Journal of Consulting and Clinical Psychology
2005, Vol. 73, No. 4, 624–633

0022-006X/05/$12.00 DOI: 10.1037/0022-006X.73.4.624

Improving Relationships: Mechanisms of Change in Couple Therapy

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In a sample of 134 married couples randomly assigned to traditional or integrative behavioral couple therapy (TBCT vs. IBCT), a multivariate hierarchical growth curve analysis using latent variable regression revealed that measures of communication, behavior frequency, and emotional acceptance acted as mechanisms of change. TBCT led to greater changes in frequency of targeted behavior early in therapy, whereas IBCT led to greater changes in acceptance of targeted behavior both early and late in therapy. In addition, change in behavioral frequency was strongly related to improvements in satisfaction early in therapy; however, in the 2nd half of therapy, emotional acceptance was more strongly related to changes in satisfaction. Research and clinical implications are discussed.

Keywords: couple therapy, mechanism, emotional acceptance, communication, behavior frequency

In their review of research comparing couple therapy with no treatment, A. Christensen and Heavey (1999) concluded that "the result of dozens of these comparisons indicates unequivocally that couples therapy increases satisfaction more than does no treatment" (p. 167). Unfortunately, examination of the practical magnitude, or clinical significance, of these comparisons reveals a more sobering picture. In traditional behavioral couple therapy (TBCT), the only couple therapy to be recognized as achieving the highest level of empirical support by the empirically supported treatment movement (Baucom, Shoham, Mueser, Daiuto, & Stickle, 1998; Chambless & Ollendick, 2001), approximately one third of the couples who enter therapy fail to improve by posttreatment. Moreover, fewer than 50% of couples who enter TBCT end therapy in the nondistressed range on satisfaction measures (Shadish et al., 1993). More distressing, in the longest follow-up to date in the couple therapy literature, 38% of couples in TBCT were divorced 4 years after therapy (Snyder, Wills, & Grady-Fletcher, 1991).

Consistent with the larger field of psychotherapy research, couple therapy researchers have responded to data on treatment limitations with an increased emphasis on mechanisms of change. Knowledge of mechanisms of change can inform combinations and modifications of existing therapies, speeding progress toward more effective treatments. Studies of couple therapy typically demonstrate changes in targeted mechanisms, repeatedly showing that TBCT creates expected changes in relationship-related behaviors (Baucom & Mehlman, 1984; Davidson & Horvath, 1997; Halford, Saunders, & Behrens, 1993; Jacobson, 1984; Snyder & Wills, 1989) and communication patterns (Baucom & Mehlman, 1984; Emmelkamp, van Linden van den Heuvell, Rüphan, et al., 1988; Hahlweg, Revenstorf, & Schindler, 1984; Kelly & Halford, 1995; Snyder & Wills, 1989). Similarly, cognitive behavioral couple therapy has demonstrated changes in relationship- or partner-specific cognitions (e.g., Baucom, Sayers, & Sher, 1990; Davidson & Horvath, 1997; Emmelkamp, van Linden van den Heuvell, Rüphan, et al., 1988; Halford et al., 1993; Kelly & Halford, 1995). Finally, Emotionally-Focused Therapy has demonstrated changes in affect during therapy (Johnson & Greenberg, 1985). In summary, when couple therapies target specific aspects of the relationship, they are typically able to achieve the desired change.

Despite the robust treatment effects on hypothesized mediators, there is little evidence that changes in targeted mediators are related to increases in global satisfaction. For example, changes in cognitions have been found to be generally unrelated to improvements in satisfaction (e.g., Davidson & Horvath, 1997; Halford et al., 1993). Indeed, only one study (Emmelkamp, van Linden van den Heuvell, Sanderman, & Scholoing, 1988) has found changes in self-reported cognitions to be related to improvements in relationship satisfaction. Furthermore, previous studies have generally found that changes in communication are unrelated to satisfaction gains (e.g., Baucom & Mehlman, 1984; Halford et al., 1993; Iverson & Baucom, 1990), whereas other studies found a positive relationship in the predicted direction for husbands only (Sayers, Baucom, Sher, Weiss, & Heyman, 1991) or wives only (Emmelkamp, van Linden van den Heuvell, Sanderman, & Scholoing, 1988). In fact, when significant relationships are found between

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This research was supported by National Institute of Mental Health grants awarded to Brian D. Doss (F31 MH12843) as well as to Andrew Christensen at the University of California, Los Angeles (R10 MH56223) and Neil S. Jacobson at the University of Washington (R10 MH56165) for a two-site clinical trial of couple therapy. After Jacobson's death in 1999, William George served as principal investigator at the University of Washington. We thank Thomas Bradbury and Amanda Jensen Doss for their helpful comments on drafts of this article.

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changes in communication and satisfaction, they are frequently in unexpected directions. Baucom and Mehlman (1984) found that high levels of positive communication and fewer demands for more change from the partner at the end of treatment were related to a greater likelihood of separation 6 months after the end of therapy. In addition, despite becoming more satisfied over the course of therapy, husbands (Sayers et al., 1991) or both spouses (Hahlweg et al., 1984) reacted less positively to their partners' negative communication than they did at the beginning of therapy. In summary, with few exceptions, the existing evidence fails to support the idea that hypothesized mechanisms of change in couple therapy are related to gains in satisfaction.

There are several possible explanations for the failure of previous studies to support the hypothesized role of cognitive and behavioral mechanisms, each with different implications for the field. First, our theoretical understanding of why couple therapies are effective in creating change may be wrong. Qualitative research on change in couple therapy indicates that change tends to occur across a broad range of affect, cognitions, and behavior (e.g., L. L. Christensen, Russell, Miller, & Peterson, 1998). Such findings suggest that a therapy focusing on one aspect of the relationship may create changes in other aspects and that these other changes may be the important mechanism(s). The current study addresses this possibility by including a broader conceptualization of putative mechanisms than has been tested previously in couple therapy. To investigate several mechanism domains, we examined how improvements in the frequency of relationship behaviors, emotional acceptance, and couple-level communication relate to changes in relationship satisfaction. In addition, because mechanisms of change may be specific to the individual, the current study includes measures of change in the frequency and acceptability of "target problems," described in more detail below.

A second possible reason that previous couple therapy studies have failed to find significant mechanisms of change is that they have only examined the relation between change in mechanisms and change in relationship satisfaction over the entire course of therapy. This reliance on an examination of the amount of change over the entire course of therapy may have obscured more complex mechanism relationships. For example, TBCT attempts to create rapid early gains in relationship satisfaction through behavioral exchange before transitioning to an emphasis on problem solving and communication training later in therapy (Jacobson & Margolin, 1979). Therefore, in TBCT, changes in behavioral frequency could be strongly related to early changes in satisfaction but unrelated to later changes in satisfaction. In this case, examining changes in behavior frequency over the entire course of therapy would miss this important distinction and could even result in a nonsignificant overall relationship between frequency and satisfaction. The current study includes separate analyses for change in the first and second halves of therapy to examine the potentially different roles of mechanisms early and late in therapy.

Third, failure to find a relationship between hypothesized mechanisms and relationship satisfaction could result from methodological or statistical limitations of the previous studies. For example, previous studies of mechanisms in couple therapy have been underpowered because of small sample sizes, making it difficult to detect mediation effects. The current study of change mechanisms used the largest randomized outcome study of couple therapy to date with almost twice the number of participants of the second largest study. In addition, the current study used multilevel modeling to appropriately account for the correlated nature of husband and wife data and to maximize statistical power. Finally, by modeling the satisfaction variables and the mechanism variables as latent variables in the current study, we produced a more accurate estimate of the relation between variables and increased power to find an effect.

Finally, because the current study does not include a no-treatment or waitlist control group, the current investigation adopted a within-treatment conception of mechanisms of change rather than the more familiar between-treatment frameworks advocated by Baron and Kenny (1986) and Kraemer, Wilson, Fairburn, and Agras (2002). Applying a between-treatment framework for mechanisms of change would only allow for the examination of differences between the two active treatments, rather than the within-treatment relation between changes in mechanisms and outcomes (Doss & Atkins, 2004). To separate the current within-treatment analyses from previous definitions of mediation, we use the term "mechanism" rather than "mediator" to refer to the results of the current study. With a within-treatment definition of change, the dependent variable becomes change in relationship satisfaction during treatment.[1] Similarly, the independent variable becomes change in the putative mechanisms during treatment. Finally, type of therapy is explored as a moderator of change in satisfaction, mechanisms, and their relation.

Method

Participants

The current study is part of a larger two-site clinical trial of couple therapy conducted in Los Angeles, CA and Seattle, WA (A. Christensen et al., 2004). In total, 134 married couples were randomly assigned to either TBCT or integrative behavioral couples therapy (IBCT). There was no waitlist or no-treatment control condition. Couples were provided up to 26 sessions of free conjoint therapy with an experienced doctoral-level private practitioner in the community. Couples had a mean of 22.9 (SD = 5.35) sessions during a median of 36 (SD = 8.14) weeks. More detail on the participants is available in A. Christensen et al. (2004). Institutional review board approval was secured at both sites and all participants completed approved consent forms.

Two Types of Couple Therapy Provided in the Current Study

TBCT (Jacobson & Margolin, 1979). TBCT contains two primary foci: behavioral exchange and communication/problem-solving training. In behavioral exchange, a therapist focuses directly on increasing the frequency of positive behaviors, thereby also reducing the frequency of negative behaviors. The second primary focus in TBCT is teaching the couple general communication and problem-solving skills. In this framework, changes in behavior (especially targeted problematic behaviors and the communication and problem-solving skills to change those behaviors) are hypothesized to act as a mechanism of increased satisfaction.

IBCT (A. Christensen & Jacobson, 2000; Jacobson & Christensen, 1996). In IBCT, the primary emphasis is on emotional acceptance of the partner's behaviors, even if those behaviors do not change in frequency or intensity. Emotional acceptance is designed to help couples extract them-

[1] This definition is justified by a recent meta-analysis demonstrating that therapy-seeking couples placed on a waiting list do not significantly change without treatment (effect size = −0.06; Baucom, Hahlweg, & Kuschel, 2003).

selves from their mutual trap, in which the partners feel so distant from, and victimized by, the other that neither is willing to compromise. Increased acceptance, by allowing the partners to escape their mutual trap, is also expected to subsequently improve frequency of behaviors. In addition, because sessions in IBCT often serve as indirect communication training and because IBCT also uses specific communication and problem-solving training as needed; changes in communication skills should also be somewhat related to changes in satisfaction in IBCT.

Measures

Measures in the current study were administered at a pretreatment assessment, 13 weeks after the pretreatment assessment, 26 weeks after the pretreatment assessment, and immediately after the final therapy session. Only satisfaction measures were collected after the final session. Acceptability and frequency of partner behavior was also completed at a 52-week assessment after pretreatment assessment. As that time was often closer to the final session than the 26-week assessment, we estimated final session values for acceptability and frequency, as described in more detail below. Communication measures were only collected at the pretreatment and 26-week assessment. Means and standard deviations for all measures across the course of therapy are presented in Table 1.

Dyadic Adjustment Scale (DAS; Spanier, 1976, 1989). The DAS is the most widely used outcome measure of relationship adjustment and satisfaction in the couple literature. The DAS includes a mixture of agreement, behavioral, and affect items assessing a number of relationship domains. The DAS also has excellent psychometric properties, with a Cronbach's alpha typically in the low .90s (Spanier, 1989). The commonly used raw total score of the DAS was used for all analyses in the current study.

Frequency and Acceptability of Partner Behavior Inventory (FAPBI; A. Christensen & Jacobson, 1997). The FAPBI is a self-report measure that assesses both the frequency of partner behaviors and the reporter's views of the acceptability of those behaviors in the past month. The FAPBI is composed of 20 items capturing 11 classes of positive behaviors (e.g., "In the past month, my partner was physically affectionate [e.g., held my hand, kissed me, hugged me, put arm around me, responded when I initiated affection]") and 9 classes of negative behaviors (e.g., "In the past month, my partner was critical of me [e.g., blamed me for problems, put down what I did, made accusations about me]"). Partners report the frequency of their partner's behavior and then rate "how acceptable is it to you that your partner did (behavior) at this frequency in the past month" on a 10-point scale.

In the current sample, the Cronbach alphas for the acceptance of partners' positive behaviors (husband, $\alpha = .85$; wife, $\alpha = .79$) and frequency of partners' positive behaviors (husband, $\alpha = .83$; wife, $\alpha = .80$) were acceptably high, with somewhat lower alphas obtained for the acceptance of partners' negative behaviors (husband, $\alpha = .65$; wife, $\alpha = .69$) and frequency of partners' negative behaviors (husband, $\alpha = .73$; wife, $\alpha = .71$). These lower alphas are attributable to the reduced variability in acceptability and frequency caused by infrequent occurrence of some of the negative items (e.g., physical abuse). Correlations between self- and partner-reports of the log frequency of behavior revealed significant overlap ($r = .43$ to $.58$).

In addition to the positive and negative subscales, spouses were asked at the pretreatment assessment to select the top five items of most concern to them. These items were provided to therapists as a measure of a spouse's target problems to be used in treatment planning. Only 5% of spouses reported the same five target problems as any other spouse (not necessarily their partner), indicating that the composition of the target problems tended to be largely individualized. For each individual, their top five items were combined to form an acceptability of target problems and a frequency of target problems scale. Cronbach alphas for the target problems acceptance (husbands and wives, $\alpha = .78$) and frequency (husband, $\alpha = .81$; wife, $\alpha = .77$) scales were acceptably high.

Communication Patterns Questionnaire (CPQ; A. Christensen & Sullaway, 1984). The CPQ is a 35-item self-report measure assessing communication behaviors preceding, during, and following discussion of relationship problems. Previous research (e.g., Heavey, Larson, Zumtobel, & Christensen, 1996) has shown that the Constructive Communication subscale of the CPQ is highly correlated with spouses' self-reported relationship satisfaction ($r = .75$) and with observers' ratings of spouses' actual communication behaviors ($r = .62$–$.70$). In order to separately analyze positive and negative aspects of the relationship, the Constructive Communication items were separated into a 6-item positive communication subscale ($\alpha = .83$) and a 4-item negative communication subscale ($\alpha = .65$) in the current investigation. In addition, to assess the impact of changes in the demand–withdraw pattern, we computed a 7-item wife-demand–husband-withdraw subscale ($\alpha = .78$) and a 7-item husband-demand–wife-withdraw subscale ($\alpha = .79$).

Results

All multilevel analyses and latent variable regressions were conducted with the Hierarchical Linear Modeling (HLM; Raudenbush, Bryk, Cheong, & Congdon, 2001) program, Version 5.02.[2] Inspection of the data revealed that all the variables were approximately normally distributed with the exception of the positive and negative behavior frequency subscales from the FAPBI; these two subscales were transformed using a log transformation to achieve a more normal distribution. For the FAPBI subscales only, we computed empirical Bayes estimates of "latent" final session value from each individual's trajectory through the 52-week assessment and we included them as a fourth data point in all analyses using the FAPBI below. After being used to estimate the empirical Bayes value of the FAPBI subscales at final session, we omitted the 52-week assessment from the following analyses to retain the focus of the current paper on change during the course of therapy.

To make the concept of change as straightforward as possible in the following analyses, we recoded the data such that the amount of change by a certain point in therapy was captured by a single term (rather than a combination of the linear and quadratic trends). Specifically, in the current analyses, the empirical Bayes estimate of the pretreatment value or 18-week value (the median duration of treatment) was subtracted from all measures, allowing the intercept to represent the estimated amount of change during the first or second half of treatment respectively.[3] Because of the relatively high reliabilities of the measures, the nonsignificant relation between pretreatment value and subsequent change (see footnote 3),

[2] Because of space considerations, a full description of the data analyses is not possible here. A more detailed description of the analyses and their justification is available from Brian D. Doss.

[3] This coding scheme removes between-person pretreatment differences from within-person gains during the course of therapy, the latter being the central interest of the current investigation. To guard against concerns that removal of the between-person pretreatment differences would impact the results, we used a latent variable regression predicting linear and quadratic change over the course of therapy from pretreatment intercepts, which was nonsignificant for both husbands and wives. Results indicated that how distressed a spouse was when they entered therapy did not significantly affect how much they improved during therapy.

Table 1
Mean Scores Across Time

Measure	Pretreatment	13 weeks	26 weeks	Final session
Marital satisfaction				
Dyadic Adjustment Scale				
Husbands				
M	84.5	90.8	93.9	98.1
SD	15.0	15.9	18.7	17.8
Wives				
M	84.7	88.7	91.6	95.0
SD	14.0	15.4	13.2	19.7
Log frequency of partner behavior				
Target behaviors				
Husbands				
M	−0.50	−0.19	−0.10	−0.24[a]
SD	0.74	0.73	0.70	0.69[a]
Wives				
M	−0.52	−0.19	−0.08	−0.21[a]
SD	0.63	0.61	0.63	0.66[a]
Positive behaviors				
Husbands				
M	1.14	1.14	1.10	1.18[a]
SD	0.44	0.39	0.42	0.30[a]
Wives				
M	1.02	1.06	1.04	1.11[a]
SD	0.43	0.37	0.39	0.32[a]
Negative behaviors				
Husbands				
M	0.30	0.19	0.17	0.42[a]
SD	0.50	0.57	0.58	0.40[a]
Wives				
M	0.24	0.18	0.13	0.41[a]
SD	0.56	0.51	0.49	0.36[a]
Acceptability of partner behaviors				
Target behaviors				
Husbands				
M	−0.59	−0.18	0.02	−0.07[a]
SD	0.70	0.73	0.75	0.82[a]
Wives				
M	−0.71	−0.16	−0.08	−0.07[a]
SD	0.58	0.70	0.73	0.74[a]
Positive behaviors				
Husbands				
M	4.62	4.94	5.31	5.07[a]
SD	1.87	1.92	1.93	1.61[a]

Measure	Pretreatment	13 weeks	26 weeks	Final session
Acceptability of partner behaviors (*continued*)				
Positive behaviors (*continued*)				
Wives				
M	4.51	5.03	5.37	5.18[a]
SD	1.79	1.89	1.94	1.60[a]
Negative behaviors				
Husbands				
M	5.66	6.13	6.11	6.05[a]
SD	1.50	1.70	1.80	1.38[a]
Wives				
M	5.66	6.17	6.00	6.04[a]
SD	1.86	1.83	2.00	1.49[a]
Communication				
Mutual positive				
Husbands				
M	4.51	—	5.15	—
SD	1.42	—	1.60	—
Wives				
M	4.16	—	5.09	—
SD	1.58	—	1.74	—
Mutual negative				
Husbands				
M	5.12	—	4.50	—
SD	1.22	—	1.66	—
Wives				
M	5.07	—	4.54	—
SD	1.36	—	1.58	—
Wife demand–husband withdraw				
Husbands				
M	5.14	—	4.49	—
SD	1.48	—	1.73	—
Wives				
M	4.92	—	4.27	—
SD	1.63	—	1.53	—
Husband demand–wife withdraw				
Husbands				
M	3.66	—	3.35	—
SD	1.55	—	1.56	—
Wives				
M	3.83	—	3.64	—
SD	1.75	—	1.70	—

Note. Dashes indicate that communication measures were not administered at the 13-week and final session assessments. $N = 134$ at pretreatment, 126 at 13 weeks, 123 at 26 weeks, and 114 at final session.
[a] Final session values of log frequency and acceptability are empirical Bayes estimates, as described in text.

the large variations of changes in satisfaction and mechanisms, and their repeated measurements over time, computing deviations from pretreatment or 18-week values were unlikely to significantly lower reliability (Rogosa, 1995).

Change in Satisfaction

To examine change in satisfaction, we fit a two-level model using maximum likelihood estimation following the guidelines advanced for couple data by Raudenbush, Brennan, and Barnett (1995). Specifically, the Level 1 equation used to test change in satisfaction was as follows:

$$Y_{it} = (\text{husband})_{it}[\beta_{h0i} + \beta_{h1i}(\text{linear}) + \beta_{h2i}(\text{quadratic})] + (\text{wife})_{it}[\beta_{w0i} + \beta_{w1i}(\text{linear}) + \beta_{w2i}(\text{quadratic})] + e_{it}, \quad (1)$$

with random effects at Level 2 for each of the Level 1 coefficients when indicated. As reported in A. Christensen et al. (2004), there were no significant site effects (Los Angeles, CA vs. Seattle, WA) or therapist effects (seven different therapists). Therapy was contrast coded (−1 = IBCT; 1 = TBCT) and entered as a Level 2 predictor.

Both husbands and wives demonstrated significant amounts of change in the DAS over the entire course of therapy (wives = 9.82

DAS points, $p < .001$; husbands = 12.03 DAS points, $p < .001$). Furthermore, the univariate chi-square test revealed significant variation in the random effects for both husbands' and wives' intercepts ($p < .001$), indicating sufficient true variance in the amount of DAS change to be explained by the putative mechanisms. Examination of therapy differences revealed that husbands showed more slowing of change (the quadratic trend) in TBCT than in IBCT ($p < .05$).[4]

In addition to examining change over the entire course of therapy, we were also interested whether change would differ early and late in therapy. As shown in Table 2, both husbands and wives showed significant improvements in satisfaction early and late in therapy. However, spouses, especially husbands, showed more change early than late in therapy (7.51 vs. 3.93 points respectively for husbands; 5.67 vs. 3.36 points respectively for wives). In addition, TBCT created significantly more change in husbands' satisfaction than did IBCT early in therapy ($p < .05$). However, in the second half of therapy, the pattern reversed and IBCT showed a trend ($p < .10$) toward creating more change in husbands' satisfaction than did TBCT. A similar pattern held for wives, although it did not reach significance during either time period.

Given the different pattern of changes in satisfaction early and late in therapy, it was felt that an exploration of frequency and acceptability of partner behaviors in the first and second halves of therapy separately (rather than over the full course of treatment) would be most informative. However, because the CPQ was only administered at two points during treatment, separate analyses early and late in therapy were not possible; therefore, only results over the full course of treatment are presented for the CPQ. Gender differences, treatment differences, and their interaction were also explored.

Change in Mechanisms

To examine change in the acceptance and frequency scales of the FAPBI, we fit Equation 1 to the data following the guidelines discussed above. For the CPQ, it was not possible to model a separate intercept and slope term for each spouse because the CPQ was only administered at two time points. However, because the CPQ asks spouses to report on couple-level communication patterns rather than individual spouses' behaviors, we considered husband and wife ratings as parallel measures of the same couple-level communication patterns. As such, a single intercept and linear slope term were fit to the data for each couple, allowing the error term, e_{it}, to represent the variability not explained by the overlap of husband and wife reports (cf., Raudenbush et al., 1995). As above, the linear and quadratic terms were centered at final session so that the intercept represented the estimated amount of change in the mechanism by the end of therapy.

Log frequency of partner behaviors. Changes in the log frequency of target behaviors were strikingly different in the first and second halves of therapy. Both husbands and wives reported that their partners showed large improvements in target behaviors early in therapy ($p < .001$) but that they significantly decreased during the second half of therapy ($p < .01$). Furthermore, wives ($p < .05$) and husbands ($p < .01$) in TBCT reported larger improvements in partners' target behaviors early in therapy than did husbands and wives in IBCT. However, couples in both therapies relapsed at relatively equal rates in the second half of therapy. These patterns are depicted in Figure 1.

The results from the positive and negative log frequency subscales were mixed (see Table 2). Neither husbands nor wives showed significant increases in positive behaviors early in therapy, but both husbands ($p < .001$) and wives ($p < .01$) reported that their spouses increased the log frequency of their positive behaviors during the second half of therapy. In addition, husbands in TBCT, compared with husbands in IBCT, reported that their wives showed significantly more increases in positive behaviors early in therapy ($p < .01$). For the negative behavior subscale, husbands, but not wives, reported that their spouses showed significant decreases in the log frequency of negative behaviors early in therapy ($p < .01$). There were no significant therapy differences. Late in therapy, however, both husbands ($p < .001$) and wives ($p < .01$) reported that their partners showed significant increases in the log frequency of negative behaviors. This pattern did not significantly differ by therapy.

Acceptability of partner behaviors. In addition to perceptions of the frequency of their partner's behavior, we were interested in change in the acceptability of those behaviors after controlling for the reported frequency. Therefore, in all the analyses of emotional acceptance, the corresponding frequency subscale for husbands and wives was entered into the equation predicting acceptability in addition to the linear and quadratic terms capturing time.

After controlling for changes in frequency, both husbands and wives became significantly more accepting of their partners' target behaviors early in treatment ($p < .001$). Notably, acceptance increased significantly more in IBCT than it did in TBCT for both spouses ($p < .01$). In the second half of therapy, husbands, but not wives, continued to show increasing levels of acceptance. Furthermore, both husbands and wives in IBCT showed significantly higher increases than did spouses in TBCT ($p < .01$). These results are graphed in Figure 1.

Spouses reported significant increases in both acceptability of positive and negative behaviors early in therapy ($p < .01$), but only the acceptability of negative behaviors continued to significantly improve for husbands ($p < .001$) and wives ($p < .01$) during the second half of therapy (see Table 2). There were no therapy differences for either subscale early or late in therapy.

Communication behavior. Levels of positive and negative communication significantly improved over the entire course of therapy ($p < .001$) with significant variability in both scales ($p < .001$). Consistent with expectations, the amount of change in positive communication was significantly higher in TBCT than in IBCT ($p < .001$). However, no therapy differences were found for changes in negative communication. Demand–withdraw interactions also significantly decreased over therapy. Specifically, there was a significant decrease in both levels of wife-demand–husband-withdraw interactions ($p < .001$) and levels of husband-demand–wife-withdraw interactions ($p < .05$). However, in neither case were the amounts or rates of decrease significantly different in the two therapy conditions.

[4] A. Christensen et al. (2004) found similar patterns of treatment differences but, because of different estimation procedures, the current estimates of change are somewhat smaller than those previously reported. In A. Christensen et al. (2004), separate slopes for husbands and wives were not estimated at Level 1, creating slightly higher reliabilities and higher pre-post score correlations.

Table 2
Change in the First and Second Halves of Therapy

Measure	First session to 18 weeks						18 weeks to final session					
	β	*SE*	*SD*	*d*	Tx	Tx *d*	β	*SE*	*SD*	*d*	Tx	Tx *d*
Dyadic Adjustment Scale												
Husband int.	7.51***	1.11	12.46***	.47	1.98*	0.31	3.93***	0.828	7.75*	.24	−1.06	−0.27
Wife int.	5.67***	1.06	11.28***	.33	1.37	0.24	3.36***	0.790	7.38*	.20	−0.350	−0.09
Log frequency of partner behavior												
Target behaviors												
Husband int.	0.340***	0.046	0.502***	.61	0.152**	0.61	−0.050**	0.016	0.039	−.09	−0.002	−0.10
Wife int.	0.386***	0.042	0.448***	.77	0.084*	0.38	−0.041**	0.015	0.061	−.08	−0.021	−0.69
Positive behaviors												
Husband int.	−0.007	0.025	0.270***	−.03	0.069**	0.51	0.036***	0.009	0.021	.14	0.001	0.09
Wife int.	0.043	0.028	0.295***	.17	0.030	0.20	0.033**	0.009	0.027	.13	−0.010	−0.74
Negative behaviors												
Husband int.	−0.087**	0.033	0.338***	−.27	−0.042	−0.25	0.187***	0.016	0.088*	.59	0.004	0.09
Wife int.	−0.059	0.036	0.376***	−.16	−0.038	−0.20	0.205***	0.018	0.332**	.56	−0.007	−0.04
Acceptability of partner behavior												
Target behaviors												
Husband int.	0.214***	0.050	0.561***	.27	−0.156**	−0.56	0.055**	0.019	0.119**	.07	−0.068**	−1.14
Wife int.	0.280***	0.043	0.511***	.40	−0.120**	−0.46	0.009	0.019	0.067*	.01	−0.055**	−1.64
Positive behaviors												
Husband int.	0.417**	0.117	1.22***	.32	−0.146	−0.24	−0.065	0.059	0.349	−.05	0.054	0.31
Wife int.	0.667***	0.120	1.30***	.53	0.200	0.31	0.028	0.060	0.330	.02	0.040	0.24
Negative behaviors												
Husband int.	0.281**	0.097	0.999***	.26	0.098	0.20	0.321***	0.059	0.294	.30	0.014	0.05
Wife int.	0.318**	0.108	1.11***	.24	0.054	0.10	0.244**	0.074	0.379*	.19	0.012	0.06

Note. Tx = effect of treatment condition (integrative behavioral couple therapy = −1, traditional behavioral couple therapy = 1); Tx *d* = effect size of difference in change by therapy condition; int = intercept.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Relation of Change in Satisfaction and Change in Mechanisms

The third question of interest was whether amount of change in the putative mechanisms would be related to amount of change in satisfaction. To examine these relationships, we used a multivariate analysis that modeled change in the DAS and the mechanism simultaneously.[5] Specifically, the equations for these analyses followed the form:

$$\begin{aligned} Y_{it} = \text{DAS}\{&(\text{husband})_{it}[\beta_{h0i} + \beta_{h1i}(\text{linear}) + \beta_{h2i}(\text{quadratic})] \\ &+ (\text{wife})_{it}[\beta_{w0i} + \beta_{w1i}(\text{linear}) + \beta_{w2i}(\text{quadratic})]\} \\ &+ \text{MECHANISM}\{(\text{husband})_{it}[\beta_{h3i} + \beta_{h4i}(\text{linear}) \\ &+ \beta_{h5i}(\text{quadratic})] + (\text{wife})_{it}[\beta_{w3i} + \beta_{w4i}(\text{linear}) \\ &+ \beta_{w5i}(\text{quadratic})]\} + e_{it}. \quad (2) \end{aligned}$$

Using the latent variable regression procedure in HLM 5.02 (Raudenbush et al., 2001), the estimated amount of change in the DAS at final session (i.e., β_{h0i} or β_{w0i}) was then predicted from the estimated amount of change in the mechanism at final session (i.e., β_{h3i} or β_{w3i}). In the case of the communication variables, only a single mechanism intercept and linear term were estimated per couple and used to predict change in husband and wife DAS separately. The relations between change in the DAS and change in the putative mechanisms are presented below.

We were also interested in determining whether the relation between change in a specific mechanism and change in satisfaction would differ depending on which therapy the couple received. As recommended by Kraemer et al. (2002), we computed an interaction term between therapy and amount of change in the mechanism and entered that term, along with the main effects of therapy and change in the mechanism, as predictors of change in relationship satisfaction. In all cases, examination of the simple slopes was used to interpret the pattern of the significant interactions.

Log frequency of partner behaviors. Results of the latent variable regression revealed that improvements in the log frequency of target behaviors were strongly related to changes in satisfaction early in therapy for husbands, $t(128) = 4.28$, $p < .001$, $d = 0.80$, and wives, $t(128) = 3.25$, $p < .01$, $d = 0.58$. However, improvements in those same behaviors in the second half of therapy were not related to changes in satisfaction for either wives, $t(128) = 0.70$, *ns*, $d = 0.12$, or husbands, $t(128) = 1.24$, *ns*, $d = 0.22$. Changes in the log frequency of positive behaviors [husbands,

[5] For a more detailed description of multivariate multilevel analyses and their relation to latent growth curve modeling, see MacCallum, Kim, Malarkey, and Kiecolt-Glaser (1997).

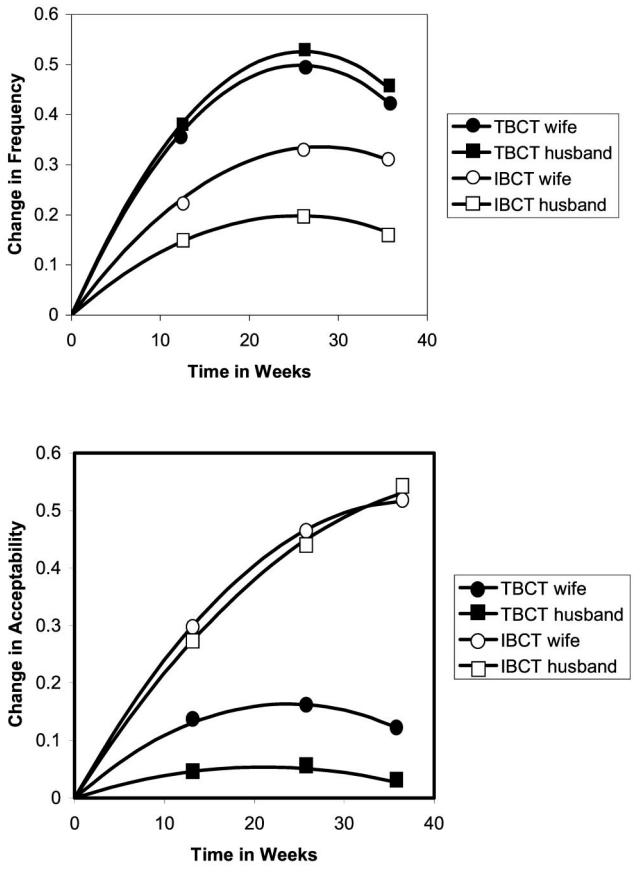

Figure 1. Estimated change in frequency and acceptability of target partner behavior during therapy. TBCT = traditional behavioral couple therapy; IBCT = integrative behavioral couple therapy.

$t(128) = 5.94$, $p < .001$, $d = 1.19$; wives, $t(128) = 3.42$, $p < .01$, $d = 0.63$] and the log frequency of negative behaviors [wives, $t(128) = -3.18$, $p < .01$, $d = -0.58$; husbands, $t(128) = -3.18$, $p < .01$, $d = -0.58$] were related to changes in satisfaction early in therapy in expected directions. In contrast, neither changes in the log frequency of partners' positive behavior [husbands, $t(128) = 1.06$, *ns*, $d = 0.18$; wives, $t(128) = 1.40$, *ns*, $d = 0.24$] nor changes in the log frequency of partner's negative behavior [wives, $t(128) = 0.75$, *ns*, $d = 0.14$; husbands, $t(128) = 0.28$, *ns*, $d = 0.04$] were related to changes in satisfaction during the second half of therapy.

Examination of the interaction term between change in partner behaviors and therapy condition revealed that the relation between behavior and satisfaction did not depend on therapy condition during the first half of therapy (all $|t|s < 1$). However, during the second half of therapy, plots of the simple slopes revealed that changes in the log frequency of husbands' targeted behavior were more strongly related to changes in satisfaction for wives in TBCT than for wives in IBCT, $t(128) = 2.03$, $p < .05$, $d = 0.37$; a similar trend was revealed for husbands' reports of behaviors they targeted in their wives, $t(128) = 1.80$, $p < .10$, $d = 0.32$. In addition, changes in the log frequency of negative behaviors were more strongly related to changes in satisfaction for both husbands, $t(128) = 2.83$, $p < .01$, $d = 0.52$, and wives, $t(128) = 2.68$, $p < .01$, $d = 0.47$, in TBCT than they were for spouses in IBCT. The interaction terms for positive behavior were not significant for wives, $t(128) = 0.80$, *ns*, $d = 0.14$, or husbands, $t(128) = -0.59$, *ns*, $d = -0.10$.

Acceptability of partner behaviors. Increases in acceptability of target behaviors of partners was significantly related to improvements in satisfaction after controlling for behavior frequency for husbands both early, $t(128) = 2.71$, $p < .01$, $d = 0.49$, and late, $t(128) = 2.26$, $p < .05$, $d = 0.41$, in therapy. Wives increased acceptance of their husband's target behaviors was not related to changes in satisfaction early in therapy, $t(128) = 1.21$, *ns*, $d = 0.22$, but it was significantly related to increases in satisfaction late in therapy, $t(128) = 2.40$, $p < .05$, $d = 0.43$.

However, the relation between improvements in relationship satisfaction and changes in acceptability of positive and negative behaviors differed by gender. For wives, increases in acceptance of husbands' positive behaviors, $t(128) = 2.07$, $p < .05$, $d = 0.37$, but not husbands' negative behaviors, $t(128) = 0.27$, *ns*, $d = 0.04$, were related to increased satisfaction in the first half of therapy. In contrast, increases in acceptance of wives' negative behaviors, $t(128) = 1.86$, $p < .10$, $d = 0.32$, but not acceptance of wives' positive behaviors, $t(128) = 0.52$, *ns*, $d = 0.10$, were marginally related to increases in satisfaction for husbands during the first 18 weeks of therapy. However, neither changes in acceptance of positive behaviors [husbands, $t(128) = 0.68$, *ns*, $d = 0.12$; wives, $t(128) = 0.59$, *ns*, $d = 0.10$], nor changes in acceptance of negative behaviors [wives, $t(128) = 0.59$, *ns*, $d = 0.10$; husbands, $t(128) = 0.68$, *ns*, $d = 0.12$], were related to changes in satisfaction during the second half of therapy. The interaction terms between therapy condition and change in acceptance were nonsignificant during both the first and second halves of therapy, indicating that the relation between changes in acceptance and changes in satisfaction did not depend on the type of therapy received.

Communication. Results of the latent variable regression revealed that increases in couples' positive communication were significantly related to increases in satisfaction for both wives, $t(128) = 4.51$, $p < .001$, $d = 0.85$, and husbands, $t(128) = 5.18$, $p < .001$, $d = 1.01$. Similarly, reductions in negative communication were significantly related to increases in satisfaction for wives, $t(128) = -3.44$, $p < .01$, $d = -0.63$, and husbands, $t(128) = -4.12$, $p < .001$, $d = 0.77$. In addition, reductions in husband-demand–wife-withdraw communication were related to increases in relationship satisfaction for husbands, $t(128) = -2.13$, $p < .05$, $d = -0.39$, and wives, $t(128) = -2.33$, $p < .05$, $d = -0.41$. However, reductions in wife-demand–husband-withdraw communication were significantly related to increases in relationship satisfaction only for wives, $t(128) = -2.26$, $p < .05$, $d = -0.41$. The same relation showed only a trend toward significance for husbands, $t(128) = -1.82$, $p = .068$, $d = -0.32$. None of the interaction terms were significant, suggesting consistency of these relationships across the two treatments.

Discussion

In contrast to previous studies of couple therapy, the current study revealed several promising mechanisms of change. One of the most interesting findings of the current study is the differential amount of change early and late in therapy in frequency and acceptability of behaviors. In the first half of therapy, the frequency of target behaviors significantly improved, with significantly more change in the frequency of target behaviors in TBCT

than in IBCT. However, spouses reported significant decreases in the frequency of target behaviors in the second half of therapy. In addition, although the frequency of positive behaviors significantly improved in the second half, the frequency of negative behaviors significantly increased during the second half of therapy.

Like frequency, acceptability showed significant increases during the first half of therapy on all three scales for both spouses. During the second half of therapy, however, wives' and husbands' acceptance of negative behaviors and husbands' acceptance of target behaviors continued to significantly increase. Acceptance of target behaviors showed significantly greater increases in IBCT than in TBCT both early and late in treatment. In contrast to the frequency measures, there was no evidence of relapse in any of the acceptance measures.

When paired with the differential relation of frequency and acceptance with satisfaction changes early and late in therapy, these results become even more striking. In the first half of therapy, improvements in all three frequency scales were strongly related to increases in relationship satisfaction for both spouses. However, in the second half of therapy, none of the frequency scales were related to changes in satisfaction for husbands or wives on average across the two treatment conditions. In contrast, changes in husband's acceptability of wives' target behaviors and changes in wife's acceptability of husbands' positive behaviors were significantly related to changes in husbands' and wives' respective satisfaction during the first half of therapy. Moreover, increases in acceptability of target behaviors during the second half of therapy were significantly related to improvements in satisfaction across treatments. There were no significant Treatment $\times$ Acceptance interactions during either period. In summary, the results of the current study suggest that during the first half of therapy, increases in frequency and acceptance for both spouses are related to increases in satisfaction for both therapies. However, during the second half of therapy, it seems that increases in acceptance remain important for both therapies, whereas the amount of change in the frequency of partner behaviors becomes less critical.

It is also notable that the effects of therapy on the mechanisms and the relation of those mechanisms with changes in relationship satisfaction depended on the type of therapy received. As expected, the results suggested that TBCT tended to create more improvements in communication and frequency of partner behaviors than did IBCT, whereas IBCT generally created more change than TBCT in emotional acceptance. The differential effects of therapy were most evident on measures of target behaviors tailored for each spouse (and, because they were provided to the therapist, likely a major focus of therapy) rather than more general measures of change in the mechanisms. Also intriguing were the differential relations in IBCT and TBCT of change in frequency with change in relationship satisfaction during the second half of therapy. Specifically, although the frequency of target behaviors significantly relapsed during the second half of therapy for the average couple, this relapse was more harmful to relationship satisfaction in TBCT than in IBCT. Although several explanations are possible, when considered in concert with the increasing gains in acceptance in IBCT during the second half of therapy (see Figure 1), these results suggest the possibility that improvements in acceptance continue to create change when the effects of behavior change begin to wear off. Another possibility is that a heavy focus on behavior change in TBCT may actually be iatrogenic for some couples over the long term (e.g., Halford, Saunders, & Behrens, 2001).[6]

Taken as a whole, the results of the current study provide a cautionary warning to those treatments that focus on specific and immediate change, such as TBCT and solution-focused approaches (e.g., Hoyt, 2002). Whereas TBCT created strong initial gains in relationship satisfaction (indeed, significantly larger gains for husbands than did IBCT), the significant relapse in the frequency of target behaviors and significant increase in negative behaviors during the second half of therapy are troubling. These findings suggest that spouses are unable to maintain their early large gains in the frequency of their behaviors, consistent with previous discussions of rule-governed behavior change in couple therapy (A. Christensen, Doss, & Atkins, in press; Jacobson & Christensen, 1996). However, it is important to note that couples demonstrated significant gains in the frequency of positive behaviors during the second half of therapy. Also notable is the fact that TBCT did not show more relapse in behavioral frequency than did IBCT; in fact, they both relapsed in the second half of therapy at relatively the same rate. What these results do suggest, therefore, is that an immediate change in behavioral frequency may not be enough regardless of the treatment. Indeed, because behavior change is one of the central foci of TBCT, these relapses during the second half of therapy may help to explain the high rates of relapse (Jacobson, Schmaling, & Holtzworth-Munroe, 1987) and divorce (Snyder et al., 1991) typically found in follow-ups of TBCT. Of course, a full understanding of the impact of these relapses in the second half of therapy must await long-term follow-up on these couples.

In contrast, the significant relation of increases in emotional acceptance with improvements in relationship satisfaction lends tentative support to the focus on the emotional context and meaning of such behaviors found in IBCT. Even in the context of relapsing behaviors, couples in IBCT reported significant increases in acceptance during the second half of therapy. Furthermore, increases in acceptance were significantly related to increases in satisfaction for couples in both therapies, leaving open the possibility that emotional acceptance could be an important mechanism of change in the second half of couple therapy. Moreover, because there was no evidence of significant relapse in acceptance during therapy, it may be that changes in emotional acceptance are a more durable form of change (e.g., Jacobson & Christensen, 1996). As with changes in frequency of behaviors, however, only an examination of the impact of changes in acceptance over the long term can address this critical question.

If we consider two sets of findings from this study, (a) that behavior change is associated with improvement early in treatment, whereas acceptance is associated with improvement later in treatment and (b) that TBCT induces greater behavior changes, whereas IBCT induces greater changes in acceptance, then it is tempting to envision a treatment that starts with TBCT and ends with IBCT. Indeed, a similar approach has been suggested by Snyder and Schneider (2002). However, a focus on acceptance might not follow easily from an emphasis on making change—if change is successful, why focus on acceptance? If change is unsuccessful, then acceptance comes on the heels of failure. There-

[6] We would like to thank an anonymous reviewer for this suggestion.

fore, the implications of the current study for modifying treatment protocols are unclear.

To place these findings in context, however, we should also note limitations of the current study. Although we believe that a within-individual analysis of mechanisms captures most closely the construct of change in psychotherapy, the intraindividual conceptualization of mechanisms defined here is modeled as the relationship between two variables in the presence of a necessary third variable (here, couple therapy), rather than the relationship between three variables. Differences between the two types of couple therapy are modeled as moderators of change rather than a cause of change. As such, this definition, though allowing for an examination of mechanisms of change in therapy, is not an actual test of mediation as advanced by Baron and Kenny (1986; see Doss & Atkins, 2004, for further discussion). Another limitation is the relatively few number of assessments during the course of therapy. The limited number of assessments reduces reliability of the change estimates and therefore power to find effects; thus, the current study may underestimate the relation between mechanisms and satisfaction across time and treatment differences in the measures. Finally, because the study used self-report methods to capture change in satisfaction and changes in the putative mechanisms, it is possible that shared method variance inflated the relation between changes in the two constructs. For example, it is possible that the current study was one of the first to find improvements in communication to be consistently related to changes in satisfaction because we used a self-report measure of communication, whereas previous studies (e.g., Baucom & Mehlman, 1984; Halford et al., 1993; Iverson & Baucom, 1990) used observational measures of communication. Although it is impossible to rule out some impact of shared method variance, the different relations between satisfaction and the mechanisms in the two therapies, and in the two halves of therapy, make it unlikely that these relations are simply a result of shared method variance.

Despite these limitations, the current study offers several promising directions for future research. First, the current results emphasize the importance of examining mechanisms of change early and late in therapy rather than over the entire course of therapy. Indeed, this study is the first examination of mechanisms in couple therapy that included more than a simple pre- and posttest design. It was these separate analyses that revealed perhaps the most important finding of the current study—the strikingly different role of changes in the frequency of partner behaviors early versus late in therapy. In addition, results in the first and second halves of therapy suggest that emotional acceptance of the partners' behaviors may be important to improvements in relationship satisfaction early and late in therapy. Second, the results of the current study emphasize the utility of mechanism measures tailored to the needs and presenting problems of individual clients. As is likely to be the case for most examinations of psychotherapy mechanisms, target measures in the current study showed larger changes and stronger relations to improvements in marital satisfaction than most other measures.

However, in order to make strong causal statements about the relation between change in mechanisms and change in relationship satisfaction, future research is necessary. The results of the current study are not sufficient to establish a causal effect of the mechanisms on relationship satisfaction; indeed, they do not even offer evidence on the direction of effect between the two variables. As discussed in detail in Doss (2004), we advocate considering results such as those in the current study as preliminary evidence of important change mechanisms that can serve to guide future exploratory investigations of therapy process. For example, Cordova, Jacobson, and Christensen (1998) revealed important in-session communication differences between couples in IBCT and TBCT. Future investigations should explore whether these in-session communication differences subsequently lead to improvements in frequency, acceptance, or communication outside of the therapy session.

It is our hope that the current study is part of the leading edge of a larger movement toward intensive investigations into mechanisms of change in many types of psychotherapy. As the first of its kind in the couple therapy field, this study adds to our understanding of change in couple therapy by respecting the complex nature of change. Moreover, in addition to illuminating change in couple therapy, the statistical framework used in the current study can serve as a useful model for further investigations of mechanisms in other types of psychotherapy. Indeed, as the design and analyses of mechanism studies improve, we expect that mechanism studies will begin to shape the understanding, development, revision, and dissemination of more effective psychotherapies.

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Received June 21, 2004
Revision received September 7, 2004
Accepted September 13, 2004 ■