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Running head: SELF-EXPANSION MEDIATES RELATIONSHIP IMPROVEMENTS

Self-Expansion Mediates Relationship Improvements in Mindfulness Intervention

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Abstract

In a recent randomized controlled trial, couples participating in a mindfulness-based relationship enhancement program demonstrated significant improvements in relationship satisfaction and relationship distress (Carson, Carson, Gil & Baucom, 2004). Here we report on mediational analyses of these couples' improvements. Potential mediators included measures of couples' engagement in exciting self-expanding activities, couples' ability to accept one another's difficult characteristics, and individual partner's ability to relax. Results showed mutual engagement in exciting self-expanding activities was the strongest mediator, which rendered treatment assignment non-significant for both relationship distress and relationship satisfaction. Acceptance of partner demonstrated relatively mild mediation effects in both cases. Individual relaxation mildly mediated changes in relationship satisfaction, but not in relationship distress. The implications of these findings for future mindfulness research are discussed.

Self-Expansion Predicts Relationship Improvements In Mindfulness Intervention

Research into mindfulness training—that is, the practice of focusing on the reality of the present moment, accepting and opening to it, without getting caught up in elaborative thoughts or emotional reactions to situations (Kabat-Zinn, 1990)—has greatly expanded over the past several years. Mindfulness meditation interventions have now been shown to be helpful in helping individuals cope more effectively with illness and stress in a variety of non-clinical (e.g., Shapiro, Schwartz, & Bonner, 1998) and clinical populations (depression, Teasdale et al., 2000; cancer, Speca, Carlson, Goodey, & Angen, 2000; psoriasis, Kabat-Zinn et al., 1998).

More recently, interest has grown in studying the effects of mindfulness training on couple functioning. We recently published a report on the first known test of a mindfulness program provided to couples (Carson, Carson, Gil & Baucom, 2004). This program was specifically designed to enrich the relationships of relatively happy, non-distressed couples. The 8-week intervention was directly modeled on Kabat-Zinn's mindfulness program (for a complete description, see Kabat-Zinn, 1990, and Kabat-Zinn & Santorelli, 1999), but included modifications to meet needs specific to working with non-distressed couples to enhance their relationships. Principal adaptations included: (a) greater emphasis on loving-kindness meditations (Carson et al. 2005), with a particular focus on one's partner; (b) incorporation of partner versions of yoga posture exercises, in which partners physically supported and facilitated one another in the performance of therapeutic, often pleasurable postures; (c) mindful touch exercises, with each partner paying close attention to the giving and receiving of a gentle back rub, followed by dyadic discussion of the implications of this for sensual intimacy (i.e., sensate focus, Spence, 1997); (d) a dyadic eye gazing exercise (adapted from

Levine & Levine, 1995), with partners acknowledging and welcoming the deep-down goodness in one another; (e) application of mindfulness to relationship difficulties; and (f) the context for practicing various mindfulness skills, both in-session and at home, was tailored to bring couples' relationships into focus (e.g., partners were encouraged to be more aware during *shared* pleasant activities, unpleasant activities, and stressful interactions, and to discuss and keep daily records about new understandings arising from such interactions). In addition, group discussion and didactic components provided opportunities to consider the impact of these exercises on relationship functioning. For a fuller description see Carson, Carson, Gil and Baucom, in press.

Results from this randomized, wait-list controlled trial suggested the intervention was efficacious in favorably impacting the principal outcomes of the trial, that is, couples' levels of relationship satisfaction and relationship distress. Several other aspects of couples' relationships also improved during the intervention (see Carson et al., 2004).

The results from this trial also provided empirical support for some of the theoretical reasons we had proposed for why a mindful approach to enhancing relational functioning might be effective (Carson et al., 2004). First, we had proposed that while mindfulness training does not aim at inducing relaxation per se, most likely mindfulness in fact often does promote the relaxation response in a fashion similar to other meditation techniques (e.g., Benson, Beary, & Carol, 1974). Psychophysiologicaly the relaxation response results in changes which are the mirror opposite of stress-induced hyperarousal. Researchers have suggested that psychophysiologicaly soothing techniques are likely to translate into a calmer approach to shared difficulties and challenges (Gottman, 1993). Based on the hypothesis that relaxation levels would change in the individuals participating in the intervention, we included

a measure of this process, and indeed individual relaxation improved in a strongly significant manner during the trial.

Secondly, we proposed that acceptance of one's partner would increase among couples during the intervention. Mindfulness training places a fundamental emphasis on the acceptance of one's experiences without judgment. Notably, theorists in the area of enhancement of healthy relationships endorse the importance of acceptance (Wenzel & Harvey, 2001), as do numerous marital therapy researchers (e.g., Christensen & Jacobson, 2000). We therefore also measured acceptance of partner, and this variable also increased significantly in the trial.

A third process that we proposed would change was self-expansion (Aron & Aron, 1997; Aron, Norman, Aron & Lewandowski, 2002). The practice of mindfulness is often experienced as self-broadening, leading to attitudinal transformations which are expressed in terms of a greater sense of trust, love for others, and connectedness with a greater *whole* (Astin, 1997; Carson et al., 2004; Kabat-Zinn, 1993; Shapiro et al., 1998). Such changes fit well with a prominent perspective on close relationships, Aron and Aron's self-expansion model. This model proposes that expansion of "self" is a fundamental human motivation, and that close relationships are an especially satisfying means to self-expansion. These authors' studies have shown that relationship satisfaction increases through mutual engagement in exciting, self-expanding activities, including those leading to "the discovery of linkages, wisdom, their position in the universe" (Aron & Aron, 1997, p. 252). These are precisely the types of experiences that mindfulness meditators often report. Hence our trial included a measure of changes in couples' participation in activities they considered "exciting", and this measure likewise showed strong intervention-related increases.¹

Given that all three of these proposed processes of change—individual relaxation, partners' ability to accept one another, and couples' joint participation in exciting, self-expanding activities—significantly increased during couples-based mindfulness training, the question remained as to the relative importance of these processes. Several recent reviewers of the mindfulness literature (e.g., Baer, 2003; Grossman, Niemann, Schmidt & Walach, 2004) have emphasized the need to investigate the mechanisms responsible for treatment-related changes. The purpose of the present investigation was to conduct mediational analyses to determine which process of change could best account for the significant improvements seen in couples' levels of relationship distress and relationship satisfaction.

Method

Participants

The participants were 44 non-distressed heterosexual couples (22 intervention, 22 wait-list) recruited principally from employees and their partners at a major hospital via advertisements placed in employee newsletters and gathering places. To qualify for the investigation, a couple had to be married or cohabitating for at least 12 months, surpass relationship distress and psychological distress cut-off criteria (T score of 58 on the Global Distress Scale, Snyder, 1997; T score of 65 on the General Severity Index of the Brief Symptom Inventory, Derogatis & Melisaratos, 1983), and could not be practicing meditation or yoga posture exercises on a regular basis. The mean age of the participating women was 37 years ($SD = 10.9$, range 23 to 69) and of the men was 39 years ($SD = 12.4$, range 24 to 69). Both the women and men were mostly very well-educated (82% of women and 63% of men had done graduate level studies), had at least one child, and all were Caucasian except for one

African American woman. Thirty-seven couples were married, and 7 were cohabitating. The mean duration of their relationships was 11 years.

Measures

Measures were administered before and after the intervention. The scope of instruments described in this report is limited to the two principal outcomes of the study (relationship satisfaction, relationship distress) and the three expected processes of change which were to be tested as mediators (individual relaxation, acceptance of partner, joint participation in exciting activities).

Quality of Marriage Index (QMI). The QMI (Norton, 1983) utilizes 6 Likert-type items to assess global relationship satisfaction (e.g., “We have a good relationship”). This measure has demonstrated high internal consistency (alpha coefficient for both women and men = 0.97) and excellent convergent and discriminant validity (Heyman, Sayers, & Bellack, 1994). Internal consistency in the current study was also good (α for women = 0.95, for men = 0.86). The QMI correlates very highly ($r = 0.85$ for women, 0.87 for men) with the most commonly used measure of marital functioning, the 32-item Dyadic Adjustment Scale (DAS; Spanier, 1976), and has been deemed equivalent to the DAS for many purposes (Heyman et al., 1994).

Global Distress Scale (GDS) from the Marital Satisfaction Inventory-Revised (MSI-R). The GDS (Snyder, 1997) is a widely used scale of relationship distress in couples comprised of 22 true-false items, with responses summarized into normalized T -scores in which higher scores reflect greater discontent with the relationship. Snyder (1997) has reported high internal consistency for the GDS (α for both women and men = 0.91), and provided data supporting its criterion, discriminant, and construct validity. Internal reliability

in the current study was good (α for women = 0.75, for men = 0.76). Analyses have validated use of the GDS with non-clinical samples (Snyder, 1997).

Individual Relaxation Index (IRI). The IRI was devised for this study to assess each individual's perception of his or her ability to relax. This was measured by two items (e.g., "Over the past two months, how easy has it been for you to wind down and relax at the end of the day?") marked on 100-mm VAS scales. The alpha coefficients for the IRI were good (for women 0.81, for men 0.76).

Acceptance of Partner Index (API). The API was devised for this study as an index of relational processes that were expected to change as a result of participation in the mindfulness intervention (i.e., perception of ability to accept difficult characteristics in the partner or relationship). This process was measured by two items (e.g., "Considering characteristics of your partner, or your relationship, which you find difficult to deal with, over the last two months how easy has it been for you to stop struggling and just allow such things to be?"), with responses indicated by marking 100-mm VAS scales. The alpha coefficients for API were good (for women 0.81, for men 0.87).

Exciting Activities Index (EAI). The EAI was devised for this study as an index of couples' joint participation in activities they considered exciting. This process was measured by two items (e.g., "How exciting are the things you have been doing together with your partner in the past two months?"), with responses indicated by marking 100-mm VAS scales.) The alpha coefficients for EAI were good (0.85 for both women and men).

General Procedures

For a full description of the study procedures, including assessment methods, the content of the intervention, and treatment integrity procedures, please see our recently published paper (Carson et al., 2004).

Results

Mediation analyses were performed to determine whether significant improvements in relationship distress and relationship satisfaction were mediated by changes in any of the three proposed mediating factors. For all mediation tests, the interdependency of male and female scores was handled by calculating averaged residualized couple scores (mean of partners' adjusted post scores; Wampler & Sprenkle, 1980) because (a) treatment of gender as a repeated within-subjects factor in these regression models was statistically very complicated, and (b) no significant gender differences had been detected in outcomes for these measures.

Mediation is generally said to occur when the relationship between a predictor and criterion is accounted for by another variable(s) (Baron & Kenny, 1986). To test such a hypothesis, the following steps were necessary:

1. Regression models had to demonstrate that treatment condition predicted significant differential changes in the adjusted post scores of potential mediating variables. As previously described, all three proposed mediating factors had shown such changes.
2. For each potential mediator that had been shown significant in the first step, the variable had to be shown to significantly predict adjusted post scores for one or both of the criterion variables—relationship distress and relationship satisfaction—while controlling for the effect of treatment condition.

3. Evidence of mediation was present if treatment condition became nonsignificant in these models (partial mediation was indicated by reduction in significance).

Separate regression models were constructed for the two criterion variables—adjusted post scores for relationship satisfaction, and for relationship distress—with treatment condition and the adjusted post scores of each of the potential mediator variables as predictors. As illustrated in Figures 1a-c, these tests gave evidence that improvements in relationship satisfaction were largely mediated by the exciting activities variable. Comparisons between regression models in which relationship satisfaction was predicted from treatment condition alone, versus treatment condition plus exciting activities, showed that the effect size (beta coefficient) for treatment condition was reduced 57% by inclusion of the exciting activities factor ($b = 3.020$ vs. 1.307), and the corresponding significance values went from highly significant to non-significant ($p = .000$ vs. $.083$). The other potential mediators demonstrated only mild mediation effects on relationship satisfaction. The acceptance of partner factor reduced the effect size of treatment condition by 27% ($b = 3.020$ vs. 2.190 , $p = .000$ vs. $.011$), while the individual relaxation factor accounted for 26% of its effect ($b = 3.020$ vs. 2.248 , $p = .000$ vs. $.011$).

The mediation effects of these variables on relationship distress were somewhat different, as shown in Figures 1d-e. Both exciting activities and acceptance of partner sufficiently reduced the effect size of treatment condition to make it no longer significant; individual relaxation, however, did not demonstrate a mediation relationship. Again, the strongest mediation was produced by the exciting activities variable, which was shown to reduce the effect size for treatment condition by 61% ($b = -2.01$ vs. -0.79 , $p = .022$ vs. $.389$). Acceptance of partner reduced the effect size by 46% ($b = -2.01$ vs. -1.08 , $p = .022$ vs. $.217$).

Discussion

Of the three potential mediating factors for relationship quality improvements—individuals' ability to relax, partners' ability to accept one another's difficult characteristics, and couples' joint participation in exciting self-expanding activities—the best was found to be the exciting activities variable. This measure rendered treatment condition non-significant in both tests, accounting for 57% of treatment-related improvements in relationship satisfaction and 61% of decreases in relationship distress. The other two factors had much weaker mediation effects. Acceptance of partner demonstrated relatively mild mediation effects in both cases. Individual relaxation mildly mediated changes in relationship satisfaction, but not in relationship distress.

This finding tends to confirm our thesis that partners would experience couples-based mindfulness training intervention as exciting and hence as self-expanding as described by Aron and Aron (1997). According to Aron and Aron's model, in close relationships the "self" is cognitively expanded or broadened by inclusion of "other" in the self. An important process suggested by this model is that changes in relationship satisfaction over time are linked to changes in experiences of, and perceived opportunities for, self-expansion in the context of the relationship. Self-expanding experiences can be distinguished in terms of two key dimensions, novelty and arousal, which in ordinary language are subsumed by the single term "exciting" (Aron, Norman, Aron & Lewandowski, 2002). Aron and Aron's studies have shown that activities which couples describe as exciting tend to be of two types: those with high levels of physical activity, such as dancing and hiking (arousal dimension); or those characterized by newness or exoticness, such as attending musical concerts, and studying nature (novelty dimension). Several correlational and experimental studies (e.g., Reissman, Aron, & Bergen,

1993) have shown that such exciting activities are positively correlated with and prospectively predictive of marital satisfaction.

Several lines of evidence suggested that self-expansion which plausibly would be advanced through couples-based mindfulness training. First of all, as proposed by Aron and Aron (1997), for many persons self-expanding experiences include those characterized by fresh discovery of a deeply meaningful sense of connectedness to a greater whole, or greater wisdom, deeper insight, expanded spirituality, etc. These types of experiences have been commonly reported by persons practicing meditation (Astin, 1997; Carson et al., 2004; Kabat-Zinn, 1993; Shapiro et al., 1998; Smith et al., 1996). Studies of meditators have also found that subjective reports of mental calm and clarity often correlate with indicators of increased physiological alertness (Shapiro & Walsh, 1984). The mindfulness approach to meditation, in particular, emphasizes that in the process of learning to pay attention to present-moment happenings, practitioners continually discover new and interesting aspects of their experience (i.e., features which are novel and arousing). And although the actual time an individual spends in meditation is usually not personally interactive, much of the process and content of meditative experience is part of a common domain, and resultant insights, feelings, and behavioral changes are eminently shareable with others. Thus it was reasonable to expect that partners' joint participation in meditation could enhance their relationship through greater self-expansion.

Secondly, yoga posture exercises performed in a mindful manner were a principal component of our couples program. Yoga posture exercises bend and stretch the body in unusual ways, and thus are intensely stimulating (though ultimately relaxing), and hence fit with the arousing dimension of self-expanding activities. Moreover, the incorporation of the

“partner” approach to yoga postures involved partners suddenly finding themselves in physical contact while in novel, often pleasurable positions (frequently accompanied by sounds of laughter and spontaneous expressions of pleasure), thus fitting with the novel dimension of self-expanding activities.

To summarize, specific elements of the couples-based mindfulness program that seemed to offer an exciting, self-expanding appeal were the practice of mindfulness meditation itself, and the yoga posture exercises (especially the partner version). Conceivably, additional components such as mindful touch exercises and breath synchronization could also have self-expansion effects.

Many readers may find it surprising that exciting self-expanding activities trumped individual relaxation and acceptance of partner as the strongest mediator of mindfulness training-related improvements in couples’ relationships. However, this is the first study that has ever even considered the role that exciting activities/self-expansion might have in promoting positive changes in mindfulness interventions. More research is needed to confirm the self-expansion effects of couples-based mindfulness training. Also, mediational analyses are needed for mindfulness-based programs delivered to groups of individuals (e.g., mindfulness-based stress reduction), which could include not only the potential role of self-expansion on an individual basis, but also changes in acceptance (deemed by experts such as Kabat-Zinn to be crucial to the practice of mindfulness), relaxation, and in mindfulness itself (i.e., moment-to-moment awareness).

A limitation to our present findings comes from the fact that couples in this study did not directly rate the mindfulness program in terms of its “exciting” quality. However, the only known explanatory factor that could account for differential changes in couples’ ratings of

exciting activities was whether they were assigned to the intervention versus control condition. Nonetheless, to confirm our interpretations of results, future studies should directly measure the degree to which participants explicitly rate the couples mindfulness program as exciting. It would also be important to obtain such ratings for specific components of the program, such as the practice of sitting meditation and the yoga postures. Another limitation of our study lies in our methods of measuring potential mediators. At the time we began the study, we were unable to locate appropriate, validated measures of exciting activities/self-expansion, acceptance of partner, individual relaxation, or mindfulness itself. We therefore devised brief measures of exciting activities, acceptance of partner, and individual relaxation as an initial step toward investigating processes of change in couples-based mindfulness training. We also considered devising a similar measure of mindfulness, but concluded that a brief measure of whether individuals were aware of their moment-to-moment experiences would be very difficult to formulate. Since that time, however, validated measures of mindfulness have become available (e.g., Brown & Ryan, 2003), and appropriate measures of acceptance and relaxation may also become available. Clearly, future mediational investigations should utilize the best measurement instruments available.

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Footnotes

¹ For parsimony's sake, however, we did not report on changes in this variable in our Carson et al., 2004 paper (but did report this elsewhere, see Carson, 2002).

References

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Author

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Chapter Title

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Figure 1. Diagrams illustrating mediation effects on coefficients of the relationship between treatment condition and posttest improvements in relationship satisfaction (5a-c) and relationship distress (5d-e).

