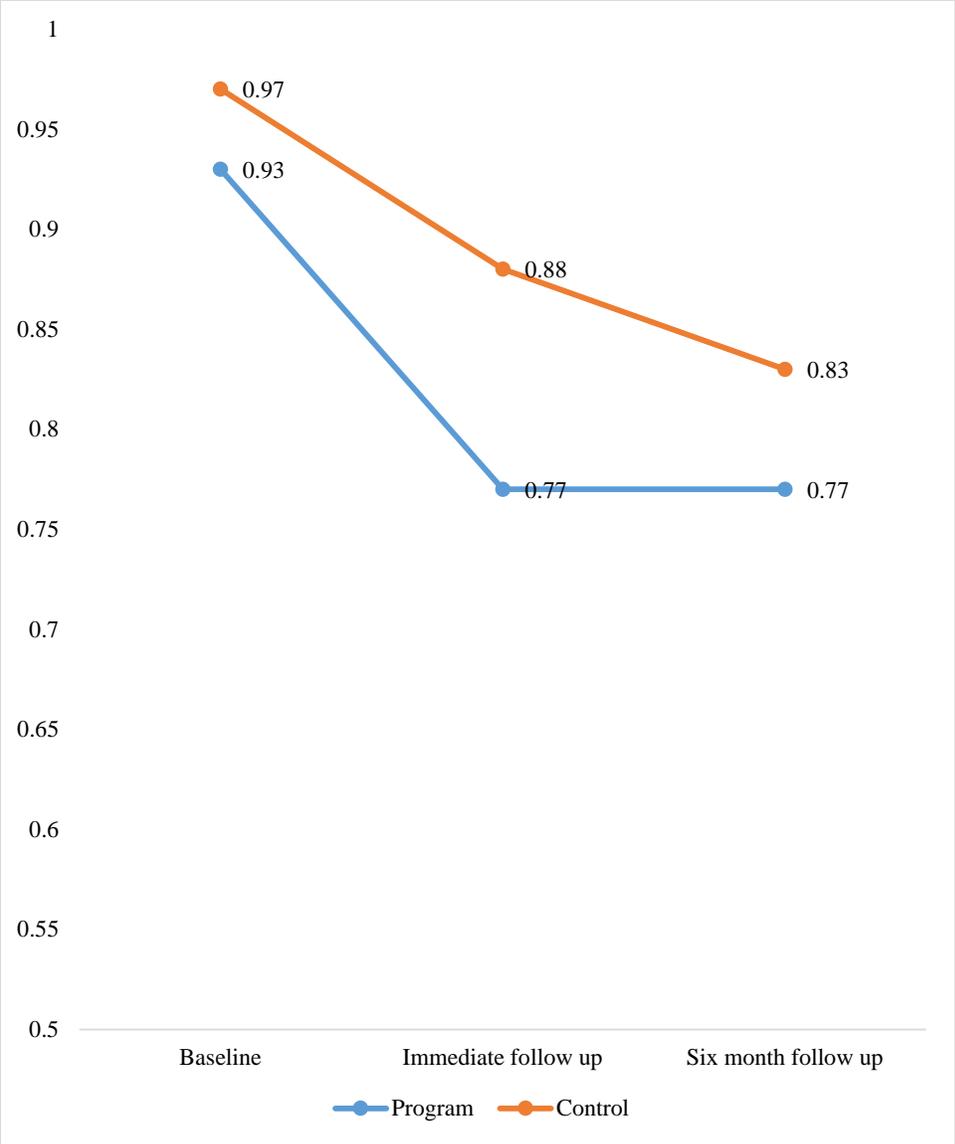


Figure 2. Means over time for women's general anxiety.

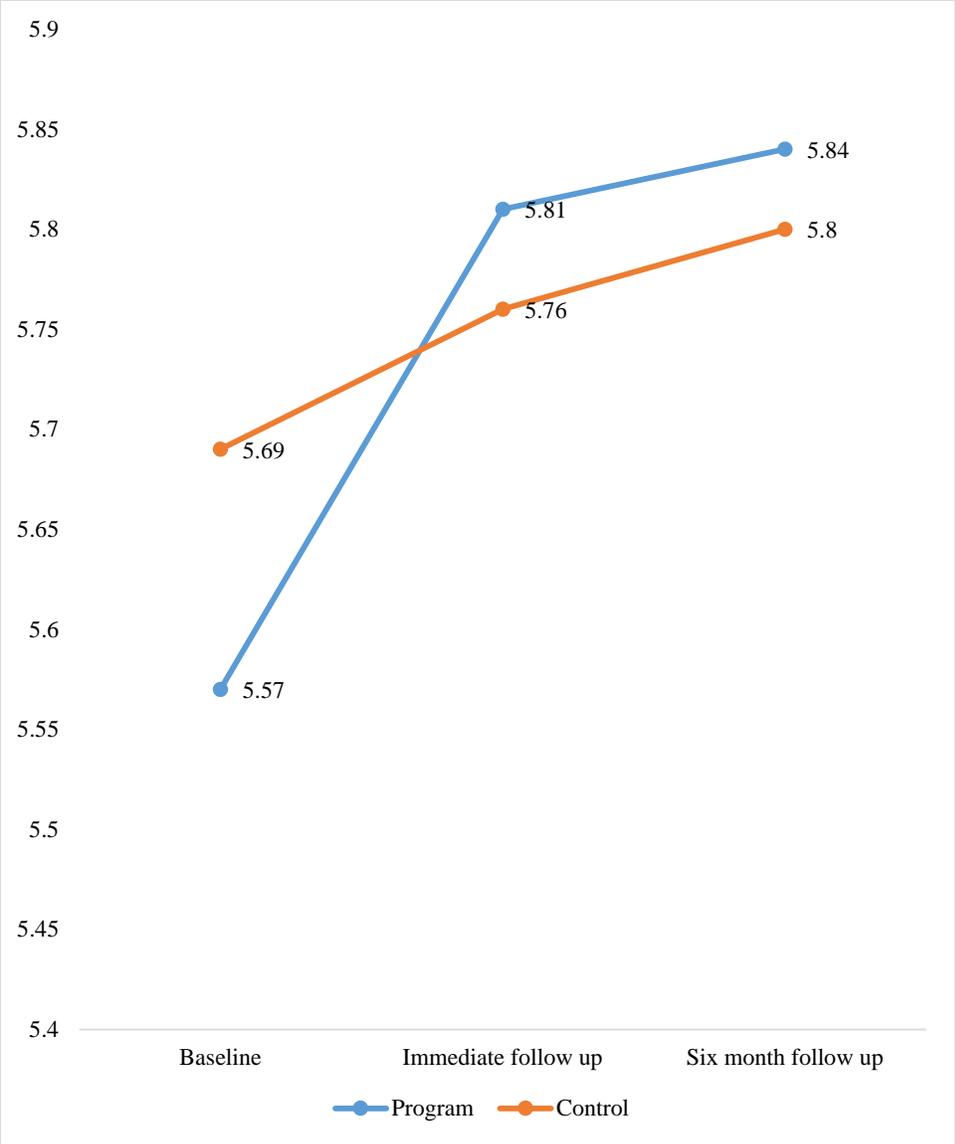


Figure 3. Means over time for women's relationship quality.

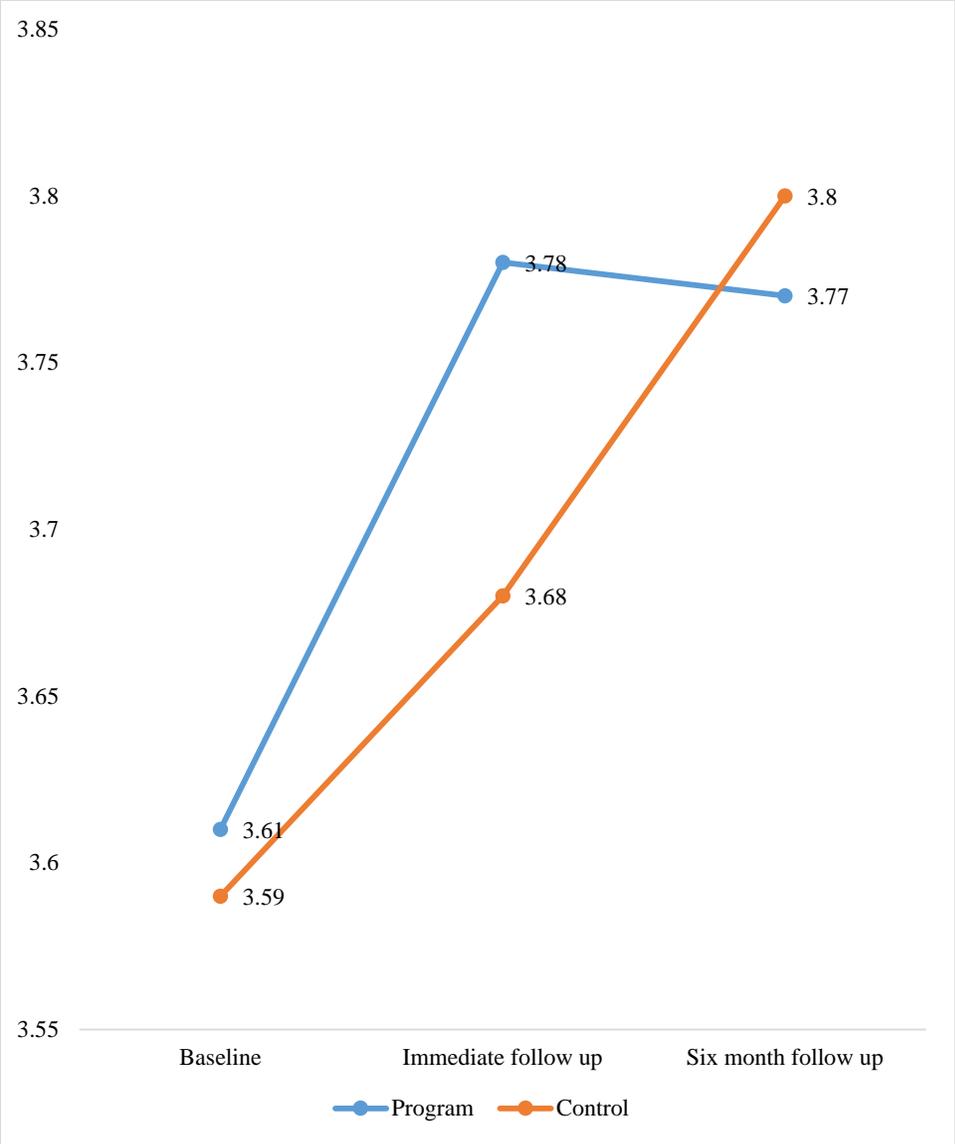


Figure 4. Means over time for women's relationship adjustment.

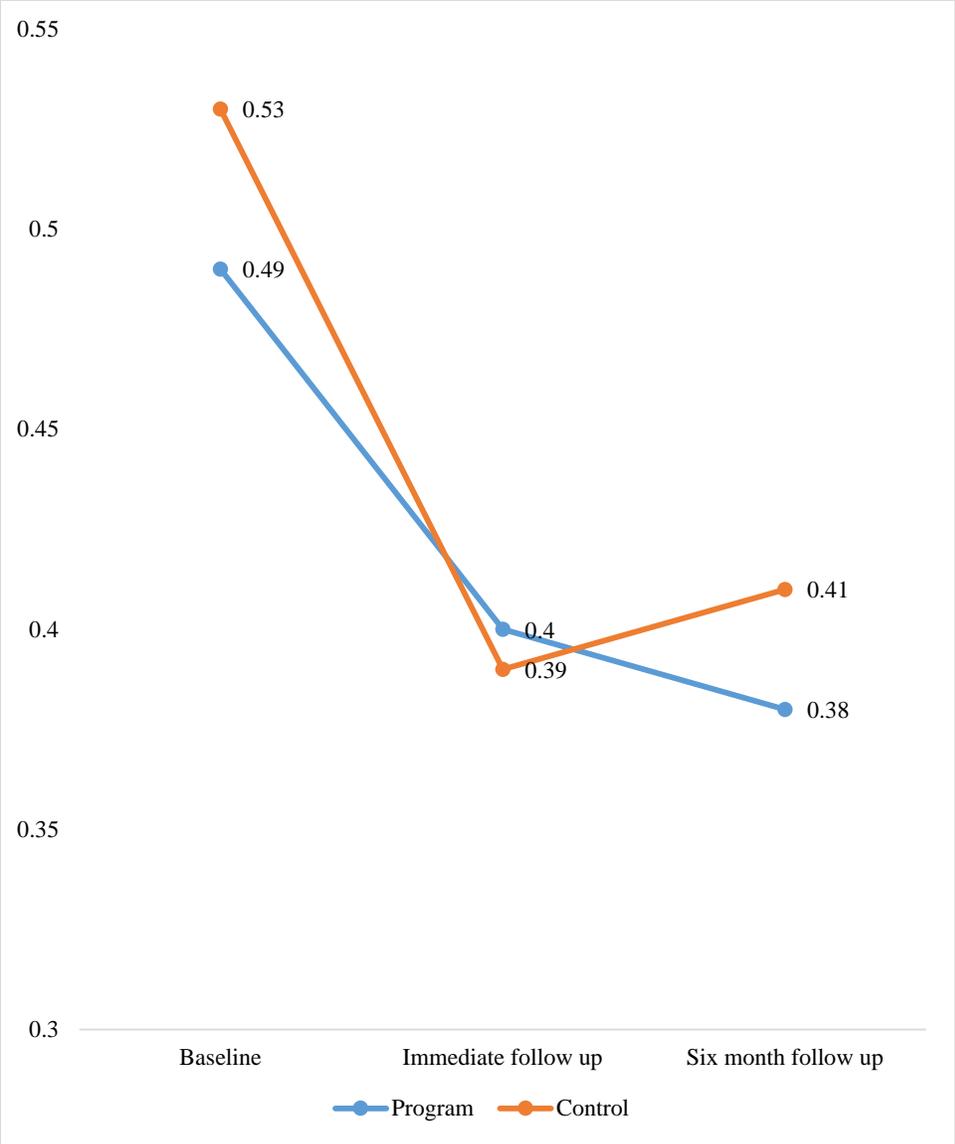


Figure 5. Means over time for men's depressive symptoms.

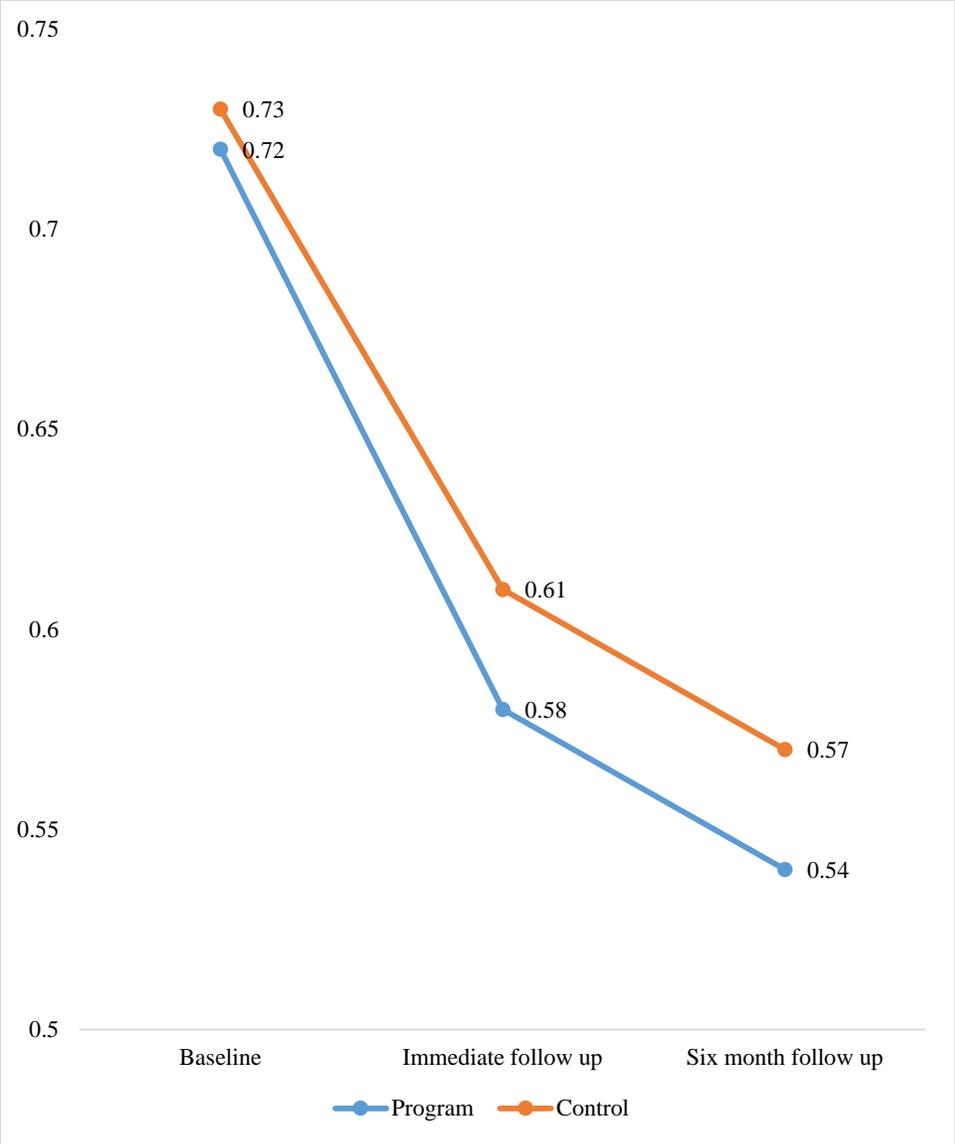


Figure 6. Means over time for men's general anxiety.

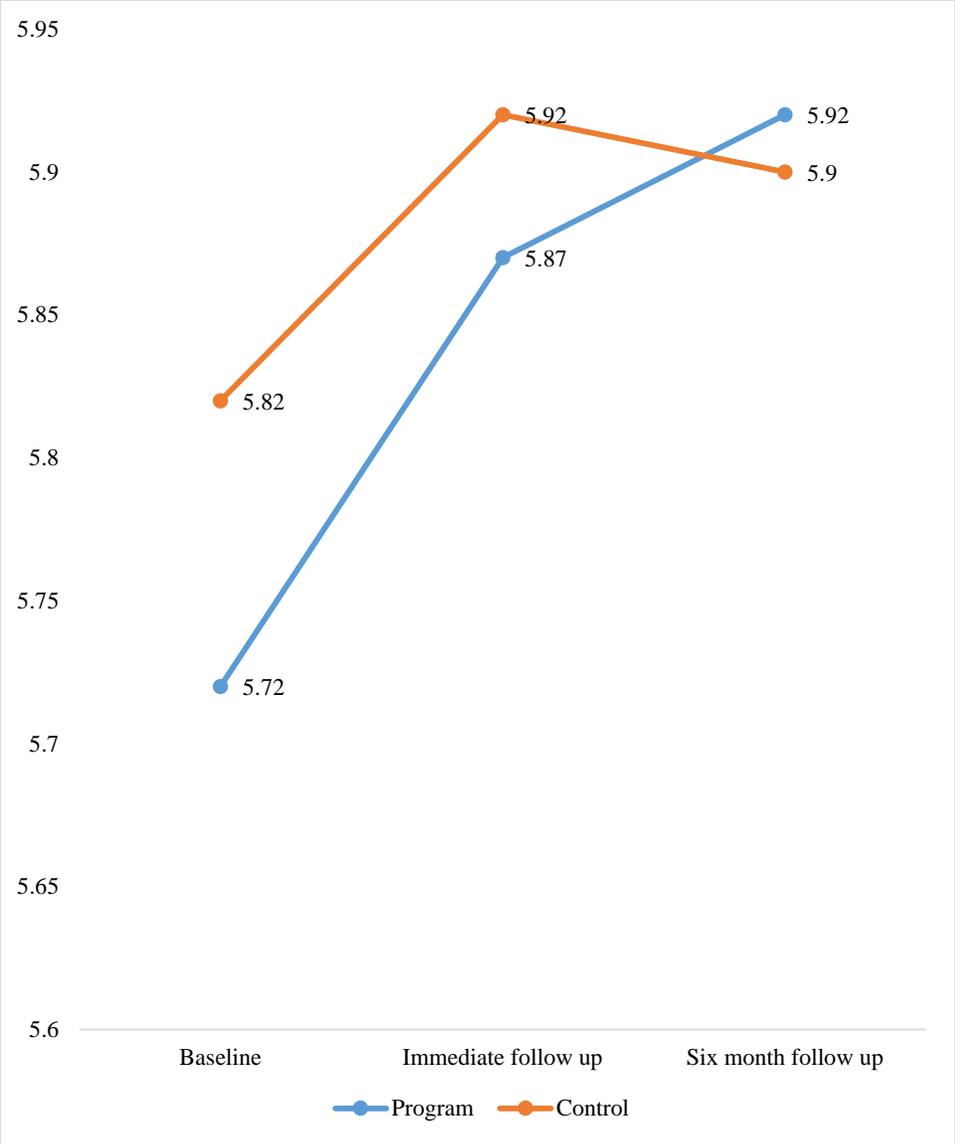


Figure 7. Means over time for men's relationship quality.

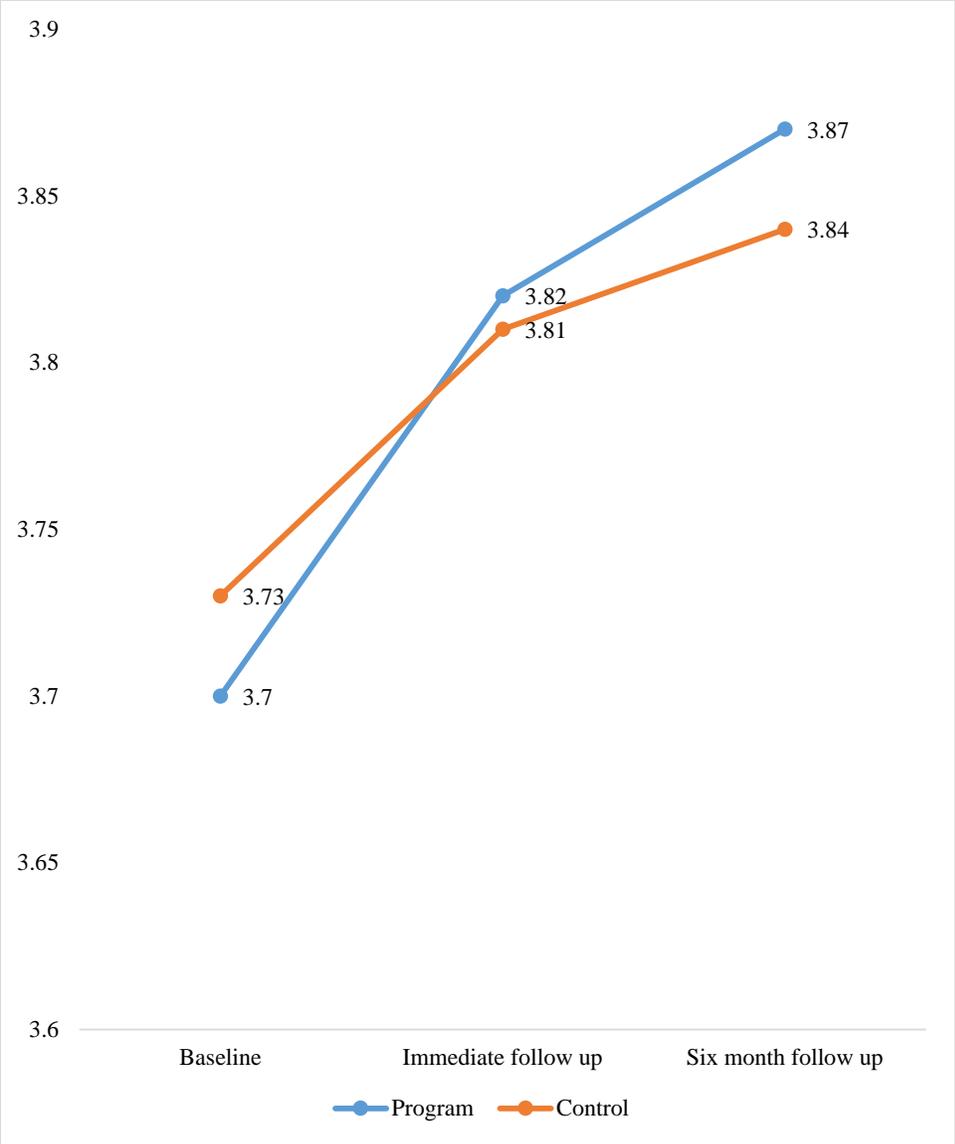


Figure 8. Means over time for men's relationship adjustment.

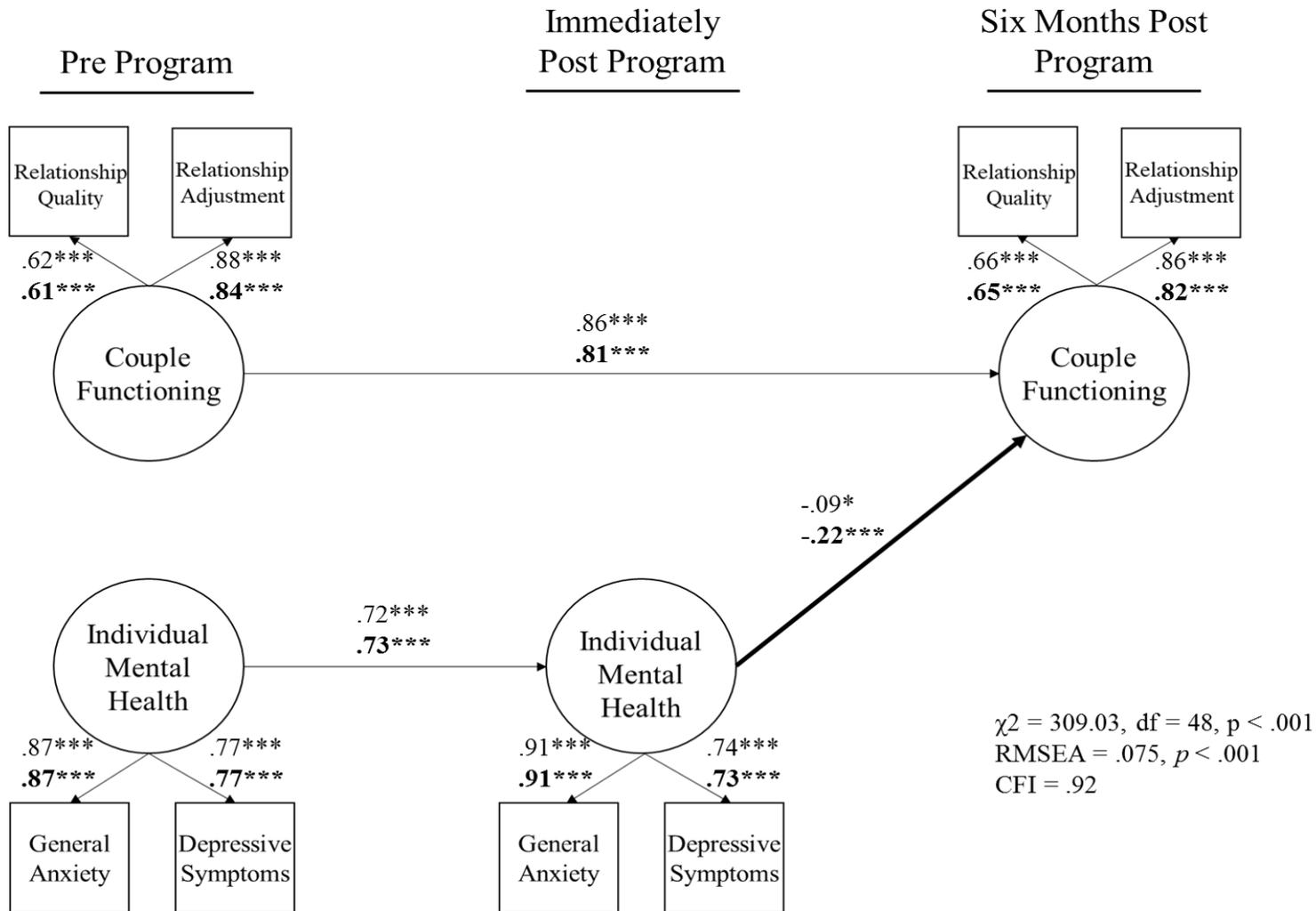


Figure 9. Standardized results demonstrating changes in individual mental health predicting changes in couple functioning for women and men (in bold).

$\chi^2 (48) = 309.03; CFI = .92; RMSEA = .075, p < .001$

$p < .001^{***}; p < .01^{**}; p < .05^*$

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