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Exploring Processes of Change in Couple Relationship Education: Predictors of Change in Relationship Quality

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In the past several decades, a number of largely atheoretical individual and meta-analytic studies of couple relationship education (CRE) programs have focused on program effectiveness without considerations of how these programs work and for whom. To address this gap in the literature, the current study drew upon assumptions from social–cognitive and behavioral theories that are implicit in CRE design to assess the influence of short-term changes from pre- to posttreatment in behaviors and commitment on changes in relationship quality among a racially and economically diverse group of 2,824 individuals who participated in a CRE program. Findings from structural equation modeling indicated that the best-fitting model for both men and women was one in which changes in behaviors predicted changes in relationship quality via their influence on changes in commitment. Further, a series of moderational analyses provided some evidence to suggest that the strength of the relationships between these variables may depend to a small extent on the social address of the participants (race, income) and to a greater extent on characteristics of the CRE experience (i.e., beginning the class at lower levels of functioning, attending with a partner). Findings help us begin to understand the influences among domains of change that occur as a result of participating in a CRE program, as well as offering some useful information to practitioners on demographic and contextual moderators of program outcomes. Implications for future research on the mechanisms of change for CRE are presented.

The preponderance of evidence linking high-quality intimate relationships to individual, couple, and family well-being (e.g., Grych & Fincham, 1990; Kiecolt-Glaser & Newton, 2001) laid the groundwork for significant federal funding support that has been provided over the past decade and a half to implement and assess couple relationship education (CRE) programs focused on the promotion of relationship quality (Hawkins & Ooms, 2012; Roberts, 2005). Although diverse in design and specific content, CRE programs generally involve the provision of structured learning experiences to help individuals and couples develop knowledge, attitudes, and skills related to healthy relationship functioning (Halford, Markman, & Stanley, 2008; Halford & Snyder, 2012; Markman & Rhoades, 2012). Numerous individual and meta-analytic studies have found that CRE programs enhance the quality of intimate relationships and can even prevent marital distress and dissolution, at least in the short-term (Carroll & Doherty, 2003; Hawkins & Ooms, 2012; Hawkins, Blanchard, Baldwin, & Fawcett, 2008).

To ensure the long-term success of these programs, Carroll and Doherty (2003) have argued CRE programs "need to be grounded in sound research" (p. 116), a call echoed by others (Bradbury & Lavner, 2012; Trail & Karney, 2012). We argue here that we need to go further—these programs need to first be grounded in theory, which can inform our research and, in turn, our efforts to improve relationship quality. Drawing from empirically validated theories will enable us to address a long-standing gap in this literature, namely that although we know that CRE programs can be effective in the short-term, we have a relatively limited understanding of *how* they work (Wadsworth & Markman, 2012; Sher, 2012). The premise of the current study is that without knowing what predicts change in individuals' relationships, we cannot confidently assert what features of CRE programs may be requisite for long-term relationship success or may explain a lack of evidence of CRE positive impact (Wood, McConnell, Moore, Clarkwest, & Hsueh, 2010). Thus, the goal of the current study was to draw upon assumptions from behavioral and social learning theory to evaluate processes of change from pre- to posttreatment among a large, racially and economically diverse group of CRE participants. Given that the rates of CRE participation have dramatically increased over the past decade, particularly among more diverse populations (Hawkins & Ooms, 2012; Stanley, Amato, John-

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son, & Markman, 2006), knowing how CRE programs work and for whom they work is an important and timely issue.

How Does Change Occur? Theoretical Perspectives on Relationship Change

The benefits of CRE participation for a number of key relationship dimensions, including communication, conflict, commitment, and relationship quality, are well-documented (Carroll & Doherty, 2003; Hawkins & Ooms, 2012; Markman & Rhoades, 2012). For example, Stanley and colleagues (2006) found that premarital education was linked to less conflict, greater satisfaction and commitment, and reduced odds of divorce (see also Stanley, Rhoades, & Whitton, 2010). Although the authors' discussion of these benefits of CRE participation seems to implicate lower conflict as potentially motivating the other changes, this type of causal linkage was only hinted at. Typically, CRE evaluation studies follow a basic design of assessing concurrent change in multiple areas of couple functioning without regard for relationships among variables of interest.

Wadsworth and Markman (2012) suggest this focus on efficacy without considering the underlying mechanisms of change has left the field of intervention at a critical juncture. They argue the future success of the CRE field now depends not only on demonstrating that programs work, but also determining what is operating to produce the change. In a recent review, Markman and Rhoades (2012) found that most evidence-based programs draw from behavioral and social learning theories to implicitly suggest processes of change, with positive changes in proximal outcomes (behaviors, knowledge, attitudes) thought to benefit more distal outcomes (relationship quality and stability). Content analysis of CRE programs supports this conclusion (Hawkins, Carroll, Doherty, & Willoughby, 2004), as both relational skills (behaviors) and attitudes/motivations are key content areas for most programs. Studies have found evidence that proximal outcomes within these areas, from communication to dyadic coping to relationship self-regulation (Bodenmann, 2005; Bodenmann, Bradbury, & Pihet, 2009; Halford & Wilson, 2009; Schilling, Baucom, Burnett, Allen, & Ragland, 2003; Stanley, Rhoades, Olmos-Gallo, & Markman, 2007), do mediate the effects of CRE participation on distal relationship outcomes. With most studies focusing their attention on behavioral mediators, identifying both behavioral and cognitive proximal outcomes and exploring influences among these, particularly for more diverse populations of CRE participants, represents the vital next phase of CRE evaluation work, as the outcomes are all theorized to be linked. The question, therefore, is how are they linked?

We propose here three basic models of change that can be used to explain how CRE courses promote positive relationship outcomes. The first model of change, referred to here as a direct effects model, stems from the principles of the social learning model, with its roots in Bandura's (2001) social–cognitive theory and the early work of Thibault and Kelley (1959). The basic premise is that individuals are not merely passive recipients of environmental influences. Rather, they are active agents of their experiences. Therefore, to understand how change occurs in relationships, we need to understand individuals' underlying attitudes and motivations regarding these relationships as well as their relational behaviors. In this model, cognitions and behaviors work simultaneously to effect change in relationships, and thus changes in both prorelationship behaviors and commitment should jointly and positively influence relationship quality.

Since this theory was proposed, additional theories have emerged that differentially weight these proximal outcomes. The first of these offshoots, and arguably the most popular model of change (Hawkins et al., 2004), referred to here as the behavioral model, posits that these proximal outcomes are not equally weighted, as outcomes are thought to result from couples' behaviors. The basic premise from behavioral theory is that positive behaviors enhance global evaluations of the relationship, whereas negative behaviors lead to diminished relationship evaluations (Weiss, 1984). Thus, CRE programs are assumed to transform intimate relationships for the better, by changing individuals' behaviors, in particular enhancing their use of daily, positive behaviors and minimizing their negative behaviors during conflict (Gottman, 1993; Driver & Gottman, 2004), as these will lead to more positive attitudes toward the relationship. This model would suggest that when CRE programs enhance positive interactions between couples and decrease the frequency and intensity of negative interactions, this will increase couples' motivations to stay in the relationship, which in turn will lead them to evaluate their relationship as more worthwhile and of higher quality. Given that behavioral skills have been the primary emphasis of most CRE efforts (Hawkins et al., 2004), it seems most interventionists and researchers have been, sometimes unknowingly, working from the behavioral model.

The second and more recent manifestation of social–cognitive theory, referred to here as the commitment model, can be seen in the investment model and interdependence theory (Rusbult, Coolsen, Kirchner, & Clarke, 2006; Stanley et al., 2010). Both suggest that relationship commitment promotes adaptive relationship-relevant acts, enabling the relationship to persist. Schoebi, Karney, and Bradbury (2012) did find that greater commitment predicted more constructive problem-solving. Therefore, the assumption underlying this model is that CRE programs improve relationships by enhancing individuals' mindset toward their relationship (Stanley, 2001). Those who are more committed are "inclined to accommodate rather than retaliate when their partners engage in potentially destructive behaviors" (Rusbult et al., 2006, p. 627). Slotter and colleagues (2012) even suggested that increasing relationship commitment could reduce rates of romantic aggression. Thus, we would expect that augmenting individuals' commitment to their relationship would lead them to engage in more positive and fewer negative behaviors, which in turn would enhance how they evaluated the quality of their intimate relationship.

In light of the equally compelling yet contradictory evidence about whether positive changes in relationship behaviors or commitment are comparatively more strongly associated with enhancements in relationship quality, tests of the relationships among changes in these areas represents a necessary step to strengthening the CRE field. Even though causality cannot be tested with cross-sectional data, Davis-Kean (2005) argued that structural equation modeling can determine whether a model provides a plausible fit to the data, which can then offer critical information for determining how to proceed in the future with longitudinal data. Therefore, the current study provides a preliminary yet valuable exploration of potential directional influence.

From Asking How to Asking for Whom: Moderators of Relationship Change Pathways

Understanding how changes are related addresses an important gap in the extant CRE literature, and our study joins the handful of others that have explored relationships among outcomes for CRE participants (e.g., Bodenmann et al., 2009; Stanley et al., 2006). Yet, we cannot assume these programs work equally well and in the same manner for all. We unfortunately know very little about what factors may moderate CRE program effects or processes of change (Markman & Rhoades, 2012; Sher, 2012), perhaps because individuals with "diverse ethnic and economic backgrounds . . . are not well understood or represented in relationship education programs" (Bradbury & Lavner, 2012, pp. 114–115), a concern raised by others (Carroll & Doherty, 2003; Hawkins et al., 2008; Johnson, 2012). It is not surprising that this lack of diversity is also reflected in the published research examining program efficacy, since it is only in the past few years that more diverse populations have begun participating in CRE in greater numbers. From the small but rapidly growing literature on diverse participants, suggestions are that there are several potential moderators of these program effects, including demographic or social address characteristics (e.g., gender, ethnicity, income, marital status) and program experience characteristics (e.g., baseline levels of functioning and attendance status [alone vs. with partner]) that warrant further consideration (Hawkins & Ooms, 2012; Wadsworth & Markman, 2012).

Recent work underscores the importance of examining moderators, as Adler-Baeder et al. (2010) found that CRE program efficacy depended on several factors, including marital status and income for men and attendance status for both men and women. There were no differences based on race for either men or women. These findings are consistent with previous work that found no evidence of racial differences (Stanley et al., 2006), but some evidence to suggest income does act as a moderator of program effects (Hawkins & Fackrell, 2010). Beyond characteristics of the participants' social address, Halford and Wilson (2009) suggest that individuals may also differ in how much benefit they get from CRE based on how risky their initial relationships are. For example, Markman, Rhoades, Stanley, and Peterson (2013) found that the effectiveness of premarital intervention depended on couples' initial levels of negative communication. With the work on moderators focusing primarily on program efficacy to date, it is not yet clear whether we would see differences in how these programs work for individuals based on their preprogram characteristics and to what extent. This is important to consider, even in exploratory fashion, rather than simply controlling for diverse characteristics. Understanding how these programs work and for whom is critical, as it is often those whom practitioners target the most for CRE programs (e.g., lower-income couples) whom we understand the least about (Bradbury & Lavner, 2012; Trail & Karney, 2012).

The Current Study

The rising utilization of CRE coupled with the recent controversy over generalized statements of its effectiveness (Hawkins & Ooms, 2012; Markman & Rhoades, 2012) make it imperative to ask more complex questions that get at how CRE works and for whom. Thus, the current study sought to explicitly utilize tenets from social learning theory, behavioral theory, and interdependence theory to evaluate models of short-term relationship change from pre- to posttreatment and potential moderators (race, marital status, income, attendance status, and baseline levels of functioning) in a large, diverse sample of men and women participating in a CRE program. To accomplish this goal, analyses were designed to address questions relevant for understanding the underlying mechanisms of change that occur as a result of CRE participation.

Because our program content addresses both behavioral and cognitive dimensions of healthy relationships, our investigation centers on three models that tested the comparative strength of links between changes in behavioral and cognitive domains (theoretically proximal outcomes; Wadsworth & Markman, 2012) and changes in perceptions of relationship quality (theoretically distal outcome) among male and female CRE participants. The first model tests how changes in positive and negative behaviors and commitment from pre- to posttreatment were directly linked to changes in relationship quality. The second model articulates a pathway from changes in positive and negative behaviors to changes in commitment to changes in relationship quality as an initial examination of a more complex process of change model. The third model fits an alternative pathway from changes in commitment to change in positive and negative behaviors to changes in relationship quality. We then examined moderators of the best-fitting model, as examining how social address of the individual (ethnicity, marital status, income), and elements of their program experience (baseline functioning, attendance status) shape these patterns may help interventionists tailor programs to better serve the needs of a wider swath of the population. To note, because it is highly plausible that mechanisms and moderators of CRE program effects differ for men and women (Adler-Baeder et al., 2010; Schilling et al., 2003) and due to the dependencies present for a subset of participants who attended as a couple, we examined our research questions separately for men and women.

Method

Participants

Participants were recruited as part of a federally funded healthy marriage and relationship education initiative. Over five years of data collection, 4,626 adult participants currently in a couple relationship from 60 counties in a Southern state engaged in at least one relationship education class. The focus of the current study is on the 2,824 participants in couple relationships who completed usable pre- and post-program surveys (61.0% of the target population). Of this final sample, 47.4% of the participants were married, 23.8% were cohabiting, and 28.9% were dating. Across all relationship statuses, 72.0% of the participants were women, 43.6% were Black, 1.4% were Hispanic, and 2.5% selected another racial group, 62.7% had children, the mean age was 34.5 years (SD = 11.1; range 18 to 84 years), and 32.7% attended the classes with their partner (15.6% were men and 17.1% were women). The median household income was between $14,000 and $24,999 a year, 48.9% of the participants were not currently working for pay, and 23.6% of the sample had less than a high school education. For those who were married at the pretest, the average marriage duration was 10.8 years (SD = 10.1; range 0 to 73 years). Regarding participants' pretreatment functioning, 35.0%

of men and 38.9% of women would be considered relationally distressed using Funk and Rogge's (2007) cut scores for Norton's (1983) Quality Marriage Index, which is consistent with other CRE programs (Hawkins et al., 2008).

Chi-square analyses for sex, race, income (above vs. below $25,000 per year), and education (high school graduate or not) determined there were no differences between those who completed only a pretest and participants who completed a pre- and posttest. Attrition analyses also found no differences for pretest levels of positive or negative interactions or relationship quality. Those who completed only a pretest did have higher commitment ($M = 3.94$) than those who completed both a pretest and a posttest ($M = 3.85$), $F(1, 5{,}625) = 8.02$, $p < .01$.

Procedure

Participants completed a questionnaire of approximately 130 items regarding their views about their behaviors, experiences, beliefs, and attitudes regarding their relationships and family in addition to sociodemographic information about their household prior to the start of the classes. Questionnaires took approximately 30–45 minutes for participants to complete.

The CRE courses offered to participants consisted of 6–12 group educational sessions focused on building knowledge and skills for healthy couple relationships and marriages. These classes were taught by a male/female team of marriage/relationship educators who were trained in program delivery and evaluation data collection. An array of CRE curricula are available; however, few that are affordable for community-based delivery and sustainability have been empirically evaluated for efficacy using random control assignment. We therefore utilized an inductive approach by offering four possible curricula, chosen because they contained core research-based relationship topics/skills identified by The National Extension Relationship and Marriage Education Network (NERMEN; Futris & Adler-Baeder, in press). The four curricula were: *Together We Can* (TWC: Shirer, 2009); *Mastering the Mysteries of Love* (MML: Guerney & Ortwein, 2004); *Basic Training for Black Couples* (BTBC: Slack & Muhammad, 2005), and *Smart Steps for Stepfamilies* (SS: Adler-Baeder, 2007). Although three of the curricula contained information specific to a target population (e.g., stepparenting strategies; postseparation parenting and relationship strategies; history of marriage in the black community), all curricula addressed the core content areas and are grounded in research-based practice and systemic theoretical frameworks. Pilot studies within the state also provided evidence of the effectiveness of these curricula and found no distinctions between curricula on levels of effectiveness.

All classes were open to the community and no selection criteria were used. Educators offered the curricula on a rotational basis; thus, participants were able to choose a class to suit their interests (35.1% participated in TWC; 13.1% in MML; 15.7% in BTBC; 10.6% in SS; and 25.5% in an approved hybrid class integrating the core content). Participants reported attending an average of 9.49 hours ($SD = 2.89$) of CRE classes over 5.65 ($SD = 1.81$) sessions with 19.5% of the participants attending fewer than four sessions and 2.4% attending more than eight. No participant compensation was given, but when needed, childcare or vouchers for childcare were provided. Immediately following completion of the CRE program, participants were asked to complete a post-program questionnaire that was identical to the preprogram questionnaire with the exception of items querying the participants' impressions of the class and the educator(s).

Measures

Positive and Negative Interactions. Two scales were utilized to assess positive and negative couple interactions. The Positive Interaction scale is the average of a 4-item measure (adapted from Huston & Vangelisti, 1991) rated on a 4-point Likert scale to statements such as, "On a typical day, how often do you do something nice for your spouse/significant other?" Reliability of the Positive Interaction scale was good at preprogram, $\alpha = .80$ for men and .82 for women, and at post-program, $\alpha = .84$ for men and .85 for women. Similarly, the Negative Interaction scale included an average of 5 items (adapted from Huston & Vangelisti, 1991), such as, "On a typical day, how often do you show anger or impatience toward your spouse/significant other?" These statements were also rated on a 4-point Likert scale with adequate reliability, $\alpha = .73$ for men and .75 for women preprogram and $\alpha = .77$ for men and .79 for women post-program.

Commitment. Commitment was assessed using the average of 5 items from the Confidence and Dedication Scale (Stanley & Markman, 1992). Participants rated on a 5-point Likert scale their level of confidence in and dedication to their relationship (e.g., "To what degree do you feel committed to maintaining your current couple relationship?"). Reliability was high, $\alpha = .92$ for males and .94 for females (pretest) and $\alpha = .94$ for males and .95 for females (posttest).

Quality. The quality of participants' relationships was assessed using the mean of 5 items from Norton's (1983) Quality Marriage Index. Respondents evaluated their overall relationship (e.g., "We have a good marriage/relationship") using a 7-point Likert scale. Reliability was high, $\alpha = .96$ for males and .97 for females preprogram and $\alpha = .97$ for both post-program.

Data Analysis Plan

Descriptive statistics and bivariate correlations examined the nature of, and relations among, study variables. To address the first aim of how changes in positive and negative interactions and commitment from pre- to posttreatment were directly linked to changes in relationship quality (direct effects model), we conducted path analyses separately for men and women using MPlus Version 5.0, which allows for the inclusion of participants with missing data by using full information maximum likelihood (FIML) estimation (Muthén & Muthén, 2004). To note, posttest scores take into account the effects of the pretest scores, allowing us to capture differences or change in these scores (Adler-Baeder et al., 2013; Singer & Willett, 2003). For a conservative examination of these links, we attempted to reduce potential confounds by controlling for variables found to influence relationship processes and the effects of CRE: race, income, marital status, and whether the individual attended alone or with their partner (Adler-Baeder et al., 2010). Goodness of fit was evaluated with: the chi-square statistic, the Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), Aikaike's Information Criterion (AIC), and Schwarz's Bayesian Criterion (BIC).

To address our second aim examining whether there were relationships between the outcomes, we fit two additional models in

MPlus Version 5.0. In the behavioral model, changes in positive and negative interactions were hypothesized to predict changes in commitment, which in turn was hypothesized to predict changes in relationship quality. In the commitment model, commitment was hypothesized to predict changes in positive and negative interactions, which was hypothesized to predict changes in relationship quality. We compared the AIC and BIC to determine the best-fitting model of the three for men and women. After selecting the appropriate model, we next examined possible indirect effects using the Model Indirect option in MPlus.

To address our third aim, we conducted a series of multigroup analyses separately for men and women on the best-fitting model to test for potential moderation by race, income, marital status, attendance status, and pretest relationship variables. For race, we compared whites and blacks; for income, we compared those below and above an annual income of $25,000; for marital status, we compared married versus unmarried; and for attendance status, we compared those who attended with a partner versus alone. For the pretest relationship variables, we compared those with low versus high initial skills and functioning. For positive interactions, commitment, and quality, the low group represented −1 *SD* below the mean. For negative interactions, the high group represented +1 *SD* above the mean. To test whether the proposed links differed as a function of these variables, two path models were compared for each moderator, one with free parameters and one with parameters fixed across groups (Muthén & Muthén, 2004). Chi-square difference tests were used to reveal whether these models significantly differed, and for those that did, we evaluated moderation on a path-by-path basis.

Results

Preliminary Analyses

Descriptive statistics and intercorrelations among study variables are shown in Table 1. Overall, participants had moderate to good relationship functioning prior to taking the CRE courses, as indicated by reports of having positive interactions once or twice a day (M_M = 2.91 and M_F = 3.00 out of 4), some negative interactions (M_M = 1.84 and M_F = 1.90 out of 4), moderately high commitment to their relationship (M_M = 4.05 and M_F = 3.84 out of 5), and fairly positive feelings about their relationship quality (M_M = 5.15 and M_F = 4.99 out of 7). Preliminary results indicated that modest shifts occurred for each of the outcome variables, with effect sizes ranging from d = .09 to .32 for men (average effect = .19) and d = .18 to .32 for women (average effect = .23). These levels are consistent with the overall effect size for CRE programs in a recent meta-analysis of lower-income participants (i.e., d = .20; Hawkins & Fackrell, 2010). In addition, for an educational intervention, an effect size of d = .25 is considered a "practical" change (Wolf, 1986), particularly for participants starting the program at moderate to high levels.

Direct Effects Model Predicting Changes in Relationship Quality

To test the assumption that changes in relationship quality would be associated with changes in behavior and commitment, we fit separate path models for men and for women (see Figure 1). The direct effects model provided an acceptable fit to the data for men, $\chi^2(27) = 270.98$, $p < .01$; CFI = .91; RMSEA = .10; AIC = 22503.12; BIC = 22738.76, and for women, $\chi^2(27) = 554.71$, $p < .01$; CFI = .90; RMSEA = .09; AIC = 54050.21; BIC = 54329.26. As seen in Figure 1, the amount of improvement in positive interactions, the amount of decrease in negative interactions, and the amount of improvement in commitment significantly predicted the amount of positive change in relationship quality for both men and women, controlling for all else in the model. Comparatively, the most potent predictor of the amount of positive change in relationship quality was the amount of change in commitment.

Comparing Models Predicting Changes in Relationship Quality

To empirically evaluate which model best predicted change in relationship quality for individuals who participated in CRE, we examined two additional models: the behavioral model and the commitment model. The behavioral model provided a good fit to the data for men, $\chi^2(27) = 205.69$, $p < .01$; CFI = .93; RMSEA =

Table 1
Intercorrelations Between Study Measures and Descriptive Statistics

	Positive Interaction Pre	Positive Interaction Post	Negative Interaction Pre	Negative Interaction Post	Relationship Commitment Pre	Relationship Commitment Post	Relationship Quality Pre	Relationship Quality Post
Pos Interact Pre	1.00	.66	−.18	−.10	.42	.30	.43	.34
Pos Interact Post	.63	1.00	−.15	−.07	.38	.46	.37	.47
Neg Interact Pre	−.17	−.15	1.00	.44	−.21	−.13	−.26	−.17
Neg Interact Post	−.12	−.13	.47	1.00	−.17	−.20	−.19	−.22
Rel Comm Pre	.49	.37	−.28	−.17	1.00	.69	.75	.62
Rel Comm Post	.32	.49	−.23	−.22	.69	1.00	.58	.82
Rel Quality Pre	.48	.37	−.31	−.19	.79	.60	1.00	.67
Rel Quality Post	.33	.48	−.24	−.23	.63	.81	.65	1.00
Men's *M (SD)*	2.91 (.69)	2.95 (.71)	1.84 (.45)	1.79 (.46)	4.05 (1.02)	4.18 (.99)	5.15 (1.44)	5.41 (1.41)
Women's *M (SD)*	3.00 (.74)	3.08 (.73)	1.90 (.51)	1.84 (.49)	3.84 (1.14)	4.00 (1.09)	4.99 (1.56)	5.28 (1.49)

Note. All correlations are significant at the $p > .05$ level. Correlations for the males are presented above the diagonal. Correlations for the females are presented below the diagonal.

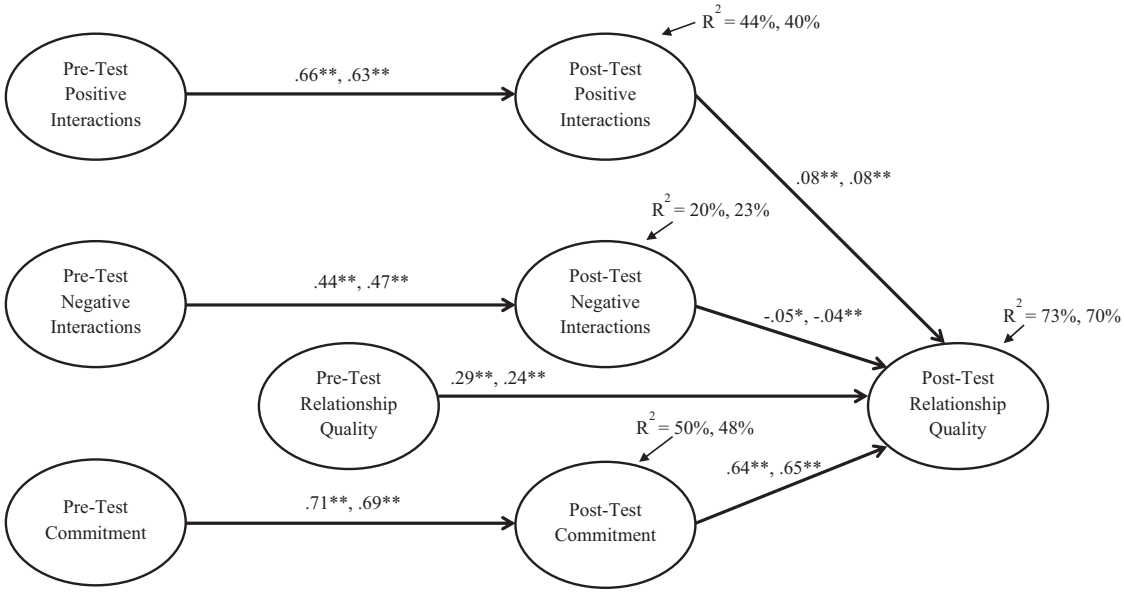

Figure 1. Direct Effects Model for Males and Females. *Note.* For males, $\chi^2(27) = 270.98$, $p < .01$; CFI = .91; RMSEA = .10; AIC = 22503.12; BIC = 22738.76; females, $\chi^2(27) = 554.71$, $p < .01$; CFI = .90; RMSEA = .09; AIC = 54050.21; BIC = 54329.26. Path coefficients are standardized coefficients and are presented for males first, females second. $^{*}p < .05$. $^{**}p < .01$.

.09; AIC = 22437.39; BIC = 22673.48, and for women, $\chi^2(27) = 323.87$, $p < .01$; CFI = .95; RMSEA = .07; AIC = 53819.37; BIC = 54098.41. The commitment model was a poor fit to the data for men, $\chi^2(26) = 584.13$, $p < .01$; CFI = .78; RMSEA = .15; AIC = 22818.27; BIC = 23058.72, and for women, $\chi^2(26) = 1233.22$, $p < .01$; CFI = .78; RMSEA = .15; AIC = 54730.72; BIC = 55015.46.

As the models were non-nested, we used the AIC and the BIC to determine the best-fitting model, with smaller values indicating better fit (Burnham & Anderson, 2002; Whisman, Davila, & Goodman, 2011). The AIC and BIC were smallest for the behavioral model, followed by the direct effects models, with the commitment model having the largest AIC and BIC values. Thus, the behavioral model best captured the predictors of change in relationship quality in our sample of CRE men and women, with the amount of improvement in positive interactions and the amount of reductions in negative interactions predicting the amount of enhancement in commitment, which in turn predicted the amount of positive change in relationship quality for both men and women, controlling for all else in the model (see Figure 2).

To further elucidate the patterns of influence between these variables, we examined whether the differences in negative and positive interactions had indirect effects on relationship quality through commitment as predicted by the behavioral model. We found strong evidence of significant, indirect effects for both men and women for negative interactions (indirect effect = −.05, $p < .01$ for men; indirect effect = −.06, $p < .01$ for women) and for positive interactions (indirect effect = .15, $p < .01$ for men; indirect effect = .18, $p < .01$ for women). This indicates that reporting fewer negative interactions and more positive interactions after participating in a relationship education program was significantly associated with improved relationship quality via their effects on increased commitment to one's relationship for both men and women.

Moderation of the Behavioral Model by Demographic and Program Experience Variables

We next examined whether the behavioral model differed by race, marital status, attendance status, income, and pretest relationship variables for men and for women using a multiple-groups structural equation modeling approach. Looking at men, chi-square differences tests revealed that the path models in which the parameters were estimated to vary freely did not significantly differ from those in which the parameters were constrained to be equal for marital status ($\Delta\chi^2(10) = 16.69$, $p = .08$) or attendance status ($\Delta\chi^2(10) = 17.82$, $p = .06$), indicating that the behavioral model fit married and unmarried men and men who attended alone versus with a partner equally well. The behavioral model also did not vary based on baseline level of negative interactions for either men ($\Delta\chi^2(10) = 14.03$, $p = .17$) or for women ($\Delta\chi^2(10) = 17.65$, $p = .06$).

We did find differences for the remaining moderators. For the demographic moderators, race ($\Delta\chi^2(10) = 47.83$, $p < .01$) and income ($\Delta\chi^2(10) = 28.74$, $p < .01$) were significant for men. For women, the behavioral model was moderated by race ($\Delta\chi^2(10) = 61.12$, $p < .01$), income ($\Delta\chi^2(10) = 75.29$, $p < .01$), marital status ($\Delta\chi^2(10) = 52.52$, $p < .01$), and attendance status ($\Delta\chi^2(10) = 40.07$, $p < .01$). Among the pretest relationship variables, positive interactions ($\Delta\chi^2(10) = 19.38$, $p < .05$ for men; $\Delta\chi^2(10) = 40.25$, $p < .01$ for women), commitment ($\Delta\chi^2(10) = 27.02$, $p < .01$ for men; $\Delta\chi^2(10) = 27.02$, $p < .01$ for women), and relationship quality ($\Delta\chi^2(10) = 28.53$, $p < .01$ for men; $\Delta\chi^2(10) = 28.53$, $p < .01$ for women) significantly moderated the model.

Path-by-path analyses were conducted for each moderator to determine how groups differed. Table 2 summarizes these results by presenting the paths found to differ most significantly and how for each subgroup of men and then women. For change from

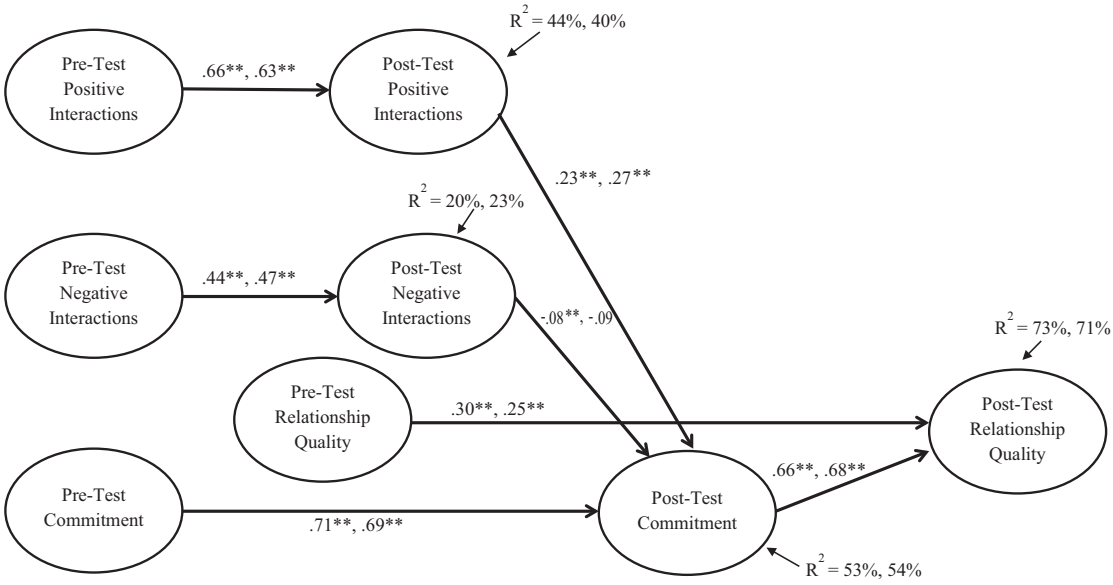

Figure 2. Behavioral Model for Males and Females. *Note.* For males, $\chi^2(27) = 205.69$, $p < .01$; CFI = .93; RMSEA = .09; AIC = 22437.39; BIC = 22673.48; females, $\chi^2(27) = 323.87$, $p < .01$; CFI = .95; RMSEA = .07; AIC = 53819.37; BIC = 54098.41. Path coefficients are standardized coefficients and are presented for males first, females second. ** $p < .01$.

pretest to posttest, freeing the path from men's pre- to posttest relationship quality resulted in a significant improvement in fit from the fully constrained model for income ($\Delta\chi^2 = 10.19$ (1), $p < .01$). There was greater change in pretest to posttest relationship quality for men whose annual income was below $25,000 than for men whose income exceeded that amount. For women, freeing the path from pretest and posttest positive interactions resulted in a significant improvement in fit for income ($\Delta\chi^2 = 20.03$ (1), $p < .01$), positive interactions ($\Delta\chi^2 = 15.99$ (1), $p < .01$), and commitment ($\Delta\chi^2 = 15.12$ (1), $p < .01$). Thus, there was greater change in positive interactions for women whose annual income was below $25,000, for women who began with fewer positive interactions with their partners, and for women who were initially less committed to their relationship.

Path-by-path analyses revealed that the path from posttest positive interactions to posttest commitment was strongly moderated for men and, to a lesser extent, for women (see Table 2). For men, freeing up this pathway improved fit from the fully constrained model for pretest positive interactions ($\Delta\chi^2 = 6.51$ (1), $p < .05$), commitment ($\Delta\chi^2 = 13.24$ (1), $p < .01$), and relationship quality ($\Delta\chi^2 = 10.35$ (1), $p < .01$). The change in positive interactions was more strongly associated with the change in commitment for men who began with fewer positive interactions, less commitment to their relationship, and lower relationship quality. For women, freeing this path resulted in a significant improvement in fit for attendance status ($\Delta\chi^2 = 12.12$ (1), $p < .01$), with the change in positive interactions more strongly associated with the change in commitment for

Table 2
Summary of Moderation Analyses for the Behavioral Model and Significantly Different Pathways for Men and Women

Moderator	Men	Women
Demographic variables		
Race (White, Black)	Post commitment → post quality (.70**, .55**)	Post commitment → post quality (.70**, .66**)
Income (Lower, Upper)	Pre quality → post quality (.20**, .35**)	Pre positive → post positive (.59**, .75**)
Marital status (Married, Unmarried)	-----	Post commitment → post quality (.70**, .66**)
Attendance status (Partnered, Alone)	-----	Post positive → post commitment (.23**, .33**)
Pretest skills and functioning		
Positive interactions (Low, High)	Post positive → post commitment (.34**, .23**)	Pre positive → post positive (.10*, .52**)
Negative interactions (Low, High)	-----	-----
Commitment (Low, High)	Post positive → post commitment (.47**, .21**)	Pre positive → post positive (.44**, .63**)
Relationship quality (Low, High)	Post positive → post commitment (.43**, .20**)	Post commitment → post quality (.79**, .64**)

Note. For the pretest positive interactions, commitment, and quality, the low skills groups represent −1 *SD* below the mean. For the pretest negative interactions, the skills group represents +1 *SD* above the mean.
* $p < .05$. ** $p < .01$.

those who attended CRE classes alone than for those who attended with a partner.

Finally, path-by-path analyses revealed that the path from posttest commitment to posttest relationship quality was strongly moderated for women and, to a lesser extent, for men. Allowing this pathway to be free resulted in significantly better model fit for both men ($\Delta\chi^2 = 28.10$ (1), $p < .01$) and women ($\Delta\chi^2 = 36.98$ (1), $p < .01$). For both men and women, the change in commitment was more strongly associated with the change in relationship quality for whites than it was for blacks. In addition, for women, freeing up this path improved model fit for marital status ($\Delta\chi^2 = 20.54$ (1), $p < .01$) and pretest relationship quality ($\Delta\chi^2 = 24.62$ (1), $p < .01$). The change in commitment was more strongly linked to the change in relationship quality for married women and for women who began the CRE courses with lower-quality relationships.

Discussion

The exponential increase in the last decade in the availability of CRE programming for a broader population of individuals and couples has been met with both enthusiasm and concern. Proponents cite the well-documented efficacy of these programs for improving the quality of intimate relationships (Carroll & Doherty, 2003; Hawkins & Ooms, 2012; Hawkins et al., 2008), with critics cautioning that many of these programs have yet to be empirically validated, particularly when it comes to understanding how they work and for whom (Bradbury & Lavner, 2012; Johnson, 2012; Wadsworth & Markman, 2012). The findings of the current study begin to address these concerns by examining models of change based on CRE participation, as well as exploring, rather than controlling for, personal and programmatic differences among participants.

Exploring Processes of Change: Evidence for the Importance of Changing Behaviors

Although some scholars emphasize the influence of commitment and other cognitive elements on prosocial behaviors (e.g., Rusbult et al., 2006; Slotter et al., 2012), much of the previous work on intimate relationships either implicitly or explicitly draws upon the assumption that improving couple behavioral skills, particularly those involving conflict, will result in more satisfying and stable relationships (Stanley et al., 2006). This assumption can also be seen in most CRE programs, which often focus heavily on behavioral skill-building (Hawkins et al., 2004). Results from the current study indicate these efforts may not be in vain, as we found more support for the behavioral theory of change, which emphasizes the influence of behavioral adjustments on commitment to and perceptions of the relationship (Weiss, 1984). Results from our diverse sample of CRE participants suggest that learning and utilizing better relational skills may facilitate greater commitment and in turn more positive views of the relationship. It is important to note, however, that although our results suggest a better fit of the data to the behavioral model, intervention researchers point out that evidence of influence among variables of interest in assessments of change following program participation is not evidence of etiology (Cowan & Cowan, 2002). Rather, these findings help verify appropriate targets for intervention.

Regarding this goal, our findings suggest that broadening the focus of current CRE programs could yield considerable improvements in program efficacy. Although traditional applications of the behavioral model have focused heavily on reducing negative behaviors and enhancing conflict management skills (Stanley et al., 2006), it was in fact increases in the use of positive, affectionate behaviors, rather than reductions in the use of negative behaviors, that more strongly linked to positive changes in commitment and in turn enhanced relationship quality for both men and women. The importance of positive behaviors is consistent with recent assertions made by some in the field that perhaps too much emphasis has been placed on conflict and negativity management as the sole target of CRE programs (Bradbury & Lavner, 2012; Driver, Tabares, Shapiro, & Gottman, 2012). For example, Bradbury and Lavner suggest that the emphasis by some to focus solely on improving couples' problem-solving behaviors as the means for improving relationship quality is "either incorrect or misleading at best" (p. 115). As evidence for this assertion, they cite Johnson and colleagues' (2005) research that found that positivity was able to buffer the deleterious effects of poor communication skills across the first four years of marriage. Accordingly, program content that addresses both positive and negative verbal and nonverbal communication appears to be both warranted and imperative.

It Depends: Examining Moderators of the Behavioral Model of Change

Supporting recent results of an experimental design study that found that program efficacy was dependent on both participant and program characteristics (Devaney & Dion, 2010; Hawkins & Ooms, 2012), we found evidence to suggest that the social address of the individual and elements of their program experience did act as moderators. It is important to note that the differences that emerged were modest and that the paths that were statistically significantly different from each other were still significant and in the same direction for both groups. Our hope, however, is that researchers and practitioners would not take this observation to mean that we should move back to only controlling for diversity. We instead believe that, even in light of these cautionary notes, these findings warrant continued efforts to look at individual and contextual variations as potentially meaningful moderators of CRE experiences.

Our finding that the stability of outcomes may vary based on income must be considered as a preliminary exploration of socioeconomic status as a moderator. Given this caveat, these modest differences do suggest greater change as a result of CRE participation for lower-income participants (i.e., greater change in relationship quality for low-income men and greater change in the use of positive behaviors for low-income women). These findings are encouraging in light of recent concerns about whether CRE programs are in fact benefiting the populations they were originally targeted at (Bradbury & Lavner, 2012; Johnson, 2012). Our finding is consistent with a previously published study from our initiative's initial cohort that compared amount of positive change based on income (Adler-Baeder et al., 2010); however, Hawkins and Fackrell (2010) found less program efficacy for lower-income individuals in a recent meta-analysis.

We can only speculate as to the reasons for the differences found here, but it may be related to the curricula used and the level of motivation of the individuals in our sample. Lower-income individuals who make the commitment to attend multiple hours of

CRE courses may be more motivated to change than their higher-income counterparts. Karney and colleagues (Karney & Bradbury, 2005; Trail & Karney, 2012) have provided persuasive evidence that unmarried lower-income individuals see marriage as much more attractive than do middle-class and upper-class individuals. The authors suggest that one reason that the relationships of lower-income individuals are still at risk, however, is that they have substantial contextual barriers that may limit their participation and the effectiveness of some CRE programs. In our sample, there were no differences in the number of hours attended based on income ($t(592) = 1.37$, *ns* for men; $t(1370) = 1.48$, *ns* for women). Our project design includes a number of concerted efforts to remove barriers to participation (childcare, transportation, and so on), and classes are embedded within community-based family resource centers that can connect participants to additional programs and services needed. Greater exploration and comparison of program design and program content is a vital next step in determining best practices for CRE for low-income individuals.

Interactions between moderators is also an important next step, as research finds that many potential risk factors tend to co-occur (Rauer, Karney, Garvan, & Hou, 2008). For example, the differences between income groups may be due in part to their overlap with small but significant differences in starting points for relationship behaviors and attitudes. Halford and Wilson (2009) proposed that high-risk individuals may particularly benefit from CRE if the program modifies the factors that made them higher risk. This is consistent with our findings, as women who started out less committed to their relationship and who used fewer positive interactions experienced a greater change in their use of positive interactions. It may also be, however, that ceiling effects explain why women who began with stronger skills and commitment had less change in their positive interactions. Baseline levels also moderated the strength of associations between changes in outcomes, with men reporting lower positive interactions, commitment, and relationship quality at baseline, demonstrating a stronger connection between changes in positive interactions and commitment; and women with lower relationship quality at baseline demonstrating a stronger connection between changes in commitment and relationship quality. In future research, following change over time for individual outcomes and relationships between outcomes that consider start points will serve to better inform us of differing trajectories of growth, maintenance, and decline.

In other examinations of moderation of the paths between outcomes, further evidence for the possible importance of initial motivation is found. Married women and women who attended alone had a stronger association between changes in the outcomes. Regarding the latter, it is likely that women who attend singly demonstrate greater intentionality by virtue of choosing to attend a couples' program alone. Among those who attend as a couple, it may be that some were more the initiator of attending and others may have attended more reluctantly. Therefore, as a group, they may be slightly less likely to report greater commitment when reporting changes in their behaviors than the group containing all intentional women (i.e., those who attend singly).

Looking at other social address variables, we found that for both men and women, the change in commitment was more strongly associated with the change in relationship quality for whites than it was for blacks. Alhough some have found no differences in program efficacy based on race (Adler-Baeder et al., 2010), others have found enhanced program effects for blacks as compared to whites (Wood et al., 2010). Ours is the first study, however, to examine processes of change by race following CRE participation. It may be that factors influencing assessments of relationship quality differ by race, and there is some evidence of this in studies of marital quality (Bulanda & Brown, 2007). As suggested by other researchers (Halford et al., 2008), future research should explore additional variables linked to relationship quality to better understand more complex models of relationship dynamics among black and white couples. To guide this exploration, Johnson (2012) highlights Hill's (1949) crisis theory, which suggests that we need to understand more about how people interpret their experiences to understand their moderating effects. For example, Johnson (2012) suggests that perceptions of discrimination may moderate ethnic differences in relationship satisfaction and status, signifying that we need to further refine our examinations of these moderators to accurately capture their potential effects.

Together, these findings suggest there may be meaningful, albeit small, differences in how CRE programs work based on demographic and program context variables. As for how these differences should inform current CRE practices, our findings suggest that even for those individuals who benefit less from participating in CRE, they appear to still derive benefits from these courses. This suggests that tailoring CRE programs may not be the next step until we first refine our understanding of how these characteristics are experienced by the individuals in the programs (Johnson, 2012). Thus, further work is needed to examine the nature and interaction of these variables to provide a clearer picture of the processes of change among smaller subgroups and to better determine which characteristics of the participant best explains differences found.

Strengths and Limitations

Our confidence in these results is enhanced by a number of strengths in our study design. First, by evaluating three separate, theoretically driven models of change and finding empirical evidence in favor of the behavioral model, we were able to offer valuable information for future longitudinal work as well as some clarification on target areas for those wishing to intervene to effect positive change in intimate relationships. Second, our use of a large, economically and racially diverse sample of CRE participants represents an important advance in the field and answers recent calls to consider how different characteristics of the populations being served may affect the efficacy of those services (Bradbury & Lavner, 2012; Carroll & Doherty, 2003; Hawkins et al., 2008). Finally, our rich dataset also enabled us to explore how program and relational context (program attendance and preattendance skills and functioning) may affect change patterns. Given that we know very little about what factors may moderate program effects (Markman & Rhoades, 2012; Sher, 2012), our findings about what factors might affect program efficacy and to what extent represent an important advance for the CRE field.

Despite these strengths, several limitations suggest these findings should be interpreted with caution. First, ours is a sample of willing participants in relatively good relationships, and volunteer participants may be biased to report enhanced couple functioning in targeted areas (Festinger, 1957). Second, we provide here only a preliminary test of influences among variables and rely on

assessments of comparative model fit to determine the better model. Data were limited to short-term, post-program effects; thus, we can only speculate as to direction of effects. It is important to view this study as a first step and to encourage future work that utilizes cross-lag longitudinal designs that incorporate cross-partner influences, as it is possible the predictors of immediate versus long-term relationship benefits of these programs may differ. In addition, future work should move beyond self-report data to incorporate multiinformants and observations of individuals post-CRE to determine whether participation does foster better behaviors.

Although the CRE curricula used in our study contained content on both behavioral skills and cognitions that influence relational quality and stability, an imbalance of the areas, favoring more emphasis behaviors, did exist. A better test of the theoretical models would utilize distinct interventions: one focused on behaviors; one focused on commitment and other cognitions regarding relationships, including developing shared and realistic expectations of the relationship and modifying the use of negative attributions in the relationship (Bradbury & Fincham, 1990; Hawkins et al., 2004); and one that balances the two. We encourage greater innovation in program design and testing to address this limitation. Too little attention has been paid to the actual content of CRE programs, and virtually no studies exist that explore curricula variation and elements of programs that are more or less impactful. Typically, individual evaluations of CRE do little to distinguish the program studied from others, thus implying similarity among CRE programs, and meta-analytic studies necessarily group all programs together. Development of models of best practices for CRE will be best served by increasing efforts to identify and distinguish programs and program elements and their effects on relationship processes and outcomes. We also encourage future efforts to empirically validate efficacy of specific curriculum through random control designs. In addition to examining programmatic differences as a potential moderator of the links between behaviors, commitment, and relationship quality, it is important to examine a richer set of participant and contextual moderators, in line with Johnson's (2012) persuasive argument about the need for capturing people's actual experiences.

Conclusion

The study of CRE programs benefits from a movement away from straightforward assessments of "did it work?" which can result in suggestions to discontinue programs due to no significant findings or small effect sizes for the larger group of participants and programs. Rather, efforts that will inform the research and practice fields will utilize more theoretically guided examinations of processes of change among participants in CRE and consider variation in the population and the programs as predictors of program effects. The current study provides initial evidence that among a large sample of CRE participants, diverse in race, socioeconomic status, and relationship status, changes in behaviors, particularly an increase in the use of positive, affectionate behaviors, is associated with enhanced relationship commitment, which in turn, is associated with greater positive shifts in relationship quality. Implications are that a focus in CRE programs on positive relationship skills in particular is likely to result in more positive views of the relationship and greater commitment and potentially greater stability, particularly for higher-risk participants. Future research is needed to further validate these findings over time and to elucidate more nuanced differences in patterns of change that may exist between subgroups of CRE participants. The increase in diversity of CRE participants in recent years provides an opportunity for such empirical explorations. These more complex assessments of CRE program effects that utilize an ecocultural lens (Phenice, Griffore, Hakoyama, & Silvey, 2009) hold great promise for better informing practice and the development of theoretically and empirically informed models of best practices.

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