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The Heart of Change: Acceptance and Intimacy Mediate Treatment Response in a Brief Couples Intervention

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In this study, we examined mediators of a brief couples intervention. Intimate safety, acceptance, and activation were examined in 2 roles: their contribution to marital satisfaction gains in the first 2 weeks after treatment (contemporaneous effects), and how early changes in the mediators influenced longer term changes in marital satisfaction over 2 years of follow-up (lagged effects). Married couples ($N = 215$) were randomized to either an intervention group or a wait-list control group and followed for 2 years. Latent change-score models were used to examine contemporaneous and time-lagged mediation. A booster intervention in the 2nd year was used for a replication study. Changes in intimate safety and acceptance were uniquely associated with contemporaneous treatment effects on relationship satisfaction in Year 1, but only acceptance was uniquely associated with contemporaneous effects in Year 2. With respect to lagged effects, early changes in acceptance partially mediated later changes in marital satisfaction in Year 1, whereas the same effect for intimate safety was marginally significant. These lagged paths were moderate in size and indirect effects were small. No lagged effects were significant in Year 2. Change in activation was not significant as either a contemporaneous or a lagged predictor of change in relationship satisfaction. We found moderate support for acceptance and more limited support for intimate safety as mediators of short- and long-term treatment response, suggesting that these processes play an important role in sustaining marital health.

Keywords: marriage, mediation, brief intervention, acceptance, intimacy

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A stream of reviews over the past 15 years has revealed few studies and little empirical support for hypothesized mechanisms of change in relationship interventions (Lebow, 2000; Snyder, Castellani & Whisman, 2006; Wadsworth & Markman, 2012; Bradbury & Lavner, 2012), despite increasingly widespread agreement of the importance of process research among couples researchers (Wadsworth & Markman, 2012) and within the broader psychotherapy research community (Kazdin, 2001). The paucity of findings for change mechanisms is not just an issue for relationship research, but as Kazdin has repeatedly noted, it is a shortcoming of psychotherapy research in general (Kazdin, 2001; Kazdin, 2007). Kazdin (2007) suggested a number of important reasons to understand mechanisms of change, including (a) understanding the critical components necessary to build better treatments; (b) understanding which components must not be diluted in transition from the lab to more resource-limited, real-world settings; (c) bringing order and parsimony to the broad array of treatments currently available; (d) clarifying the connection between treatment and a broad range of more distal outcomes; and (e) identifying moderators of treatment.

For the present study, we examined mediators of change in the Marriage Checkup (MC; Cordova et al., 2005; Cordova et al., 2014), a brief, preventive treatment for couples at risk for relationship deterioration. We situate the theory of change operationalized in MC treatment in the existing body of process research and discuss methodological considerations and recent statistical innovations that enable us to best marry the theory of change to the analytic method. We modeled couples' processes of change as occurring in two discrete stages: an early period surrounding the intervention, when couples achieve rapid gains in both mediator and outcome variables, and a longer term follow-up period, when early gains in mediators may operate to prevent the subsequent deterioration of relationship satisfaction.

Process Research in Couples Interventions

Christensen and colleagues (Christensen, 2010; Benson, McGinn, & Christensen, 2012) have argued that couples interventions are unified by their influence on five common principles that underlie all of the changes in marital satisfaction created by these interventions. The principles are (a) facilitating shared narratives and dyadic views of the relationship; (b) modifying dysfunctional interactional behavior, e.g., physical or emotional abuse; (c) eliciting avoided private behavior; (d) improving communication; and (e) promoting strengths. Although Christensen and colleagues created this framework with specific reference to couple therapy, we believe these principles are also usefully applied as an organizing framework for brief, preventive, relationship treatments.

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Two main types of interventions target the prevention of couple distress: skills-based relationship education, and assessment and feedback interventions (Halford & Snyder, 2012). Skills-based interventions, such as the Premarital Relationship Enhancement Program (PREP; Markman, Renick, Floyd, Stanley, & Clements, 1993), Couple CARE (Halford, Moore, Wilson, Dyer, & Farrugia, 2006), and Relationship Enhancement (Guerney & Maxson, 1990) primarily target satisfied couples and aim to change risk factors that have been identified as both malleable and useful in forecasting long-term trajectories of relationship satisfaction. These programs impart knowledge and skills in a curriculum format. Although the interventions vary with respect to their content and may touch on any of Christensen's (2010) proposed common principles, the most central and recurring theme is a focus on improving communication (Halford & Snyder, 2012).

Research on mediators of change in skills interventions has been inconclusive, with few studies showing associations between changes in skills and changes in marital satisfaction (for reviews, see Wadsworth & Markman, 2012, and Halford & Snyder, 2012), and some studies showing associations that were directionally opposite from their hypotheses (Baucom, Hahlweg, Atkins, Engl, & Thurmaier, 2006; Schilling, Baucom, Burnett, Allen, & Ragland, 2003). Several hypotheses have been put forth to reconcile these inconsistencies, including the possibility that benefits are driven by couples with the poorest baseline skills (Halford & Snyder, 2012) and the possibility that distressed couples are not deficient in skills, but simply do not employ them at home (Snyder & Schneider, 2002). It may also be the case that topographically similar behaviors function differently in the context of different kinds of relationships (e.g., McNulty, 2010).

In their examination of mediation effects in couple therapy, Doss, Thum, Sevier, Atkins, and Christensen (2005) showed that behavior change mediated gains in the first half of therapy, whereas acceptance mediated gains in both the first and second halves of therapy. A notable difference between that study and the present one is that Doss and colleagues examined only contemporaneous effects, limiting the degree to which they could discern causal direction.

To our knowledge, no published studies have tested hypothesized mediators in assessment and feedback interventions, perhaps because there have been fewer of them (Halford & Snyder, 2012); in addition, their individually tailored nature implies more complex or multifaceted mediating processes. Assessment and feedback interventions such as PREPARE/ENRICH (Olson, Fournier, & Druckman, 1996), the Relationship Evaluation Questionnaire (RELATE; Busby, Holman, & Taniguchi, 2001), and the MC (Cordova et al., 2014) involve the administering of batteries of questionnaires and the results are used to provide feedback designed to help couples consolidate strengths and address weaknesses. These interventions may also include other targeted, within-session components, such as the MC's focus on building intimacy bridges (Ippolito Morrill & Cordova, 2010). In some respects, process researchers of individually tailored interventions such as the MC may face a complex task, because the proximal targets of change may be different between couples. For example, some couples might learn communication skills, and others might work on identifying their relational patterns of behavior or increasing avenues for expressing affection. However, the complexity of process research depends not just upon topological differences in

the treatment approach, but also upon the underlying theory of change. For example, the MC teaches communication skills to some couples in the direct service of fostering a more intimate and accepting atmosphere in the relationship. In this vein, Doss and colleagues (2005) suggested that one potential reason that much mediation research in couples interventions has been unsuccessful is that interventions may target and measure one inactive ingredient, but actually hit another, active ingredient. Under this reasoning, interventions would only be successful to the extent that they moved the "true" mediator. Supporting this hypothesis, Rogge, Cobb, Lawrence, Johnson, and Bradbury (2013) found that skills interventions have had poorer results with respect to the skills they targeted, but produced positive effects in other, untargeted domains, implying that relationship skills may not be the active ingredient in skills-based interventions.

Doss and colleagues (2005) also suggested that the failure of tertiary couple therapy to demonstrate mediating relationships could be due in part to pre-post designs that do not disentangle the nuances of change, nor do they adequately reflect the theoretical model. Conceptualizing processes as occurring in phases is particularly relevant to brief interventions, whose effects may consist of two discrete phases: an early phase when a broad array of relationship skills and processes may change at once, followed by a gearshift to a longer term follow-up over which the role of active preventive ingredients may unfold. Thus, individuals could have differential early responses to treatment, and differential patterns of long-term response conditioned on their early responses.

The Marriage Checkup

The MC is conceptualized as the relationship health equivalent of an annual physical health checkup, with the goal of attending to emerging issues before they lead to more severe distress. The MC theorizes that some degree of hurt is inevitable in intimate relationships and that helping couples find adaptive responses to their problematic issues early can foster immediate increases and prevent subsequent deterioration in marital satisfaction (Cordova, 2013). In keeping with the model of the annual checkup, the MC offers booster sessions targeted at detecting unhealthful, emergent patterns in the relationship dynamic, as small external stresses can accumulate over time to negatively impact the functioning of the relationship (Repetti, Wang, & Saxbe, 2009). In service of this goal, the MC targets three mediating processes: intimate safety, acceptance, and behavioral activation.

Intimacy is conceptualized as a behavioral process, in which one person engages in vulnerable behavior in relation to his or her partner (Cordova & Scott, 2001). When the behavior is reinforced by the partner's accepting and nonpunitive response, intimate behaviors are theorized to happen more frequently, and when punished, less frequently. Intimate safety refers to people's felt sense that they are safe being their authentic, vulnerable selves in relation to their partners. A higher degree of intimate safety should lead to a larger proportion of approach behaviors, even and perhaps especially in times of inevitable hurts and stressors, whereas a lower degree of intimate safety is hypothesized to lead to fewer approach behaviors and withdrawal from the relationship, particularly in times of hurt. Intimate safety falls quite clearly under Christensen's third principle, eliciting avoided private behavior (Christensen, 2010; Benson, McGinn, & Christensen, 2012).

The concept of partner acceptance is borrowed from integrative behavioral couple therapy (IBCT; Jacobson & Christensen, 1996), which theorizes that accepting unwanted behaviors expands couples' behavioral repertoires to make space for new, more reinforcing interactions (Cordova, 2001). Acceptance fits most easily into Christensen's first principle, theoretically functioning to help couples see their partners and their interactions in a different light, enabling them to create more adaptive responses to situations that previously generated relationship distress. The MC targets acceptance by applying several techniques from IBCT (e.g., uncovering soft emotions, eliciting understandable reasons, and identifying themes and patterns) in response to each partner's concern during the assessment session.

The final hypothesized mediator, activation, is thought to function by uniting couples toward taking concrete actions intended to improve their relationship satisfaction. During the feedback session, couples are provided a menu of targeted, therapist-generated options for actively addressing their concerns, and the couple also works together to generate several of their own ideas. These actions could touch on any of Christensen's (Christensen, 2010; Benson, McGinn, & Christensen, 2012) proposed common couple intervention principles, but are unified by the couple's engagement in taking concrete steps to improve their relationship.

In line with Christensen and colleagues' (2010) notions of unifying processes and Doss and colleagues' (2005) discussion of mediators that are targeted versus those that are hit, the MC uses a number of different means to achieve gains in intimate safety, acceptance, and activation. The MC might address communication skills, such as the speaker-listener technique with some couples, and encourage others to gain a deeper understanding of their relationship patterns or vulnerable emotions, but these techniques are all employed in the service of promoting gains in intimate safety, acceptance, and activation.

In the present study, we examined data used in the outcome analysis of the largest clinical trial to date of the MC (Cordova et al., 2014). Over the course of that clinical trial, couples attended an assessment and feedback session at baseline and a booster assessment and feedback session 1 year later. Effect sizes at 2 weeks posttreatment were small and remained relatively steady across the first year, spiked after the booster session, then tended to decline across the second year. Given that the bulk of the treatment effect was realized within the 2 week period after treatment, the MC displayed the gearshift in trajectories characteristic of many brief interventions, suggesting that couples experienced two discrete phases of change.

Present Aims

In the current study, we aimed to test the MC's theory of change. We conceptualized change in the MC as occurring in two discrete phases, one consisting of a quick shock to the system, at which point many variables would change at once and we might see contemporaneous mediation effects, and the longer term period over which longitudinal preventive effects would become apparent. We hypothesized that early changes in intimate safety, acceptance, and activation would be related to early gains in relationship satisfaction. We also hypothesized that those early gains in the mediators would be associated with subsequent changes in marital satisfaction, whereas early changes in marital satisfaction would

not be associated with subsequent changes in the mediators. Finally, we hypothesized that this pattern of results would replicate over the booster session that occurred in Year 2.

Method

Participants

Participants were 215 married couples ($N = 430$ individuals) whose relationship satisfaction ranged from severely distressed to highly satisfied. Six couples were same-sex and 209 were opposite sex. To be eligible to participate, couples needed to be married and cohabiting, and they could not currently be attending couple therapy. Ages of participants ranged from 20 to 78 years, with an average age of 45.7 years ($SD = 11.3$). Most participants were Caucasian (93.9%). On average, couples were married 15.1 years ($SD = 12.0$) and had 2 children ($SD = 1.5$). Participants had a median annual household income of \$75,000 to \$99,000 with the median level of education being a bachelor's degree. Means and standard deviations of study variables are presented in Table 1.

Procedures

Participants were randomized into intervention and wait-list control groups. Treatment couples attended an assessment and feedback session at baseline and again 1 year later. Couples completed questionnaires at baseline, at the end of the feedback session, and at 2-week, 6-month, and 1-year follow-ups. Over the second year, data were collected following the same pattern as the first year. Control couples attended an MC at the end of 2 years. All activities were approved by the Clark University Institutional Review Board. By the 2-year follow-up, 27% of the sample had dropped out. All participants were included in this study, making it a full intent-to-treat analysis. In previous work (Cordova et al., 2014), dropout status was found not to bias estimates of mediator or outcome variables, although differential dropout (13 treatment couples vs. one control couple) between randomization and intervention suggested that some couples—after learning of their randomization—chose not to attend the MC. More detailed information on procedures and a detailed analysis of dropouts can be found in Cordova and colleagues (2014).

Measures

Relationship satisfaction. We used the six-item Quality of Marriage Index (QMI; Norton, 1983), and the 22-true-false-item Global Distress Subscale of the Marital Satisfaction Inventory-Revised (GDS; Snyder, 1997) to assess relationship satisfaction. The QMI sums six items, with five items rated 1–7, and a global assessment rated 1–10, producing a possible range of scores from 6–45. The GDS is normed separately by sex, with a mean score of 50 and an SD of 10. Cronbach's α s were .97 for the QMI and .93 for the GDS.

Intimate safety. To assess intimate safety, we used the 28-item *Intimate Safety Questionnaire* (Cordova, Blair, & Meade, 2010), which measures the degree to which partners feel safe being vulnerable across different relationship domains. All items were scored 0–4, with 0 representing *Never* and 4 representing *Always*. Sample items include, "I feel comfortable telling my partner things

Table 1
Means and Standard Deviations for Study Variables

Variable	Base	4 Weeks	1 Year	1 Year-4 Weeks	2 Years
QMI					
Control	36.45 (8.39)	36.57 (7.91)	37.41 (7.43)	37.23 (8.12)	37.74 (8.28)
MC	36.18 (8.31)	38.39 (6.76)	37.89 (7.57)	38.94 (6.61)	37.87 (7.25)
GDS					
Control	52.62 (9.50)	50.87 (9.40)	50.61 (9.08)	50.7 (9.69)	51.38 (8.49)
MC	52.34 (9.20)	50.56 (8.53)	49.09 (9.12)	48.31 (8.67)	49.85 (8.94)
RAQ					
Control	4.06 (.77)	4.14 (.80)	4.15 (.81)	4.09 (.85)	4.19 (.81)
MC	3.99 (.88)	4.25 (.80)	4.24 (.75)	4.38 (.70)	4.27 (.75)
ISQ					
Control	3.08 (.46)	3.12 (.49)	3.12 (.52)	3.10 (.62)	3.12 (.55)
MC	3.02 (.52)	3.16 (.47)	3.20 (.47)	3.27 (.50)	3.19 (.51)
SCQ					
Control	3.26 (.89)	3.4 (.88)	3.36 (.89)	3.19 (.86)	3.33 (1.03)
MC	3.29 (.85)	3.73 (.81)	3.66 (.77)	3.51 (.79)	3.54 (.86)

Note. QMI = Quality of Marriage Index; MC = Marital Checkup; GDS = Global Distress Subscale of Marital Status Inventory-Revised; ISQ = Intimate Safety Questionnaire; RAQ = Relationship Acceptance Questionnaire; SCQ = Stages of Change Questionnaire; Standard deviations are in parentheses. Descriptives ignore clustering due to couple nature and are based on available data at each assessment point.

I would not tell anyone else,” “When I need to cry I go to my partner,” and “Sex with my partner makes me uncomfortable.” In a validation study using a different sample than the present one, Cordova et al. (2010) found support for four different domains of intimate safety assessed in the questionnaire, with the best fitting model indicating a global factor of intimate safety underlying the four specific domains. Higher intimate safety scores were associated with greater commitment and trust, and intimate safety was measurably distinct from trust, shyness, extraversion, and a traditional measure of intimacy. To further assess discriminant validity for the current study, we added the six items of the QMI (Norton, 1983) to the model, and the best fitting model identified the global intimate safety factor as distinct from marital satisfaction. In the present analysis, we used the second-order factor by taking the mean of all 28 items. Cronbach’s α was .90.

Acceptance. We measured acceptance with the Relationship Acceptance Questionnaire (RAQ; Cordova, 2001), a global measure developed for the MC project based on the theory of acceptance described by Cordova (2001). The RAQ measures acceptance directed toward the partner, as well as acceptance felt from the partner. Consistent with Cordova et al. (2014), the present study focused exclusively on the 13-items measuring felt acceptance. Felt acceptance items include, “I feel like my partner accepts me as a person, ‘warts and all,’” “My partner always wants to change me,” and “I am comfortable just being myself around my partner.” All items were scored 1–5, *strongly disagree* to *strongly agree*. The mean was taken as the scale score.

A confirmatory factor analysis performed with the present sample found the hypothesized two-factor solution, felt acceptance and acceptance directed toward the partner, to fit the data well. To assess discriminant validity, we added the QMI, dedication commitment (Stanley & Markman, 1992), and affective communication (Snyder, 1997) to the model, first in pairwise fashion, and finally all together. All models identified felt acceptance as conceptually distinct but correlated with all three variables, with correlations of .65, .54, and .72 with marital quality, commitment,

and affective communication, respectively. Cronbach’s α for felt acceptance was .94.

Activation. We measured activation with the action subscale of a modified version of the 32-item University of Rhode Island Change Assessment Scale–Psychotherapy (McConaughy, Diclemente, Prochaska, & Velicer, 1989). The scale was modified to ask specifically about a couple’s relationship. For example, one item in the original scale says, “Anyone can talk about changing; I’m actually doing something about it,” whereas the version in the present study said, “Anyone can talk about improving their marriage; I’m actually doing something about it.” Cronbach’s α was .88.

In the present sample, correlations of intimate safety, marital satisfaction, and acceptance were high. Intercorrelations of all variables are available as an online, supplementary document. Correlations of intimate safety with marital satisfaction ranged from .64 to .68, acceptance with marital satisfaction ranged from .60 to .67, and intimate safety with acceptance ranged from .69 to .71. Despite the high cross-sectional correlations, there is a rich literature delineating the theoretical differences of these mechanisms, and earlier research on the MC (Cordova et al., 2014) has substantiated that, although interrelated, these variables moved somewhat differently over time throughout the study. Beyond the steps described above, we took additional steps in the analytic strategy to ensure conceptual distinction throughout the analysis.

Data Analytic Strategy

Collins (2006) stated that strong longitudinal research integrates three elements: an articulated theoretical model of change, a temporal design with intervals that capture the unfolding of the process, and a statistical model that operationalizes the theoretical model. In the MC study, more measures were collected in the time immediately surrounding the treatment period as change was expected to occur more rapidly in the weeks immediately surrounding treatment and more slowly over the follow-up period. The pattern of results presented in the MC 2-year outcome study

indicated that the process and outcome variables tended to change in close proximity to one another (Cordova et al., 2014). Therefore, the two central challenges of this analysis were simultaneously disentangling changes that were hypothesized to occur in close temporal proximity and understanding the downstream effects of early changes. MacKinnon (2008) suggested that the most useful type of model for this design might be the latent change-score model (McArdle, 2009), which directly models between-person differences in within-person change. Moreover, latent change-score models parcel out measurement error, examine change as a latent rather than observed variable, and incorporate the effects of initial status on the amount of change, addressing a number of limitations of observed change scores. We used latent change-score models to test longitudinal effects in the MC.

We divided our analysis into two parts. Substantively, these parts describe the immediate mechanisms of action and the processes associated with long-term preventive effects. Because we hypothesized that our mediators would be associated with both

rapid short-term gains and long-term preventive effects, the most natural mapping of this theory to our design and hypotheses was to examine contemporaneous effects in the period of time immediately surrounding treatment, and then test how treatment gains in mediators over that brief window were associated with marital satisfaction over the next 11 months of the follow-up period. The lagged-change component of this study is particularly important, as Kazdin (2007) has argued that the demonstration of temporal precedence is the “Achilles’ heel of treatment studies” (p. 5). A path diagram of the conceptual model is provided in Figure 1.

The first part of the analysis examined change between the pre-intervention and 2-week postintervention time points, corresponding to the “shock to the system” component of treatment. This analysis had the drawback of examining only contemporaneous change, but allowed a straightforward analysis of the size of mediation effects and the simultaneous inclusion of multiple mediators in the model. The second part of our analysis tested whether the amount of change in the mediator over the active treatment phase was related to the amount of

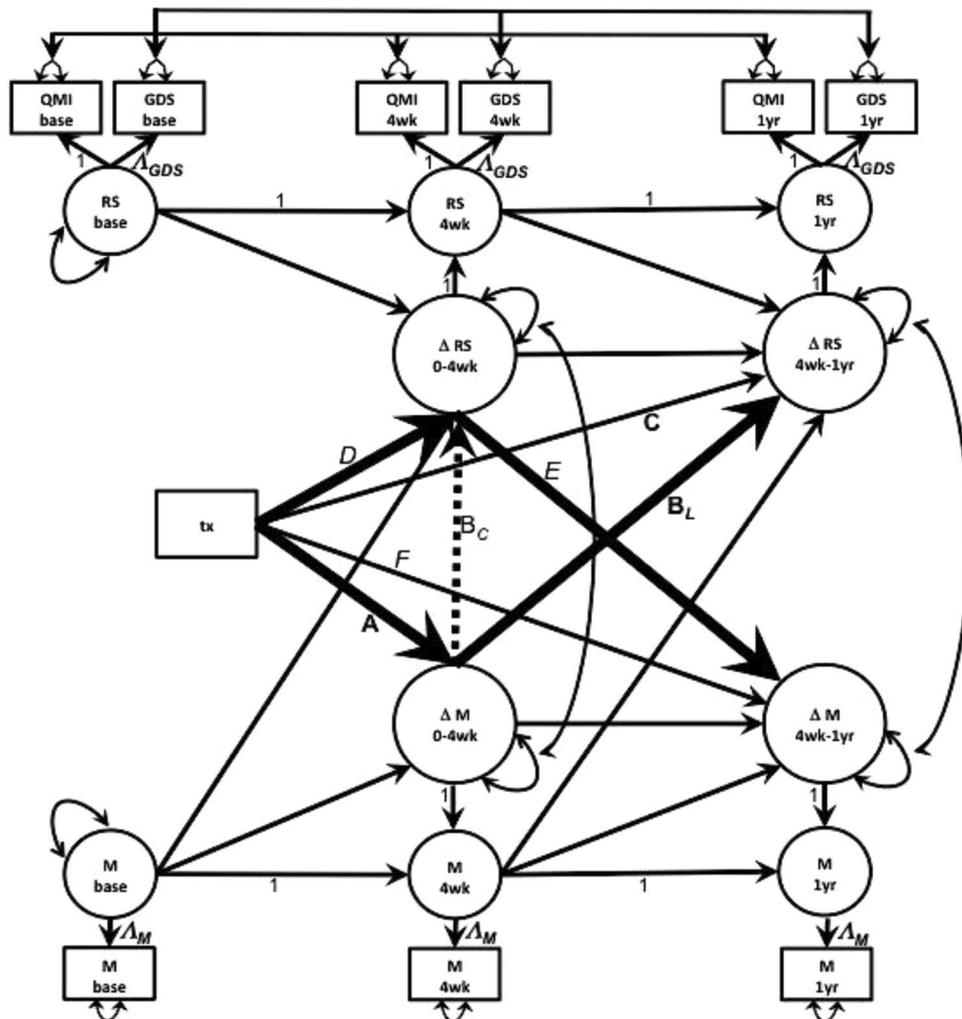


Figure 1. The paths of primary interest are bolded. M = mediator; RS = Relationship Satisfaction. The contemporaneous model includes only data through 4 weeks, and Path B_C represents a path that is only in the contemporaneous model (it is replaced by the pictured covariance in the lagged model).

change in marital satisfaction during the subsequent longer term follow-up period (Path B_L in Figure 1). Because the treatment effects peaked by the 2-week follow-up period, this analysis can be considered a test of those intervention ingredients that have enduring contributions to the sustainment of treatment gains and prevention of relationship deterioration.

Due to the high intercorrelations between intimate safety, acceptance, and marital satisfaction, it was important to verify that mediators were acting above and beyond the effect of early changes in relationship satisfaction. Therefore, we also included paths from each variable's earlier change to its own subsequent change.

We first modeled each variable and each sex separately to ensure good local fit before combining them to form the larger multivariate models. Preliminary models indicated that partners were largely indistinguishable, so we simplified our final models by treating couple-level nonindependence as a nuisance term, using a sandwich estimator to calculate standard errors, rather than modeling partners in parallel. This strategy enabled us to include the six same-sex couples in the analysis. The tradeoff here is parsimony versus complexity; the covariance structure was greatly simplified, increasing model stability and decreasing researcher degrees of freedom in the nuisance part of the model. This comes at a cost of not explicitly modeling partner effects, which were not part of our planned comparisons.

We performed all analyses with Mplus Version 7.3. Despite several significant χ^2 tests, all other fit statistics indicated excellent fit. Fit statistics are presented in Table 2. All results are presented in *SD* units, calculated by dividing model parameters by the square root of their intercept variance.

Results

Contemporaneous Mediation

Contemporaneous change was modeled with a series of latent change-score models, which examined the change between preintervention and 2 weeks postintervention, controlling for the initial level of each variable (i.e., activation, intimate safety, and acceptance) in the analysis. Initially, each mediator was examined individually in a bivariate model with the outcome. The final model, presented in Table 3, included all three mediating variables simultaneously. In the

Table 2
Fit Statistics for Structural Equation Models

Model	χ^2 (df)	RMSEA	CFI	TLI
4-Week contemporaneous	81.23 (29)***	.07	.98	.96
1-Year, 4-week contemporaneous	54.69 (29)***	.05	.99	.97
1-Year cross-lagged Intimacy	32.37 (20)*	.04	.99	.99
1-Year cross-lagged Acceptance	29.26 (20)	.03	1.00	.99
1-Year cross-lagged Activation	47.82 (20)**	.05	.98	.96
2-Year cross-lagged Intimacy	16.63 (20)	.00	1.00	1.00
2-Year cross-lagged Acceptance	19.76 (20)	.00	1.00	1.00
2-Year cross-lagged Activation	40.37 (20)**	.05	.98	.97

Note. RMSEA = root-mean-square error of approximation; CFI = comparative fit index; TLI = Tucker–Lewis fit index. Significant chi-square values denote deviations between the raw data and model-implied covariance matrix.

* $p < .05$. ** $p < .05$. *** $p < .001$.

Table 3
Parameter Estimates (*SD* Units) for Contemporaneous Mediation Models

Parameter	Year 1		Year 2	
	<i>B</i> (<i>SE</i>)	<i>p</i>	<i>B</i> (<i>SE</i>)	<i>p</i>
Tx \rightarrow Δ RS _{0-4wk}	.05 (.06)	.361	.01 (.06)	.832
Tx \rightarrow Δ RAQ _{0-4wk}				
(A ₁ path)	.22 (.07)	.001	.22 (.06)	<.001
Tx \rightarrow Δ ISQ _{0-4wk}				
(A ₂ path)	.23 (.07)	.001	.15 (.06)	.014
Tx \rightarrow Δ SCQ _{0-4wk}				
(A ₃ path)	.37 (.10)	<.001	.16 (.09)	.072
Level RS \rightarrow Δ RS _{0-4wk}	-.29 (.07)	<.001	-.20 (.09)	.024
Level RAQ \rightarrow Δ RS _{0-4wk}	.11 (.05)	.026	.08 (.06)	.176
Level ISQ \rightarrow Δ RS _{0-4wk}	.10 (.05)	.057	.07 (.06)	.203
Level SCQ \rightarrow Δ RS _{0-4wk}	-.01 (.03)	.682	.00 (.03)	.900
Δ RAQ _{0-4wk} \rightarrow Δ RS _{0-4wk}				
(B ₁ path)	.31 (.06)	<.001	.28 (.07)	<.001
Δ ISQ _{0-4wk} \rightarrow Δ RS _{0-4wk}				
(B ₂ path)	.25 (.06)	<.001	.14 (.10)	.168
Δ SCQ _{0-4wk} \rightarrow Δ RS _{0-4wk}				
(B ₃ path)	-.01 (.03)	.867	.00 (.04)	.961
Total Tx \rightarrow Δ RS _{0-4wk}	.18 (.07)	.012	.10 (.07)	.146
(Sum of direct + indirect paths)				
Indirect Effects				
Tx \rightarrow Δ RAQ _{0-4wk} \rightarrow Δ RS _{0-4wk}	.07 [.03, .15]		.09 [.03, .25]	
Tx \rightarrow Δ ISQ _{0-4wk} \rightarrow Δ RS _{0-4wk}	.08 [.03, .17]		.02 [-.04, .09]	
Tx \rightarrow Δ SCQ _{0-4wk} \rightarrow Δ RS _{0-4wk}	.01 [-.02, .05]		.01 [-.01, .05]	

Note. RS = Relationship Satisfaction; RAQ = Relationship Acceptance Questionnaire; ISQ = Intimate Safety Questionnaire; SCQ = Stages of Change Questionnaire; Tx = treatment.

Brackets denote bias-corrected, bootstrapped 95% confidence intervals.

bivariate models, we found that changes in all three mediators (Path B_C) were significantly associated with changes in relationship satisfaction, with activation having the smallest association ($\beta = 0.10$, $p = .027$). In the final model, activation's association with changes in relationship satisfaction became nonsignificant, but the associations between changes in intimate safety and acceptance with changes in relationship satisfaction remained significant. Asymmetric confidence intervals of the indirect effect were generated with bias-corrected bootstrapping and indicated the indirect effects of the intervention through intimate safety and acceptance were statistically significant, equivalent in size, and together, accounted for 83% of the treatment effect. In the second-year replication, which included all three mediators, only changes in acceptance were significantly associated with changes in marital satisfaction, although when modeled on its own, changes in intimate safety were also significantly associated with treatment gains ($\beta = .28$, $p < .001$). For the second year, the confidence interval of the indirect effect of acceptance excluded zero, and acceptance accounted for the entire treatment effect.

Time-Lagged Mediation

Time-lagged processes were also examined with latent change-score models, allowing the change in the mediators over the first month of the study—when the treatment effect peaked—to predict subsequent changes in satisfaction over the next 11 months of follow-up for both Years 1 and 2 (Path B_L). Because the bivariate models grew quite large, analyses were performed pairwise, with

a separate model examining the relationship of each mediator with relationship satisfaction. Table 4 presents the results of the bivariate longitudinal analyses. Pathways not of substantive interest have been omitted from the table for parsimony. Full results can be obtained from the first author.

The between-groups differences in change in relationship satisfaction over the follow-up period in both Year 1 and Year 2 (Path C) were not significantly different from zero, indicating that early treatment gains were largely maintained. However, indirect pathways may be significant even in the absence of a significant change in the dependent variable (MacKinnon, 2008). In this case, a significant indirect effect (Path A × Path B_L) would suggest that early changes in the mediator partially explained the effect of the intervention on between-groups differences in the maintenance of Satisfaction. Over the first year of the study, early changes in acceptance were significantly associated with later changes in relationship satisfaction (Path B_L). The cross-lag from change in intimate safety to later change in Satisfaction (Path B_L) trended in the same direction but was not significant, and the effect of change in activation (Path B_L) was also not significant. The bootstrapped indirect effects for Acceptance were small but excluded zero, suggesting that treatment-related gains in acceptance influenced later changes in Relationship Satisfaction. For intimate safety, the lower bound of the indirect effect was 0.00, indicating marginal significance. None

of the parameters of interest were significant in Year 2. We conducted Wald tests to determine whether the size of the lagged paths (Path BL) were significantly different between Years 1 and 2. Both acceptance, Wald(1) = 8.28, *p* = .004, and intimate safety, Wald(1) = 6.15, *p* = .013, were significantly different between Years 1 and 2, meaning the lagged findings in Year 1 did not replicate across Year 2.

To understand the specificity of our mediation effects, we also examined whether early changes in satisfaction led to later changes in the mediators (Path E). If this were the case, it would undermine the specificity of our pathways, increasingly the likelihood that an unobserved variable drove the mediators and marital satisfaction. All of these pathways were nonsignificant, supporting the specificity of our findings.

Effects of Control Variables

In all models, the levels (intercepts) of mediator variables and Relationship Satisfaction were included as covariates to disentangle the effects of between-person status from within-person change. The baseline level of relationship satisfaction was consistently negatively associated with change in relationship satisfaction in the short-term follow-up to treatment (see Table 3). This change was likely driven by treatment status, such that more

Table 4
Parameter Estimates (SD Units) for Time-Lagged Latent Change-Score Models

Parameter	Acceptance		Intimate safety		Activation	
	B (SE)	<i>p</i>	B (SE)	<i>p</i>	B (SE)	<i>p</i>
Year 1						
Tx → ΔM _{0-4wk} (A path)	.23 (.06)	<.001	.22 (.07)	.001	.39 (.10)	<.001
ΔM _{0-4wk} → ΔRS _{4wk-1yr} (B _L path)	.20 (.08)	.016	.15 (.09)	.076	.01 (.05)	.913
Total Tx → ΔRS _{4wk-1yr} (C + all indirect paths)	.00 (.08)	.976	-.02 (.08)	.819	-.01 (.08)	.850
ΔRS _{0-4wk} → ΔRS _{4wk-1yr}	-.32 (.20)	.103	-.29 (.19)	.135	-.18 (.17)	.273
ISQ level → ΔRS _{4wk-1yr}	-.10 (.07)	.182	-.02 (.09)	.850	.06 (.06)	.264
RS level → ΔRS _{4wk-1yr}	-.07 (.09)	.432	-.14 (.09)	.138	-.14 (.05)	.003
ΔRS _{0-4wk} → ΔM _{4wk-1yr} (E path)	-.17 (.12)	.165	.19 (.16)	.234	-.17 (.17)	.293
Tx → ΔM _{0-4wk} → ΔRS _{0-4wk} (A × B _L paths)	.04 [.01, .09]		.02 [.00, .05]		.00 [-.03, .04]	
Year 2						
Tx → ΔM _{0-4wk} (A path)	.22 (.06)	<.001	.15 (.06)	.015	.18 (.09)	.041
ΔM _{0-4wk} → ΔRS _{4wk-1yr} (B _L path)	-.26 (.16)	.100	-.14 (.12)	.232	.06 (.05)	.259
Total Tx → ΔRS _{4wk-1yr} (C + all indirect paths)	-.03 (.10)	.765	-.03 (.10)	.778	.01 (.10)	.934
ΔRS _{0-4wk} → ΔRS _{4wk-1yr}	-.10 (.39)	.804	-.23 (.35)	.514	-.29 (.29)	.323
ISQ level → ΔRS _{4wk-1yr}	.01 (.10)	.933	.02 (.10)	.884	-.06 (.04)	.145
RS level → ΔRS _{4wk-1yr}	-.11 (.11)	.303	-.09 (.11)	.412	-.10 (.06)	.075
ΔRS _{0-4wk} → ΔM _{4wk-1yr} (E path)	.13 (.27)	.639	-.11 (.22)	.617	-.16 (.27)	.538
Tx → ΔM _{0-4wk} → ΔRS _{0-4wk} (A × B _L paths)	-.05 [-.20, .02]		-.01 [-.06, .01]		.01 [-.01, .04]	

Note. M = mediator variable; RS = Relationship Satisfaction; RAQ = Relationship Acceptance Questionnaire; ISQ = Intimate Safety Questionnaire; SCQ = Stages of Change Questionnaire; Tx = treatment.
*The delta method was used to sum all paths leading from treatment to the change in satisfaction. Brackets denote 95% confidence intervals.

distressed couples experienced larger gains from treatment. In addition, when controlling for Satisfaction, individuals with higher levels of acceptance at baseline tended to have larger treatment gains over both the first and second year. Relationship satisfaction did not exhibit a significant homeostatic effect in this study, as the amount of earlier change was not significantly associated with the amount of change over the follow-up period. Results were not sensitive to the inclusion or exclusion of control variables.

Sensitivity Analyses

We ran sensitivity analyses to understand the failure to replicate the lagged findings. We speculated that the discrepancy between the time-lagged findings in Years 1 and 2 might have been due to imperfect timing of lagged measures, leading to the lagged effect being washed out. We examined this by controlling for the contemporaneous effects of the mediator on the outcomes, partialing out the effect of the mediators' changes between 4 weeks and 1 year. In this analysis, the lagged effect of intimate safety became statistically significant in Year 1, marginally significant in Year 2, and the lagged path estimate was not significantly different between Years 1 and 2, Year 1: $\beta = 0.37, p = < .001$; Year 2: $\beta = 0.21, p = .054, Wald(1) = 2.12, p = .15$, whereas the lagged effect of acceptance in Year 1 was not significantly different from Year 1, but also not significantly different from zero, Year 1: $\beta = 0.30, p = < .001$; Year 2: $\beta = 0.17, p = .14, Wald(1) = 0.84, p = .36$.

Discussion

Following a brief couples' intervention, we examined the roles of acceptance, intimate safety, and activation in promoting short- and long-term changes in relationship satisfaction in this study. We found the strongest support for acceptance, which consistently accounted for early treatment gains, accounted for longitudinal change in relationship satisfaction over the first year of the study, and indirectly prevented deterioration of Relationship satisfaction in the treatment group over the follow-up period. The association between early changes in intimate safety and subsequent changes in relationship satisfaction was borderline significant over the first year of treatment, but not replicated over the second year, although a sensitivity analysis found that the effects for intimate safety were statistically significant in Year 1 and marginally significant in Year 2. Activation accounted for little of the variability in satisfaction on its own and none when the model included intimate safety and acceptance.

To our knowledge, this paper provides the first evidence of a time-lagged, within-person relationship between mediator and outcome in a couple intervention. Work of this nature is useful because, although researchers have been successful in identifying a host of risk factors for relationship deterioration (see Stanley, 2001, for an exhaustive list), changes in these risk factors have generally not been associated with gains in Relationship satisfaction, although the interventions themselves have been somewhat successful at producing satisfaction gains (Hawkins, Blanchard, Baldwin, & Fawcett, 2008). To the extent that researchers can disentangle underlying processes of change, it will direct the focus of future research to a better understanding of how to manipulate these active ingredients and develop more effective interventions. This paper provides moderate support for acceptance and more

limited support for intimate safety as active ingredients in the MC. Of particular consequence is our finding that a couple's growth in acceptance and intimate safety influenced the amount of change in relationship satisfaction over the following year, indicating that not only can intimate safety and acceptance be changed by a brief intervention, but these changes have direct bearing on how the relationship evolves in the year following the intervention. Therefore, preserving and fostering acceptance and intimate safety may be a key to preventing relationship distress.

The indirect effects in this study were small, as would be expected from a brief intervention whose total effect was small, but the study was largely successful in explaining the majority of the effects of the intervention. Understanding the pathways that transmit small effects is useful because when clinicians see couples for a short period of time, focusing that time on the active ingredients of the intervention becomes crucial. Perhaps most important are the moderately sized cross-lagged associations between the amount of earlier change in acceptance and intimate safety and later changes in marital satisfaction. Directing future efforts toward enhancing treatment's effect on these two critical pathways may help grow and sustain marital satisfaction.

The shared variance between intimate safety and acceptance over both years of this study is consistent with Christensen and colleagues' (Christensen, 2010; Benson, McGinn, & Christensen, 2012) five unifying principles for mechanisms of change in couple therapy. Intimate safety falls clearly within the principle they characterized as eliciting avoided private behavior. Acceptance fits with this principle as well, but may also encourage dyadic views of the relationship. The acceptance of partner behaviors may function to reorient individuals from blame to a view of the couple in context, opening a path for more adaptive responses to situations that had previously generated relationship distress. Together, we might conceive of intimate safety and acceptance as constituting the emotional climate in a relationship. An orientation toward the dyad and an accepting stance toward unwanted behaviors may depersonalize the discussion of difficult content and foster a sense of intimate safety, just as intimate safety may aid in the development of an understanding that contextualizes sticking points, leading to understanding rather than blaming. To the extent that the emotional climate is warm, partners may be more likely to approach each other with vulnerable content, engaging in positive exchanges that enhance relationship satisfaction and confronting issues that could threaten satisfaction. The results of this study suggest that the MC functions by warming this emotional climate, leading to a greater sense of relationship satisfaction in the short term and paving the way for more approach behaviors that sustain satisfaction in the long term.

Just as we have described overlap between the principles of dyadic relationship perspectives and the elicitation of avoided private behavior, Benson, McGinn, and Christensen (2012) pointed out that there is also overlap between the elicitation of private behavior and communication skills, as some couples may benefit from guidance in how to effectively reinforce each other's disclosures. An exploration of this overlap may be useful for situating the current findings in the broader body of research, which has been conducted largely on relationship education and skills-based interventions. Although skills-based interventions often generate gains in satisfaction, these gains tend not to be related to the skills imparted in the intervention (Wadsworth & Markman,

2012). How, then, might skills-based interventions be working? Many good things might happen over the course of skills interventions that have nothing to do with the acquisition of skills. These interventions target skills, but they may also be successful in increasing satisfaction to the extent that they alter common principles other than communication skills. Although we did not directly examine the role of communication skills, it follows from our theory that altering the emotional climate through processes such as intimacy and acceptance may motivate couples to employ the skills they do have. We strongly suspect that some relationships have grown so toxic that expertise in communication skills may be necessary for repair, but this might not be the case with the average, relatively satisfied couple that attends a preventive treatment. Snyder and Schneider (2002) describe how even many distressed couples demonstrate ample communication skills in laboratory settings, but simply do not employ them at home. It stands to reason that when the emotional climate is warm, couples might be more motivated to use their communication skills in the service of understanding their partners and eliciting understanding from their partners. When the climate is less inviting, performances of self-disclosure may be more likely to be punished than reinforced, and the preferred path for individuals may be to withdraw from their partners and withhold emotionally vulnerable content. In this way, for many couples targeted by preventive programs, communication skills may serve as variable markers rather than causal risk factors of relationship distress.

Reconciling Inconsistent and Null Findings

Our initial analyses indicated a statistically significant discrepancy in the size of the lagged pathways between the initial session and booster sessions, but sensitivity analyses found that controlling for contemporaneous changes over the follow-up period made the comparisons across the initial and booster sessions essentially equivalent. This discrepancy may stem from the quick erosion of the spike in the mediators seen after the booster session. Changes to the mediators produced subsequent benefits in relationship satisfaction, but those changes were short-lived. This highlights the fact that our replication was on a sample that was previously exposed to the intervention. It is possible that those couples that successfully united around issues discussed during the first checkup benefitted less from the additional checkup. Uniting around those issues may have activated a process whereby couples began engaging in fundamentally new approach behaviors. Having addressed the open issues in the first year, the therapeutic potential of the booster session might have lay more in maintaining gains and less in paving new ground. The brief spikes in the emotional climate may perhaps be due to warm feelings stemming from dedicating time to take stock of the relationship, producing increased feelings of closeness in the short run, but not creating a qualitative shift in couples' patterns of relating. However, to empirically establish the true additive effect of the booster session, a design that randomizes once-treated couples into a booster session would be necessary.

The weak direct effect between activation and marital satisfaction was also surprising. We offer two potential explanations. First, it is possible that the benefit that couples derived from attending the MC was largely driven by processes that occurred in the room during treatment, as opposed to what couples did in the weeks and

months following treatment. For example, reflections by the clinician may have helped partners to see each other in a new light, or the treatment room may have created a safe space for couples to have mastery experiences, such that one person's disclosure of previously privately held emotional content was reinforced by his or her partner, promoting feelings of acceptance and intimate safety. In a study assessing the impact of homework completion on treatment gains, Hawrilenko, Eubanks Fleming, Goldstein, and Cordova (in press) found that completing recommendations assigned in the MC contributed to couples' short-term, but not long-term gains, meaning that even couples that completed substantially less homework eventually achieved gains comparable to those who completed more homework. A second possibility is that activation alone is not particularly helpful for couples. One study found that the average couple that attended psychotherapy had already been highly distressed for 6 years (Notarius & Buongiorno, 1992, as cited in Gottman, 2002). Intuitively, couples may be able to resolve most issues on their own, but those that are left unresolved may be particularly unresponsive to a couple's repertoire. Thus, even if couples are highly motivated to change, action without expert guidance may be ineffectual.

Limitations

This study had several limitations. The dose of mediator variables was not randomized, but rather was driven by each couple's unique response to treatment, opening the possibility that an unobserved variable drove changes in both the mediators and relationship satisfaction. We explored this possibility through our use of cross lags. Because relationship satisfaction did not produce subsequent changes in the mediators, the probability that an unobserved confound accounted for our findings appears lower. In the contemporaneous analyses, we could not discern causal direction. In the longitudinal analyses, the mediators were entered pairwise rather than simultaneously, so it was not possible to partial out the independent effects of each mediator. Furthermore, our use of self-report measures to assess mediators presented two issues. First, these measures were constructed in-house for the present study, so formal studies verifying construct validity have not been published. Second, self-report questionnaires introduced the "glop problem" (Gottman, 2002) of high correlations among variables of interest. In the future, gathering observational data would be helpful in obtaining ratings of the acceptance and intimate safety constructs that might be disconnected from a couple's global rating of relationship quality.

Although this study adds useful data to the important ingredients for a healthy relationship, our sample is relatively homogeneous and our time frame relatively short. The variables affecting relationship satisfaction may differ across cultural groups (Lucas et al., 2008), and there may also be important differences across the life span. The different "clocks" affecting development have been studied for some time (see Schaie, 1965), and although the clock in the present study started at couples' baseline measures, it may also be important to examine maturational clocks, like age or length of relationship, and cohort clocks, like birth year, which can influence individuals' values and the processes most related to their relationship changes.

Conclusions and Future Directions

The present findings, which provide evidence for the mediating role of acceptance and intimate safety in sustaining marital satisfaction, would be complemented by an understanding of the treatment mechanisms responsible for the initial change in the mediators. The most fruitful place to look may be in the interaction between the clinician and the couple in-session. Linking specific therapeutic mechanisms to changes in the mediators identified here would help flesh out the full causal chain of change in an intervention such as this.

More generally, relationship interventions draw from a broad range of theoretic frameworks, but very few researchers have examined competing theories of change from a theoretical standpoint outside of that in which an intervention was developed. A notable exception to this is a recent study by Benson, Sevier, and Christensen (2013), who examined the role of attachment in behavior-based couple therapy. Work of this nature is critical for achieving a dialog that leverages different theoretic frameworks toward an empirically coherent body of knowledge.

Couples research can be particularly challenging because so many variables and processes change in tandem. Perhaps as a result of this, researchers draw from a wide range of theoretical frameworks, and interventions target many different processes. Identifying those variables with a time-lagged, within-person relationship can help determine the most useful targets, a task that is critical for improving models of relationship health and developing more effective interventions. We have added to the literature with the present study in several regards. We applied an innovative statistical methodology to flexibly examine the short- and long-term impacts of mediators in a brief couples intervention, providing a dynamic model of mediation. Critically, we identified intimate safety and acceptance as variables whose early changes lead to subsequent changes in relationship satisfaction, suggesting they may be key processes for improving relationship quality, maintaining gains, and preventing distress.

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