MOTIVATING ACTION AND MAINTAINING CHANGE: THE TIME-VARYING ROLE OF HOMEWORK FOLLOWING A BRIEF COUPLES' INTERVENTION

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Studies regarding the effectiveness of homework assignments in cognitive-behavioral treatments have demonstrated mixed results. This study investigated predictors of compliance with homework recommendations and the time-varying relationship of recommendation completion with treatment response in a brief couples' intervention (N = 108). More satisfied couples and couples with more motivation to change completed more recommendations, whereas couples with children completed fewer. The association between recommendation completion and treatment response varied with the passage of time, with the strongest effect observed 6 months after the intervention, but no discernible differences at 1 year postintervention. Couples that completed more recommendations experienced more rapid treatment gains, but even those couples doing substantially fewer recommendations ultimately realized equivalent treatment effects, although they progressed more slowly. Implications are discussed.

Out-of-session practice assignments, often called "homework," are widely used across a variety of therapeutic methods. The use of homework is particularly popular among treatments based on the cognitive-behavioral tradition, for individuals, couples, and families alike (Kazantzis, Deane, Ronan, & L'Abate, 2005). Within this model, at-home practice is used to transfer skills learned in-session into a client's outside life, by generalizing specific behaviors practiced in-session into the client's broader sphere of functioning (Kazantzis et al., 2005). Clients are encouraged to apply skills learned in treatment to appropriate and useful situations that arise in their everyday lives. The current study focuses on the use of out-of-session homework recommendations after attending a Marriage Checkup (MC; Cordova, 2014), which is a two-session assessment and feedback intervention designed to help couples begin the process of change, including both self-directed change and appropriate treatment seeking, toward the broader goal of preventing marital deterioration.

Typical homework assignments offered in cognitive behaviorally based couples' treatments include observational assignments, writing/tracking assignments, experiential learning tasks, and bibliotherapy (Dattilio, 2005). The MC is based on Integrative Behavioral Couples Therapy (IBCT; Jacobson & Christensen, 1998), which tends to focus on acceptance-based techniques,

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emphasizing contingency-shaped change, rather than on more concrete-behavioral techniques, emphasizing rule-governed change. Although the MC does offer concrete and practical options to address couple distress, many of the homework recommendations for couples are in line with the more acceptance-based approach. Additionally, because the MC is a two-session intervention in which options are presented in the second session, out-of-session practice occurs after the conclusion of the intervention rather than in between regular sessions as is typical in tertiary treatment. Consequently, there is limited opportunity for therapists to help couples generalize skills from the intervention, so out-of-session practice may function differently in the MC than in tertiary therapy. This leaves open the question of clinical utility of homework assignments in this context.

Research on compliance with homework assignments has suggested that commitment to completing out-of-session work across individual cognitive-behavioral treatments is predicted by therapist follow-up on a client-initiated idea, discussion of readiness/willingness to participate in the activity, concrete operationalization of the task, therapist encouragement, contractual commitment, and in-session practice (Mahrer, Gagnon, Fairweather, Boulet, & Herring, 1994). Although many aspects of compliance for individuals may be relevant for couples in treatment, couples may also experience unique barriers to and predictors of homework compliance. As there is a lack of research focusing on homework compliance in couples-specific treatments, it may be useful to consider predictors of help seeking and treatment outcomes as potential predictors of assignment compliance. Research suggests that lower marital satisfaction is related to increased treatment seeking (Doss, Rhoades, Stanley, & Markman, 2009), although it is likely that more satisfied couples allocate more attention to their relationship. For this reason, it is worth disentangling the effects of relationship satisfaction from motivation for change in understanding engagement with homework assignments. Research has also suggested that women are overall more likely to seek treatment and that women's level of distress is more strongly related to treatment seeking than men's marital distress (Doss, Simpson, & Christensen, 2004; Fleming & Cordova, 2012). Studies of longitudinal examinations of IBCT versus Traditional Behavioral Couples Therapy have found that couples that show improvement in relationship satisfaction have been married longer than couples that do not (Baucom, Atkins, Rowe, Doss, & Christensen, 2015). In the current study, we investigate the predictors of compliance with homework recommendations within the unique context of the MC.

It is also critical to understand the specific contribution of homework to treatment outcomes. In fact, a majority of the research on homework in treatment has examined whether or not treatment packages including homework improved treatment outcomes relative to those without homework. In a meta-analysis across many cognitive-behavioral treatments, Kazantzis, Whittington, and Dattilio (2010) found that 62% of clients improved in treatments that included homework, as opposed to only 38% improvement in treatments that did not include homework. This analysis estimated a causal effect for homework of $d = .48$ in controlled studies. Again, there is a relative lack of literature addressing couples-specific treatments, but one study found that therapist and couple ratings of compliance to homework were related to treatment success (Holtzworth-Munroe, Jacobson, DeKlyen, & Whisman, 1989). The vast majority of literature on the causal effect of homework assignments relates to homework in tertiary therapy, where therapists have ongoing contact with patients, whereas relatively little work has examined the role of homework in briefer interventions where therapeutic contact with patients is more limited. In one such study, Davidson and Horvath (1997) found that homework compliance was not related to treatment gains in a three-session couples' intervention, although with a relatively small sample and small effect size, that study may have been underpowered.

Hypotheses

In the current study, we seek to examine relative out-of-session homework compliance and usefulness in treatment in the context of the MC program. First, we hypothesize that marital satisfaction, length of relationship, motivation to change, the therapeutic alliance, and education will be positively associated with completing homework recommendations, whereas having children may be a barrier to engagement with homework recommendations. Second, we hypothesize that homework recommendation follow-through in the MC will predict improved treatment outcomes.

METHOD

Participants

Participants included 113 couples that were recruited for the MC from a northeastern metropolitan area of the United States. In total, 215 couples participated in the MC, but only the 113 couples randomized into the treatment group were analyzed in this study (109 of which were opposite-sex couples). Couples ranged from extremely satisfied to extremely dissatisfied with their relationships, with 20% of the sample meeting the clinical cutoff for relationship distress. On average, couples completed the equivalent of four homework recommendations ($SD = 1.6$) at 6-month follow-up. Participants in the study were 92% Caucasian, 3% African American, 3% Asian, and 2% Hispanic. The average age for men was 47 years ($SD = 11.3$), and the average age for women was 45 years ($SD = 11.4$). Participants had an average of two children ($SD = 1.6$), median household income in the $75,000–$99,000 range, and the majority were college educated ($M = 16.1$ years, $SD = 2.7$). On average, participants had been married 18 years ($SD = 11.6$).

Procedures

Couples were recruited for the study through the use of print and electronic advertisements as well and print and broadcast media. Couples were eligible for the study as long as they were (a) married and (b) not currently in couples' therapy. After screening, participants were randomly assigned to either treatment or control groups and sent an initial packet of questionnaires, but not informed of intervention assignment until the questionnaires were returned. Once questionnaires were returned, treatment couples were immediately scheduled for their first visit. These couples completed additional questionnaires after the feedback visit, and at 2-week, 6-month, and 1-year follow-up. The same pattern of clinic visits and questionnaires was repeated over a second year, although the current study examines just the first year of data. Further information on recruitment can be found in Cordova et al.' (2014) paper.

During the initial assessment visit, couples discussed their reasons for seeking a MC, the history of their relationship (Buehlman, Gottman, & Katz, 1992), and participated in three observed conversations. The final component of the assessment was a therapeutic interview, which allowed each partner to discuss his or her view of both the strengths and areas of concern for the relationship. In the feedback visit, therapists reviewed the content of the previous session and presented couples with their scores on several major questionnaires. The session concluded with the therapist presenting and discussing an individually tailored menu of at-home homework recommendation options for the couple to consider using to improve their areas of concern (e.g., reading book chapters, scheduling dates/conversations, practicing acceptance). These recommendations were generated by the therapist—and tailored uniquely for each couple—based on the couple's initial assessment visit. The therapist was able to draw from a list of recommendations generated early in the study, but was also at liberty to create new recommendations based on the couples' needs. The therapist also collaborated with the couple to generate their own recommendations for addressing areas of concern. The protocol for brainstorming and assigning homework recommendations, as well as example recommendations, is provided in Appendix S1. Overall, therapists generated a mean of 6.5 homework recommendations (range = 3–12, mode = 6) across 2–3 areas of concern, while couple members generated a mean of 3.1 homework recommendations (range = 0–4, mode = 3) across the same areas of concern. Couples were presented each homework recommendation option and encouraged through Motivational Interviewing principles (Miller & Rollnick, 2002) to take action in their marriage to address areas of concern. The ultimate decision as to which recommendations to follow was left with the couple.

Therapists included the developer of the intervention (the last author of this manuscript) and nine clinical psychology doctoral students. The last author supervised all cases. Therapists saw an average of 18 couples (range: 3–25). Sessions were coded for treatment fidelity with a coding booklet developed to rate adherence to the treatment manual. Fidelity was high. More information on therapists and fidelity coding can be found in Cordova et al. (2014).

Measures

Homework Recommendation Completion, the primary measure of interest in the current study, was measured by the Recommendations Follow-Up Form, a measure of homework recommendation completion created for this study. This form was administered to treatment couples only and was tailored to ask about specific recommendations. The form was completed at 2 weeks, 6 months, and 1 year postfeedback (and at the same points after follow-up). It prompted participants with each of their homework recommendations, and asked participants, "How much did you and your spouse *address* recommendation #1?" using a scale from 0 (*did not even think about*) to 100 (*specifically thought about and addressed*). For ease of interpretation, results have been rescaled by dividing by 100, such that one point reflects the equivalent of one complete homework recommendation.

Marital Satisfaction was measured by the Quality Marriage Index (QMI; Norton, 1983) and the Global Distress Subscale (GDS) of the *Marital Satisfaction Inventory, Revised* (Snyder, 1997). The QMI is a 6-item measure that assesses a partner's evaluation of the quality of his or her marriage. The first five items in the measure ask participants to rate their level of agreement on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) on such items as "we have a good relationship," and "my relationship with my partner makes me happy." The final question asks participants to rate their overall level of happiness with their relationship from 1 (*not at all happy*) to 10 (*extremely happy*). The sum of items is used as a measure of marital quality. The GDS is an inventory of 22 true/false items such as, "Even when I am with my partner, I feel lonely much of the time," and "Our relationship is as successful as any that I know of." The items are summed, with reverse coding as appropriate, and *t*-scores are assigned separately for men and women, according to Snyder's (1997) norms. Cronbach's alpha in the current sample was .97 for the QMI and .93 for the GDS, indicating good reliability of scale items.

Readiness to Change was measured by the Couples' Stages of Change Questionnaire. This is a 32-item measure of four theoretically consecutive stages of change (precontemplation, contemplation, action, and maintenance). This measure was directly adapted from the Stages of Change Questionnaire—Psychotherapy (McConnaughy, Prochaska, & Velicer, 1983) to be relevant for couples' treatment. For example, an item from the original scale, "I think I might be ready for some self-improvement," was adapted to, "I think my marriage might be ready for some improvement." Other sample items include, "I guess we have problems in our marriage, but there is nothing I really need to change," and "I am really working hard to change problems in our marriage." Items are scored 1–5 (*strongly disagree* to *strongly agree*). This study used the readiness to change score (DiClemente, Schlundt, & Gemmell, 2004), which was developed to serve as a univariate, pretreatment predictor and was calculated by summing the contemplation, action, and maintenance subscales and subtracting the precontemplation scale. Cronbach's alpha for the 32 items was .94.

Therapeutic Alliance was measured by the Therapeutic Alliance Scale (Cordova, 2007), an unpublished measure created for this study. The scale has 15 items assessing the therapeutic alliance, with items such as, "At time I questioned our therapist's judgment," "I felt like I could open up to our therapist," and "Our therapist didn't take sides." Items were scored from 1 to 5, *strongly disagree* to *strongly agree*, and summed to generate a scale score. Cronbach's alpha in the current sample was .89, indicating adequate reliability of scale items.

Analytic Strategy

The analyses involved two stages: a structural equation model examining predictors of homework recommendations completed at the 6-month time point and a latent growth model examining the association of homework recommendation completion with treatment response. Of 113 couples enrolled in the treatment condition, five same-sex couples were excluded from the analysis because subsequent analyses showed partners to be distinguishable and including them would have violated model assumptions. Thirteen couples either dropped out before treatment or did not complete packets after treatment, and an additional two couples dropped out before the 6-month time period. Three further couples that did not drop out failed to return their 6-month packets. In sum, 18 couples were missing on all variables at 6-month follow-up. By the end of the 1-year follow-up period, 24 couples (22.2%) had dropped out of the study. Further details on dropouts can be

obtained from Cordova et al. (2014). All 108 opposite-sex couples were included in both SEM models, making this a full intent-to-treat analysis. Full information maximum-likelihood estimation was used in the structural equation models, guaranteeing unbiased estimates under conditions of missing at random (MAR).

To explore predictors of homework recommendation completion, homework recommendations were regressed on two couple-level variables: relationship length and presence of children (binary), as well as five individual-level variables: each partner's education, baseline marital satisfaction, readiness to change, therapeutic alliance, and years of education. We also controlled for the number of homework recommendations each couple received. We followed the actor–partner interdependence model framework for assessing individual-level variables, allowing each individual's amount of homework to be predicted by their own pretreatment variables as well as their partner's pretreatment variables (Cook & Kenny, 2005). To approximate the coefficient of determination for the predictors of interest, we performed the analysis stepwise, first entering only the number of homework recommendations, then adding the rest of the predictors in a block to determine the change on the coefficient of determination driven by the variables of interest. All predictor variables, except for the binary indicator of children, were standardized before performing the analysis. The outcome, amount of homework completed, was divided by 100 such that one unit reflected the equivalent of one complete recommendation.

We then examined completed homework recommendations as a predictor of treatment gains. To test this, we modeled marital satisfaction with a piecewise latent growth curve, with a knot located at the follow-up period 2 weeks postfeedback. The two pieces of the slope represent initial gains from baseline to 2 weeks postfeedback, and maintenance of gains over the follow-up period, from 2 weeks postfeedback to 1 year, as this model is consistent with the shape of change observed in other studies on this sample. We coded time such that each slope represented the total change over that phase (i.e., the loading of each slope's endpoint was fixed at one). Consistent with Cordova et al. (2014), we used two scales as indicator variables for marital satisfaction: the Quality of Marriage Index and the Marital Satisfaction Inventory-Revised Global Distress Scale. Using two measures allowed us to disentangle individual error from trajectory disturbance (Bollen & Curran, 2005). We included total homework recommendations completed as a time-varying covariate, centered at each time point to ease interpretation of the slope variables. To address potential confounding, we controlled for the baseline characteristics associated with homework recommendation completion by including them as predictors of the initial and follow-up slopes.

Analyses were performed using Mplus version 7.3 (Muthén & Muthén, 1998–2012).

RESULTS

Hypothesis 1: Predictors of Homework Recommendation Completion

Means, standard deviations, and correlations of the predictors can be found in Table S1. We found men's and women's actor and partner effects not to differ significantly, Wald(11) = 9.94, $p = .54$. That is, the effect of men's predictors on their own homework recommendation completion was not different from the effect of women's predictors on their own homework recommendation completion (actor effects), nor did individuals' effects on their partner's homework recommendation completion (partner effects) differ by sex. Therefore, for purposes of parsimony and power, we constrained men's and women's effects to be equal, meaning we generated one actor effect and one partner effect for each variable. We assessed the fit of the final model using the chi-square statistic, Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), and root-mean-squared error of approximation (RMSEA). For the CFI and TLI, values above .90 are deemed adequate and above .95 are deemed good. For RMSEA, values below .08 are deemed adequate and below .06 are deemed good. Fit of the final model was excellent, with a nonsignificant chi-square value, $\chi^2(35) = 29.98$, $p = .71$, indicating the modeled data did not deviate markedly from the observed data, and CFI = 1.00, TLI = 1.07, RMSEA = 0.00. Path coefficients are listed in Table 1. Four significant predictors of homework recommendation completion emerged. Three of these were positively associated with completing homework recommendations: the actor's baseline marital satisfaction, the actor's readiness to change, and the total number of homework recommendations that were generated. An increase in one standard deviation of marital satisfaction was associated

Table 1

Predictor Variables for Number of Homework Recommendations Completed at 6-Month Follow-Up

Predictor	β	SE	t	p
Couple-level variables				
Number of options (unstandardized)	**.31**	**.07**	**4.32**	**< .001**
Relationship length	.03	.17	0.20	.846
Children (binary)	**−1.17**	**.40**	**−2.93**	**.003**
Actor effects				
Marital quality	**.67**	**.19**	**3.60**	**< .001**
Readiness to change	**.43**	**.14**	**2.97**	**.003**
Years of education	−.02	.14	−0.15	.879
Therapeutic alliance	.09	.14	0.69	.492
Partner effects				
Marital quality	.00	.18	0.02	.986
Readiness to change	.15	.15	1.03	.305
Years of education	−.13	.13	−0.95	.341
Therapeutic alliance	.01	.14	0.06	.953

Note. Unless otherwise stated, predictor variables have been standardized. The outcome was left in raw units. Statistically significant relationships have been boldfaced.

with completing, on average, an additional two-thirds of a homework recommendation, and a one standard deviation increase in readiness to change was associated with completing nearly one-half of an additional homework recommendation. Of particular note, having children was negatively associated with completing homework recommendations, as couples with children completed approximately one fewer homework recommendation than couples without children. Although therapeutic alliance did not emerge as a significant predictor, it had a relatively restricted range, with most couples endorsing the top scores on the questionnaire, decreasing the likelihood of a significant finding. The number of homework recommendations generated accounted for 7% of the variability in the amount of completed recommendations, whereas the remaining predictors accounted for an additional 33%.

We used a *t* test to compare the total amount of homework recommendations completed by men and women. We found that men ($M = 3.77$, $SD = 1.84$) and women ($M = 4.14$, $SD = 2.07$) did not complete a significantly different amount of homework recommendations, $M_{diff} = 0.37$, $t(88) = 1.67$, $p = .10$.

Hypothesis 2: Association of Homework Recommendation Completion With Treatment Response

Given the equivalence of men's and women's total amount of homework recommendations completed, the joint nature of the assignments, the correlation between partner reports of total amount of homework completed ($r = .47$), and our conceptualization that homework should function at the couple level, we averaged partners' completed homework recommendations and entered them as a couple-level variable in the growth model. Despite a significant chi-square value, $\chi^2(263) = 364.43$, $p < .001$, indicating the model was not a perfect fit to the data, fit of the final model was otherwise adequate on the criteria outlined under *Hypothesis 1*, CFI = .94, TLI = .94, RMSEA = 0.066. Results are presented in Table 2 and pictured in Figure S1. The growth curve was consistent with Cordova et al. (2014), showing a sharp gain immediately after treatment, followed by a long period where gains were mostly maintained. The only control variable significantly associated with change over time was couples' baseline satisfaction, indicating that couples that were initially more distressed improved more over the first phase of follow-up. Gains between baseline and feedback were not significantly associated with the

Table 2
Growth Model Parameters

Predictor	β	SE	t	p
Growth parameters				
Slope 1 (change to 4 weeks)	**.26**	**.06**	**4.47**	**< .001**
Slope 2 (change from 4 to 52 weeks)	−.06	.07	−0.87	.382
Covariates				
Intercept → Slope 1	**−.26**	**.08**	**−3.39**	**.001**
Intercept → Slope 2	.02	.07	0.31	.742
Children → Slope 1	−.02	.13	−0.18	.858
Children → Slope 2	.02	.16	0.14	.893
Readiness to change → Slope 1	.01	.04	0.14	.889
Readiness to change → Slope 2	.04	.06	0.75	.456
Number of recs → Slope 1	−.04	.03	−1.65	.100
Number of recs → Slope 2	.01	.03	0.27	.790
Homework completed → Marital satisfaction				
2-week HW → Feedback	.04	.04	0.95	.342
2-week HW → 2-week	**.08**	**.03**	**2.61**	**.009**
6-month HW → 6-month	**.11**	**.03**	**3.74**	**< .001**
1-year HW → 1 year	.02	.05	0.31	.760

Note. Marital satisfaction and readiness to change were standardized. Each unit of homework represented the equivalent of completing one full recommendation.
Statistically significant values have been bolded.

number of homework recommendations completed at 2 weeks posttreatment, supporting the notion that it was not a positive response to treatment driving the amount of homework recommendations couples completed, decreasing the likelihood that an unobserved latent variable drove both homework and treatment response. Number of homework recommendations completed was significantly associated with increases in marital satisfaction at both 2 weeks and 6 months posttreatment, suggesting that couples that did more homework had a larger initial response to treatment and maintained that differential through the 6-month follow-up period. The strongest effect occurred at 6 months, where doing one additional homework recommendation was associated with an increase of 0.11 standard deviations in marital satisfaction, nearly 50% of the treatment effect at that time point. That is, couples that did two extra homework assignments could be expected, on average, to experience twice the gains of the average treatment couple at the 6-month point. By 1 year, this differential faded, indicating that completing homework recommendations had a meaningful but temporary association with couples' responses to treatment.

Because wording of the homework recommendation completion item did not differentiate those homework recommendations completed in the current period versus those completed over the entire duration of the study, it was unclear whether the nonsignificant result at 1 year suggested that gains related to recommendations were fleeting, or the measure did not capture decreases in completed homework recommendations over the last 6 months of follow-up. To further explore whether completing homework recommendations had lasting effects, we ran a sensitivity analysis where homework recommendation completion at 6 months was used to predict marital satisfaction at 1 year. Results were equivalent to the model that used the 1-year homework point, with no significant relationship between homework recommendation completion and marital satisfaction at 1 year, buttressing the notion that the relationship between homework recommendation completion and increases in marital satisfaction deteriorated over time despite an enduring intervention effect.

Missing Data

By the end of 1 year, 22% of couples had dropped out of the study. To understand how attrition may have impacted our results, we explored whether data met assumptions for MAR, the condition under which the full information maximum-likelihood estimator produces unbiased results. Because a direct test of MAR is not available, we used Little's Missing Completely At Random (MCAR) Test, a more stringent test of missing data. Little's MCAR test was nonsignificant, $\chi^2(413) = 419.81$, $p = .40$, indicating that the data were MCAR. This suggests that the results in this study were not biased by attrition.

DISCUSSION

This study sought to understand factors that predicted homework recommendation completion and disentangle the role that completing recommendations played in response to a brief couples' intervention. We found that apart from the control variable of the number of homework recommendations actually presented, the presence of children, couples' readiness for change, and baseline marital satisfaction all predicted the amount of homework a couple would ultimately complete and that together, these predictors explained one-third of the total variability in the amount of homework recommendations that couples completed (with an additional 7% explained by the number of options presented).

It is perhaps not surprising that couples with children did fewer recommendations, as childcare responsibilities create an additional barrier to spending time focusing on the relationship itself. Clinical implications of this finding are (a) the importance of explicitly discussing and tailoring the menu of options to suit parents' time constraints, and (b) harnessing the presence of children as a motivating value for relationship enhancement. Clinicians might encourage parents to consider that a healthy romantic relationship—as opposed to simply an intact marriage—plays a critical role for child physical and mental health, social adjustment, and academic performance (Cummings & Davies, 1994). Mostly, all intervention participants will have competing demands on their time; for those with children, acknowledging the extent of these demands and discussing the myriad ways that further time dedicated to maintaining the quality of their relationship can benefit their children may increase motivation to work on the relationship.

In line with the Transtheoretical Model of Change (Prochaska & DiClemente, 1982), we found that readiness for change predicted the amount of effort couples channeled into their relationship after the clinical visits were complete. Although more distressed couples tend to be more likely to seek treatment (Doss et al., 2009), distress within our treatment-seeking sample may have served as a barrier to working on the relationship after treatment. It may be the case that couples become collaborative around their problems more easily once the emotional climate clears enough to undermine discriminated avoidance. This finding also highlights the utility of fostering change talk; in the absence of a full course of therapy, change talk may be a back door to motivating targeted action.

We also found that having more options was associated with completing more homework recommendations out of session. To some degree, this finding may indicate that variety is useful, but we urge caution in interpreting this result. Despite a significant, positive relationship, we strongly suspect that more is not always better and caution against over-interpreting the linear nature of this relationship. In practice, therapists took care to present a reasonable number of options over a reasonable number of domains (on average, couples received ten recommendations across three areas of concern), so the range of this predictor variable has been restricted by clinical experience. Having more options may have increased the likelihood that couples received recommendations that resonated for them, or alternatively, provided couples with more opportunity to classify normal daily occurrences as completed homework recommendations. We might imagine that if the number of options were further increased, homework could befall the same fate as the supermarket shelf with too many different types of jam: reduced consumption due to decision paralysis (Iyengar & Lepper, 2000).

Relationship length, education level, and therapeutic alliance were not significant predictors of homework compliance. It is important to bear in mind that our sample consists of couples that have already decided to attend an intervention. Although relationship length and education level

may be a useful predictor of who attends couples' interventions and how couples do once they are there (Baucom et al., 2015), these variables do not appear to predict how much effort couples put in once they arrive, at least in this sample. Given the vast literature on the importance of the therapeutic alliance and the restricted range of the observed alliance values in this study, we hold the present nonsignificant findings lightly.

In our examination of the longitudinal effect of homework completion, we were concerned with removing the effect of potential confounds in order to isolate the unique contribution of homework recommendation completion to treatment response. Because any variable that predicted both homework recommendation completion and trajectory over the course of treatment was a potential confound, we controlled for the significant predictors of homework recommendation completion, which have been detailed above. Of these, only baseline satisfaction predicted couples' trajectories of relationship satisfaction, with more dissatisfied couples initially improving at a faster rate. Additionally, we speculated that couples that responded quickly to treatment may have been more likely to buy-in to the value of completing homework recommendations, thus raising the possibility that some unobserved variable drove both treatment response and the amount of homework completed. We tested this by examining whether couples' changes from baseline until the end of the session where homework recommendations were offered (e.g., after treatment but before couples had the chance to begin their homework) were related to the amount of recommendations couples ultimately completed. This association was nonsignificant, reducing the likelihood of an unobserved confound between homework recommendation completion and treatment response.

Having controlled for the effects of the most plausible confounders in our data, homework recommendation completion remained a significant predictor of response to treatment through 6 months, with the completion of one additional recommendation associated with a 0.11 standard deviation increase in marital satisfaction, which was nearly 50% of the average treatment effect. Thus at 6 months, couples that completed more homework recommendations had improved more, but this differential was not maintained at 1 year. This finding indicates that homework recommendation completion was associated with more rapid gains after treatment, but even couples completing substantially fewer homework recommendations eventually realized the same treatment effect as those doing more. It may be that couples that initially did more homework recommendations generalized the gains from mechanisms targeted in treatment more quickly, whereas those that did less homework saw their patterns of relating change more slowly.

An alternate interpretation of these findings stems from a concern about the wording of our homework scale. The typical item asked, "How much did you and your spouse address recommendation #1?" rather than specifying a time period, "How much did you and your spouse address recommendation #1 *in the past six months*?" Broadly, there are two types of homework recommendations: one-time activities (e.g., reading a book chapter) and ongoing activities (e.g., scheduling time together). If our item was not sensitive to changes in ongoing assignments, it may have overestimated homework completed over the last 6 months of follow-up, thereby underestimating the impact of ongoing homework in that period. If that were the case, we would still expect to see homework-related gains from the proportion of one-time assignments couples had previously completed. Either those effects were too small to detect, or couples completed more or benefited more from the ongoing types of assignments. The eroding effect of homework could therefore be due either to couples doing less homework over time in a way that was not captured by our measure, or because the effects of completed homework weakened over time. Although the mechanism responsible for the eroding effect of completing homework recommendations is somewhat in doubt, it is nonetheless clear that the effects of homework recommendations were more rapid and not as long lasting as other effects attributable to the intervention.

The studies examined in Kazantzis et al.'s (2010) meta-analysis, which confirmed the value of homework in tertiary therapy, focused on gains immediately posttreatment but did not disentangle the contribution of homework to maintaining those gains over longer follow-up. In one study of homework's role in cognitive-behavioral group therapy for depression, Neimeyer and Feixas (1990) found that patients assigned to the homework condition had greater reductions in

depression immediately posttreatment, but the between-group differences between homework and no-homework conditions had eroded by 6-month follow-up. The present study finds a similar pattern, albeit with the relationship between homework and increases in satisfaction appearing to last somewhat longer. Together, these studies raise the possibility that the influence of homework varies over time, and the mechanisms contributing to quick gains may not be the same mechanisms that maintain longer term gains. In the present sample, completing homework recommendations was associated with more rapid gains, but other factors were more important for maintaining them. In a study using dynamic linear modeling to explore the mediators of this intervention, [Author] found that changes in targeted mediators of intimate safety and acceptance that occurred during the active treatment phase were associated with subsequent changes in marital satisfaction over the course of longer term follow-up ([Author], *under review*). Although homework activities may provide a quick boost, these mediating processes, which are most strongly affected in the time period where couples come into the clinic, appear to be a key to long-term intervention response. Thus, doing homework may make couples better faster, but may not be necessary for generalizing any fundamental changes in relating that came about through the intervention.

Important structural differences between long-term therapy and brief interventions may also help explain the current findings. Dattilio (2005) advised that in tertiary therapy, homework is best utilized to consolidate gains between sessions, generalizing the skills learned in therapy outside of the walls of the treatment room. Ongoing therapy relationships provide an opportunity for the client and therapist to work through any difficulties together. The menu of changes in the present study was aimed toward self-directed change, where couples would not have the opportunity for continued contact with the therapist to troubleshoot difficulties in implementing homework assignments. It is possible that continued therapeutic contact could increase the quality of completed homework—as couples may not get it quite right on the first pass by themselves—thereby strengthening the effect of homework over time. The 6-month follow-up appears to be a critical point for homework: It is the point where homework had the largest influence on gains, and the point after which homework-related gains disappeared. Future work aimed at understanding what happens around this time point would be useful. For example, if couples express difficulty generalizing their newfound skills to emerging problem areas, the option of a brief check-in with their clinician around 6-month follow-up may help couples strengthen their gains. If couples that did fewer homework recommendations report something from treatment having finally "clicked," it would buttress the notion that they generalized treatment gains more slowly on their own.

The most useful generalization of these results might be to other brief, self-directed interventions. The MC's approach to consulting with couples about homework recommendations was adapted directly from Motivational Interviewing, which itself has been adapted to a variety of tertiary care contexts. Thus, there is some rationale to suspect the results of this study might generalize to other brief interventions that include homework components, or those that are entirely self-directed and require sustained involvement on the part of the couple. Indeed, with an increasing number of online and self-directed couples' interventions such as *Our Relationship* (Doss, Benson, Georgia, & Christensen, 2013), *Couple Commitment and Relationship Enhancement* (Couple CARE; Halford, Moore, Wilson, Farrugia, & Dyer, 2004), and *ePrep* (Braithwaite & Fincham, 2007), understanding the process of self-directed change and the ingredients that best sustain it will be increasingly useful for researchers and clinicians alike in their attempt to deliver meaningful care with lasting benefits.

The present findings leave us in a state of ambivalence in our evaluation of the value of homework recommendations in this brief couples' intervention. On the one hand, couples doing more recommendations saw quicker gains and had, on average, a better year than couples doing fewer, even if their endpoints were the same. On the other hand, with an intervention that lasts three or fewer hours, the time spent generating and discussing the menu of options also has a cost, and that time might be better directed toward the core mediators targeted in session, which generated the most lasting change. Because time and energy are limited resources, interventions—particularly brief interventions—must understand how to spend those resources wisely; better capitalizing on this energy could lead to stronger intervention effects. The present findings suggest that the inter-

vention increased motivation and directed it toward targeted action, and although those actions were effective in the short term, there is work yet to be done in translating those actions to enduring gains.

Limitations

As noted already, the wording of the item assessing homework recommendation completion was unclear in the time period to which it referred, and consequently, the erosion of the effect of completing homework recommendations could reflect either a decrease in the strength of recommendations to influence marital satisfaction over time, or a decrease in the continuing effort put into completing recommendations. Either way, this study aids our understanding of the intervention by showing that in the short run, couples that did more homework recommendations increased in satisfaction relative to those that did fewer, and thus, homework options were helpful for couples. However, the results also make clear that over time, the relationship between homework recommendation completion and increases in satisfaction weakened compared to the effects of the intervention itself, suggesting that the active ingredients for longer term change lay elsewhere.

It is also possible that the relationship between homework recommendation completion and treatment response was confounded by unmeasured client factors. In their review of common factors in the marital and family therapy literature, Karam, Blow, Sprenkle, and Davis (2015) described several client factors that may be responsible for improvements in therapy, and would have been good candidates for covariates in the present analysis. For example, it could be the case that clients higher in conscientiousness would be likely to respond more effectively to all aspects of the intervention, both doing more homework and approaching therapist reflections more openly and actively.

Finally, couples received a widely varied menu of options and power considerations prevented us from attempting to disentangle the comparative value of different categories of recommendations. Because assignments tended to cluster across couples' areas of concern, we attempted to fit a multilevel structural equation model to examine whether the effect of homework varied across couples' areas of top concern, but the relatively small sample caused estimation problems with this model. A more thorough understanding of which assignments were most useful, or which areas of concern benefitted most from treatment, would be key to strengthening the existing protocol. Because we are disentangling a small effect, power considerations also prevented us from examining whether therapist-suggested or self-directed homework was more useful in generating change. Future research with larger samples might empirically examine the importance of the couple's involvement in the process of generating homework recommendations.

Amidst these limitations, the present study extends the literature by identifying predictors of homework compliance and exploring the time-varying influence of homework over a long-term follow-up period. These findings raise critical questions about how time is best allocated to foster lasting change in brief interventions and the differential role of homework in interventions with and without ongoing therapeutic contact.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article:

Figure S1. Treatment Response Across High and Low Levels of Homework Completion.
Table S1. Means, Standard Deviations, and Correlations for Predictor Variables.
Appendix S1. Abridged Homework Protocol with Example Assignments.