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The Effects of a Couples-Based Health Behavior Intervention During Pregnancy on Latino Couples' Dyadic Satisfaction Postpartum

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Abstract

Many couples tend to report steadily decreasing relationship quality following the birth of a child. However, little is known about the postpartum period for Latino couples, a rapidly growing ethnic group who are notably underserved by mental and physical health caregivers in the United States. Thus, this study investigated whether a brief couples' intervention focused on helping couples support each other while increasing healthy behaviors might improve dyadic functioning postpartum. This study presents secondary analyses of data regarding couple functioning from a larger randomized controlled trial with 348 Latino couples to promote smoking cessation. Portions of the intervention taught the couple communication and problem-solving skills to increase healthy behavior. Couples participated in four face-to-face assessments across 1 year starting at the end of the first trimester. Latent growth curve analyses revealed that the treatment group reported an increase in relationship satisfaction and constructive communication after the intervention, which diminished by 1-year follow-up, returning couples to their baseline levels of satisfaction. Results suggest that incorporating a brief couple intervention as part of a larger health intervention for Latinos may prevent postpartum decreases in relationship satisfaction.

Keywords

Couple Interventions; Latino Couples; Relationship Satisfaction; Pregnancy

INTRODUCTION

Latinos are the largest and fastest-growing ethnic group in the United States. In fact, recent Census data indicate that between 2000 and 2010, this group grew by more than 15 million individuals, which made up over half of the entire population growth of the United States (U.S. Census Bureau, 2011). However, although there is a growing body of literature on more general Latino family functioning, the literature on dyadic functioning in Latino couples is still small. The existing research suggests that Latino couples might be more distressed than non-Latino couples in some areas of their relationships and also perhaps more likely to engage in avoidant communication styles (Holt & DeVore, 2005). Furthermore, there remains a pressing need to examine how well existing couple interventions meet the needs of this population (Daire et al., 2012; Wheeler, Updegraff, & Thayer, 2010). Consequently, the purpose of this paper is to conduct a secondary analysis to examine the effects of a couples-based smoking cessation intervention delivered to Latino couples expecting a child on their communication and relationship satisfaction.

Based on prospective data from non-Latino couples, it was expected that pregnancy might be a sensitive and critical time period in which Latino couples might benefit from a couples-based intervention (Halford, Petch, & Creedy, 2010; Schulz, Cowan, & Cowan, 2006; Shapiro & Gottman, 2005). In a primarily non-Latino sample, Lawrence, Rothman, Cobb, Rothman, and Bradbury (2008) demonstrated that first-time parent couples have greater rates of marital decline than their nonparent counterparts, even after controlling for a number of potentially confounding variables (e.g., marital duration or remarriage). The decline in dyadic satisfaction is steepest in the postpartum period, and this drop occurs most drastically by 6 months after the baby's birth (Lawrence et al., 2008). Furthermore, a decline in dyadic satisfaction is found not only among nonparent couples making the transition to parenthood, but is also present in many couples following the birth of a new child; for example, a meta-analysis demonstrated that couples with children in infancy report greater marital dissatisfaction than other couples (Twenge, Campbell, & Foster, 2003). Thus, relationship adjustment appears to be particularly at risk during the postpartum period for non-Latino couples, which may be due to heavy burdens in physically caring for an infant, less time for couple communication and uninterrupted attention for each other, reduced frequency of couple time, decrease in sexuality, and decreases in disposable income (e.g., Petch & Halford, 2008). Although these mechanisms have primarily been studied in Caucasians, one might reasonably expect that these same issues would apply to Latino couples as well. Babies still demand attention, no matter what language is spoken in the home.

Therefore, similar to non-Latino couples, the birth of a new child into the home might be a difficult and stressful time point for low-income Latino couples, and the burden might be particularly heavy given the increased financial burden of a new baby (Petch & Halford, 2008), but this possibility requires more empirical investigation. Latino couples overall, particularly Latino wives, have reported higher marital distress compared to non-Latino couples (Negy & Snyder, 1997, 2000); however, few studies to date have examined the effect of childbirth on dyadic satisfaction for Latino couples. Given that these couples often are under strain for cultural and economic reasons, which in turn puts them at risk for relationship distress (Vega, Kolody, & Valle, 1988), it seems likely that the potentially

stressful experience of adding another member to the household could be a critical transitional period for these couples. Along these lines, and similar to prospective empirical findings for non-Latino couples, retrospective, qualitative interviews with long-term Latino couples indicated that they perceived their level of conflict increased overall in child-bearing years and that this time period was a particular source of distress (Mackey & O'Brien, 1998). However, it also is possible that Latino values of *familismo*, which refers to the high priority placed on familial harmony and cohesion (Lugo Steidel & Contreras, 2003; Marín & VanOss Marín, 1991), might be activated in these transition periods and thus might buffer Latino couples from the stress incurred after the birth of a child. Consequently, it remains unclear at this point whether Latino families experience the same declines in satisfaction postpartum than do non-Latino couples; thus, research on this transition is greatly needed.

Given that the transition to parenthood often can be a difficult time for new parents, interventions have been developed for non-Latino couples to buffer new parents against these problems. Research also indicates that Latino couples are open to similar types of relationship education and support (e.g., Daire et al., 2012), and are more highly motivated to change and improve their health-related behaviors during pregnancy (Pollak et al., 2015). One approach to helping non-Latino couples successfully navigate the transition to parenthood has been to offer interventions that focus on the couple's relationship as well as coparenting skills (Khazan, McHale, & Decourcey, 2008). These interventions have been shown to protect couples' romantic relationships, such that couples in the intervention group typically experience significantly smaller satisfaction declines (Schulz et al., 2006; Shapiro & Gottman, 2005) and smaller increases in negative communication (Halford et al., 2010; Shapiro & Gottman, 2005) than couples in the control group following childbirth. However, no one has examined the effects of these types of relationship interventions on Latino couples during pregnancy.

One promising intervention focus might be addressing dyadic communication, which is theorized to help couples effectively negotiate the changes and conflicts that can occur as they navigate the demands of caring for a new child. Slightly more research has been conducted on communication styles than on relationship satisfaction in Latino couples. Studies on communication and conflict resolution indicate that the ability to negotiate conflict satisfactorily appears to be a necessary and critical task for couples' adjustment in non-Latino couples (e.g., Bradbury & Karney, 2004; Fincham, Beach, & Davila, 2004) and there is some evidence that is equally important for Latino couples. Similar to findings regarding gender differences in non-Latino samples (Christensen & Heavey, 1990), data indicate that Latina women might be more likely to use controlling communication whereas Latino males are more likely to engage in withdrawal (Wheeler et al., 2010), a pattern that is similar to the destructive demand/withdraw pattern observed in nonLatino samples (Christensen, Eldridge, Catta-Preta, Lim, & Santagata, 2006). Furthermore, Latino couples appear to be more likely to use avoidant and withdrawing strategies in interactions than non-Latinos (Holt & DeVore, 2005) and less acculturated couples were more likely to use avoidance in conflict situations than more acculturated couples (Bermudez, Reyes, & Wampler, 2006; Flores, Tschann, VanOss Marin, & Pantoja, 2004). Also, in line with their non-Latino counterparts, these negative communication patterns seem to be tightly linked to relationship quality in Latino samples, such that the more control, avoidance, and

withdrawal reported in their relationships, the lower the relationship satisfaction (Christensen et al., 2006; Wheeler et al., 2010). Furthermore, if the Mackey and O'Brien (1998) findings are accurate that Latino couples also report increased conflict after the birth of a baby, then it is possible that conflict resolution strategies that are embedded in communication skills training might help Latino couples address their increased conflict if it exists, just as these interventions appear to aid their non-Caucasian counterparts.

Finally, a recent review of relationship education interventions that focus on improving communication skills in a general population indicates that this approach has potential to improve couple functioning immediately posttreatment (Markman & Rhoades, 2012). Improvements in couples' communication has been linked prospectively to changes in couples' satisfaction levels posttreatment (Bodenmann, Bradbury, & Pihet, 2009; Snyder, Castellani, & Whisman, 2006). More specifically apropos to this study, there is growing evidence that teaching couples to communicate effectively about reducing substance use not only affects this health behavior, but also increases couples' relationship satisfaction (Epstein et al., 2007; McCrady, Hayaki, Epstein, & Hirsch, 2002). However, to date, only one study has examined the quantitative effects of communication skills training on a sample consisting exclusively of Latino couples. The Hispanic Active Relationships Project (HARP) provided relationship and communication tools to Latino couples who were recruited through fliers, church announcements, advertisements to participate in an Active Communication workshop. Results indicated significant improvement in marital satisfaction, positive communication, conflict resolution, commitment, and decreased negative interaction following the course (Kotrla, Dyer, & Stelzer, 2010). However, this study did not examine how the intervention might affect Latino couples during and after pregnancy.

In addition, there is some indication from research with primarily Caucasian samples that these effects of communication on marital satisfaction might differ by gender, such that improving men's communication leads to greater improvements in relationship satisfaction whereas improvements in women's communication might have the opposite effect (e.g., Schilling, Baucom, Burnett, Allen, & Ragland, 2003). Conversely, a recent study indicated that changes in both genders' communication can lead to improvement in couple satisfaction (Bodenmann et al., 2009). Furthermore, research on cultural differences suggests that these gender-typed qualities and attitudes are also important to study for Latino couples because of the salient role of gender in Mexican culture (Cauce & Domenech-Rodríguez, 2002).

Finally, whereas findings indicate that brief relationship education efforts can effect an immediate improvement in couple functioning, there is some evidence that these improvements often erode within 1 year (e.g., Cordova et al., 2014; Kaiser, Hahlweg, Fehm-Wolfsdorf, & Groth, 1998; Laurenceau, Stanley, Olmos-Gallo, Baucom, & Markman, 2004), indicating a nonlinear change trajectory. For example, Cordova and colleagues' research on a two-session motivational couples intervention demonstrated that couples receiving this intervention get a significant boost in their functioning that gradually decreases over the course of the year. As the intervention under examination in this study is similar in nature, it is possible that its outcome would follow a similar nonlinear trajectory, whereby the intervention might show an initial positive impact that would decline over time.

Allowing that (a) similar communication patterns appear to occur across cultures, (b) these patterns are linked to relationship quality in both Latino and non-Latino populations, and (c) improvements in communication might lead to increases in satisfaction in Caucasian couples, it therefore seems reasonable that improving communication might affect Latino couple functioning. Thus, this study examined the dyadic effects of a couples intervention designed to promote healthy family behaviors on Latino couples during and after a pregnancy. The primary target of this intervention was to change males' smoking behavior, and these outcome results are found elsewhere (Khaddouma et al., 2015; Noonan et al., 2016; Pollak et al., 2015). However, one of the appealing aspects of this intervention was that it might have multiple positive effects on participants beyond its primary target, which would indicate that it might be a cost-effective method to deliver multiple public health benefits such as changing health behaviors and simultaneously improving couple functioning in a critical developmental period when couple functioning usually declines.

Thus, (Hypothesis 1) it was expected that the intervention couples would demonstrate increased satisfaction postpregnancy compared to control couples, while controlling for each partner's satisfaction at baseline. Second, (Hypothesis 2) it was hypothesized that intervention couples would demonstrate more positive changes in communication after the intervention than control couples, also while controlling for each partner's communication at baseline. Furthermore, according to previous research described above, we expected that change in couple functioning postintervention is likely to occur in a nonlinear fashion. Hypotheses 1 and 2 predicted potential group differences at 3 months postpartum (Time 3) and 12 months postbaseline (Time 4); however, we also examined long-term change from baseline (Time 1) to Time 4. To examine long-term change (Hypothesis 3), we hypothesized that couples in the intervention group would demonstrate fewer declines in relationship satisfaction and communication at Time 4 compared to couples in the control group. Finally, (Hypothesis 4) gender effects were examined for communication and satisfaction; however, due to varying findings from previous studies, no specific predictions were made for each gender.

METHOD

Participants

A total of 348 couples participated in this study and were included in analyses. Participants engaged in a longitudinal randomized controlled trial that examined the efficacy of a couple-based smoking cessation intervention among Latino men whose wives were pregnant. We added the couples' component to extend the effects of the intervention beyond the time of the intervention and to address community capacity building. The primary outcome targets in the original study were reducing smoking behavior for men and increasing healthy eating and exercise for the women, by directly increasing positive communication around these behaviors for the couples; primary outcome results are reported elsewhere (Pollak et al., 2015). Couples were eligible if they were married or living together. Eligible men were 18 years of age or older, living with their pregnant partner, of Latino ethnicity, and had smoked within the past 30 days. Eligible women were 16 years of age or older, living with their partner, 8–25 weeks pregnant, and not currently smoking. Detailed information regarding

recruitment, treatment development, attrition/retention, and procedures is reported in the primary outcome manuscript (Pollak et al., 2015).

Overall, men (M) and women (W) in this study were Caucasian (M = 49%, W = 47%) or mixed race (M = 46%, W = 47%), and most participants reported Mexico as their country of origin (M = 78%, W = 77%). The average age for men in the sample was 30.0 ($SD = 5.9$) and for women the average age was 27.9 ($SD = 6.0$). Men and women had mostly obtained a high school education or less (M = 93%, W = 91%) and reported a monthly income below \$1,500 (M = 79%, W = 85.5%). The majority of the men were employed full-time (66%) or part-time (28%) whereas women were typically unemployed (74%). At baseline, women were, on average, at 16 weeks gestation ($M = 16.79$, $SD = 5.70$). Most partners were unmarried and cohabiting (69%) or married (30%) and had been involved in a relationship with their current partner for more than 3 years (64%). Using a clinical cut-off for relationship distress (13.5 on the CSI-4; Funk & Rogge, 2007), 25% of women were clinically distressed at baseline and 19.7% of men were clinically distressed at baseline.

Overall, participant completion rates were high (T2 = 89% ($n = 615$), T3 = 82% ($n = 567$), and T4 = 81% ($n = 560$)) and binge drinking at intake was the only baseline variable related to follow-up at T2 ($t(346) = 2.87$, $p < .05$), T3 ($t(346) = 2.92$, $p < .05$), and T4 ($t(346) = 3.00$, $p < .05$).

Procedures

Couples were recruited into the study through a variety of methods. The primary recruitment strategy was partnership with local healthcare organizations that provided prenatal care to underserved populations. Providers would refer pregnant Latinas to our recruiters and recruiters also had a booth at a mandatory health fair that patients attended to learn about resources during their pregnancies. On the recommendation of our community advisory panel, our study and intervention was framed as a resource to help both members of the couples develop healthier behaviors together to improve the overall health of their families. Other recruitment strategies included attending local cultural events, fairs, and sporting events such as soccer games, going on Spanish-speaking radio shows to discuss healthy behaviors, and fliers posted in areas in the community likely to be frequented by our target population.

Eligible couples participated in a randomized controlled trial that compared the efficacy of a two-session culturally appropriate (as assessed by our community advisory panel and focus groups), couple-based, behavioral face-to-face treatment versus a control group in which couples received a culturally appropriate self-help smoking cessation guide. The first session was before the birth of the child and the second was approximately 6 weeks after childbirth. The couples were also provided with follow-up telephone calls to answer questions and remind them to follow through with the plans they developed in the face-to-face sessions. All sessions were conducted during home visits. The style of smoking cessation counseling was based on Motivational Interviewing (Miller & Rollnick, 2009) and couples' communication sessions were based on models of cognitive-behavioral couple therapy that promoted awareness of family-related motivations for substance use and engaging in healthy behaviors while also teaching dyadic coping and communication skills training, both

emotional expressiveness skills and problem solving (e.g., Fischer, Baucom, & Cohen, 2016; Epstein & McCrady, 1998). The time spent on communication was focused on helping the couples to express concerns about and motivations for healthy behavior change and to problem solve effectively on making the changes, which is different from previous relationship education studies utilizing communication skills training as these focused specifically on relationship concerns or conflicts. As such, this intervention could be considered more in the partner-assisted intervention for individual change category of couple-based interventions rather than couple therapy, per se. In this intervention, communication between the couple was not the central focus but instead was presented as a tool to for better problem solving and teamwork around these healthy behavior changes. For example, after the couple were taught speaking and listening skills (following procedures outlined in Epstein & Baucom, 2002), they were asked to take turns sharing with each other what they thought their major barriers to health behavior changes were and why they had difficulty changing (e.g., they could talk about the benefits of smoking, or why they like eating junk food), whereas the other partner listened carefully and reflected what he or she was saying without offering advice to better understand the other person's position. In the problem-solving sections, they were taught a problem-solving procedure (again following skills outlined in Epstein & Baucom, 2002) and they each took turns problem solving with each other on the barriers they described when learning the speaker-listener skills. The motivational interviewing aspects of the intervention focused on helping them identify why they engaged in the unhealthy behaviors (the benefits of the behavior and the costs of change) and also examined the outcomes of change (the costs of the current behavior and the benefits of change). After this exploration, they were also offered a menu of strategies for behavior change and the facilitators helped them both develop a plan for change once they chose a strategy.

The intervention sessions lasted approximately 2 hours, with communication skills training comprising 30 minutes. A male and female facilitator as well as a research aide was present for each in-person session. Facilitators were bicultural, bilingual individuals who were chosen for interpersonal skill and warmth on the basis of individual interviews. Facilitators received training (40 hours) in cognitive-behavioral skills development, principles of smoking cessation, motivational interviewing techniques, and couples' communication counseling. Before starting any counseling with participants, facilitators were required to pass a credentialing test in which they role-played counseling sessions with the primary investigators that were trained and considered experts in respective areas of motivational interviewing and couples therapy. All sessions with couples were digitally audio recorded, with participant's consent, to monitor adherence to the program protocol. These audio-recordings were reviewed by a bilingual supervisor each week, and instances that deviated from protocol or presented difficult clinical issues were noted and addressed by the treatment team during weekly supervision meetings.

Trained interviewers conducted four face-to-face surveys conducted separately with each partner throughout the duration of the study: baseline (approximate end of the first trimester; T1), end-of-pregnancy (28–35 week gestation; T2), 3 months postpartum (T3), and 12 months from baseline (T4). Survey follow-ups coincided with intervention procedures for couples in the intervention group, such that both intervention sessions were completed in-

person before the end-of-pregnancy follow-up. As the study was mainly targeting smoking cessation, many of the items during the surveys assessed aspects of smoking. We also asked about other health behaviors, such as drinking, and diet and exercise for the women. The participants knew the assessments were meant to evaluate their health behaviors and how they functioned as a couple to support each other, as that was the stated purpose of the study during recruitment.

Measures

Distribution information and internal consistencies for this scale at each time point are presented in Table 1.

Constructive communication—We assessed men’s and women’s constructive communication with the 7-item Constructive Communication subscale of the Communication Patterns Questionnaire (Heavey, Larson, Zumtobel, & Christensen, 1996). A sample item reads, “We both suggest possible solutions and compromises,” which ranges from 1 (*very unlikely*) to 9 (*very likely*). Reliability was acceptable at all time points for men (T1 $\alpha = .81$, T2 $\alpha = .78$, T3 $\alpha = .82$, T4 $\alpha = .85$) and women (T1 $\alpha = .81$, T2 $\alpha = .79$, T3 $\alpha = .82$, T4 $\alpha = .82$).

Relationship satisfaction—We assessed men and women’s relationship satisfaction with a 4-item Couples Satisfaction Index (Funk & Rogge, 2007), a scale designed to measure one’s satisfaction in a relationship, during each assessment phase. A sample item reads, “Please indicate the degree of happiness, all things considered, of your relationship,” which ranges from 0 (*extremely unhappy*) to 6 (*perfect*). Reliability was acceptable at all time points for men (T1 $\alpha = .85$, T2 $\alpha = .87$, T3 $\alpha = .85$, T4 $\alpha = .85$) and women (T1 $\alpha = .95$, T2 $\alpha = .96$, T3 $\alpha = .96$, T4 $\alpha = .97$).

Analytic Strategies

Building on previous literature (Cordova et al., 2014; Kaiser et al., 1998; Laurenceau et al., 2004), it was expected that change over time in this study would be nonlinear and thus many moderation techniques (e.g., moderation in a multi-level model, grouping in a structural equation model) would not appropriately capture the change we expected. Therefore, we followed procedures outlined by Cordova et al. (2014), which examined the influence of treatment group at each time point rather than aggregate change over time using latent growth curve models (LGCM; Duncan, Duncan, & Strycker, 2006). Regressing the variable at each time point onto the treatment condition variable is more parsimonious than previous piecemeal approaches of estimating differences across time (e.g., Keller et al., 2000) and allows the effect of treatment to vary across time points, which is more likely to accurately capture the rates of change couples report after treatment. As Cordova and colleagues note “... [p]iecewise models [impose] potentially inappropriate linearity assumptions over the follow-up period.” Furthermore, they note that an additional advantage to this model is that it also provides information on between-group mean differences across time points. However, it does not directly compare change from baseline to the final time point, so we also conducted analyses directly comparing these two points (T1 and T4) using paired *t*-tests.

In addition, because of the interdependence of the couple data, error terms of the paired variables were correlated (e.g., T2 woman relationship satisfaction and T2 man relationship satisfaction). Thus, we employed a *version* of the Actor-Partner Interdependence Model (APIM; see Card, Selig, & Little, 2011; Kenny, Kashy, & Cook, 2006) called dyadic LGCM. This a priori statistical model is visually depicted in Figure 1.

We conducted all dyadic LGCM analyses using Mplus 7.2 (Muthén & Muthén, 1998–2013), which uses full information maximum likelihood estimation (FIML) to handle data missing at random. When the covariates related to the missing pattern are included in the model, FIML produces less biased and more reliable parameter estimates compared to conventional methods (e.g., list-wise deletion, multiple imputation; Allison, 2000; Schafer & Graham, 2002).

In addition, gender differences were examined within each dyadic LGCM. To determine if paths significantly differ by gender, each path in the model was constrained to be equal for the men and women. Comparisons of the freely estimated and constrained models were made using the Satorra–Bentler chi-square differences test. According to this test, a model fits the data better if each group (i.e., men and women) takes on unique structural pathway estimates when the freely estimated and constrained models are compared. If constraining the structural pathways to be equal reduces the overall model fit, this suggests that the pathways differ for men and women. Therefore, a significant Satorra–Bentler chisquare test indicates that the tested path significantly differed by gender (Satorra & Bentler, 2010).

Several indices were used to assess the overall fit for the final model (i.e., after appropriate paths are constrained): the chi-square test, the standardized root mean square residual (SRMR), the comparative fit index (CFI), the Tucker–Lewis index (TLI), and the root mean square of error approximation (RMSEA). A model was determined to be a good fit for the data if the chi-square was small and nonsignificant, the SRMR value was less than 0.10, the CFI and TLI values were greater than 0.95, and the RMSEA was less than 0.05 (Kline, 2011).

RESULTS

Preliminary Analyses

Distributions for constructive communication and satisfaction were skewed and the mean scores of relationship satisfaction and constructive communication were high for both men and women at baseline (Table 1). This indicates that even if the intervention was effective, positive change may not be statistically detectable due to a ceiling effect. Therefore, all models were estimated using maximum likelihood robust standard errors (MLR) to reduce estimation bias (Asparouhov, 2005). Because binge drinking was associated with dropout, this variable was initially included as a control variable in all of the models; however, it did not predict any of the outcome variables. Therefore, to retain the most parsimonious model, binge drinking was removed from the final models. No covariates were included in the following models. Lastly, we examined correlations among constructive communication and relationship satisfaction variables at all four time points for both men and women (Table S1). All correlations were in expected directions, were statistically significant (except T2

women's constructive communication and T1 men's relationship satisfaction), and significant correlations ranged from $r = .12$ to $r = .81$.

Relationship Satisfaction

To examine intervention effects for changes in men and women's relationship satisfaction (hypotheses 1 and 4), we ran a dyadic LGCM (Duncan et al., 2006). To examine how treatment groups differed at each time point, men and women's relationship satisfaction at T2–T4 was regressed onto treatment condition. After examining a series of chi-square difference tests assessing for gender differences in the model (Table 2), the best fitting model indicated that there were no significant gender differences. The final model fit the data well: $\chi^2(26) = 35.47$, $p = .10$, CFI = 0.99, TLI = 0.98, RMSEA = 0.032 (90% CI = 0.000, 0.057), and SRMR = 0.066. Results indicate that the treatment group reported statistically significant higher scores on relationship satisfaction at T3 only (Table 3). In addition, a similar intervention effect was tending toward significance ($p < .10$) at T4 whereby the intervention group reported higher scores on average. We plotted the two treatment group trajectories (Figure 2) by combining the mean slope and the treatment effect at each time point; time points 2–4 incorporate the previous means and treatment effects. From these graphs we see that men's and women's satisfaction in the intervention group decreased less overall compared to the control group, which is primarily attributable to between-group differences in the bump in satisfaction that the intervention group received from the treatment at Time 3.

In post hoc analyses, we examined a series of directional t -tests to determine ARM differences at T2 ($t(622) = -1.55$, $p = .06$), T3 ($t(579) = -1.71$, $p < .05$), and T4 ($t(550) = -.86$, $p = .20$). Only T3 had significantly different ARM means (control $M = 15.90$, $SE = .20$; intervention $M = 16.35$, $SE = .21$, Cohen's $d = .12$) resulting in a small effect size.

To test hypothesis 3, for relationship satisfaction, which was a directional hypothesis, we examined mean differences between T1 and T4 relationship satisfaction using a single-tailed repeated measures analysis of variance (RM-ANOVA; see Table 4). Specifically, we tested change from time 1 to time 4 using gender and ARM as covariates and then examined the parameter testing the interaction between ARM and change in relationship satisfaction ($F(1,546) = 3.12$, $p < .05$). For the control group, satisfaction decreased, and the intervention group's satisfaction increased slightly. These analyses confirm that individuals in the intervention group did not experience the same declines in relationship satisfaction as those in the control group (intervention Cohen's $d = .08$; control Cohen's $d = .14$).

Constructive Communication

To examine the intervention effect on men and women's reports of constructive communication (hypotheses 2 and 4), we ran a second dyadic LGCM (Duncan et al., 2006). Treatment group was again included in the model to examine intervention effects on relationship communication for each time point after baseline (see above) by regressing communication (t2–T4) on the treatment group variable. Next, we examined a series of models testing gender constraints with Chi-square difference tests (Table 2) to determine if and how men and women differed on model parameters. The final model, where only men's

and women's baseline communication was different, fit the data well (Table 2): $\chi^2(28) = 52.54$, $p < .05$, CFI = 0.96, TLI = 0.96, RMSEA = 0.050 (90% CI = 0.028, 0.071), and SRMR = 0.105. Results of the final model indicated that treatment groups differed at T2 and T3 and trended toward significance at T4 ($p < .10$; Table 5). At T2 and T3 the treatment group reported more constructive communication compared to the control group and indicated that the treatment group received a bump in communication skills though the significant differences did not last through to Time 4. Plotting these treatment group trajectories (See Figure 3), while men and women in both the treatment and control group experienced an increase in constructive communication, men and women in the intervention group increased to a greater extent. Furthermore, although the treatment group participants received an additional bump in levels of constructive communication at T3, these differences had decreased at T4.

Next, we examined a series of directional post hoc t -tests to confirm ARM differences and T2 ($t(623) = -1.44$, $p = .06$), T3 ($t(578) = -2.09$, $p < .05$), and T4 ($t(545) = -.63$, $p = .22$). Only T3 was statistically different for the control group ($M = 55.59$, $SE = .48$) and the intervention group ($M = 57.02$, $SE = 8.27$) resulting in a small effect size (Cohen's $d = .17$).

To test hypothesis 3 for constructive communication, a directional hypothesis, we examined mean differences between T1 and T4 relationship satisfaction using a single-tailed RM-ANOVA with gender and ARM as covariates (Table 4). Change in constructive communication was statistically different for the control and intervention group ($F(1,542) = 4.05$, $p < .05$). This analysis confirms that the intervention group reported more improvement compared to the control group (control Cohen's $d = .32$; intervention Cohen's $d = .49$).

DISCUSSION

In this study, we examined the effects of a brief couple intervention during the critical transition from pregnancy to postpartum. First, when examining relationship satisfaction, men and women did not differ on their reports of initial relationship satisfaction, change in relationship satisfaction, and treatment effect; thus, there were no gender effects in response to treatment. For both men and women, those in the treatment group had a slight increase in satisfaction postpartum, which is unusual given previous studies documenting that couple satisfaction in non-Latino couples often declines during this time point (e.g., Lawrence et al., 2008; Twenge et al., 2003). These couples' satisfaction levels had decreased at 1-year postbaseline so that they were no longer statistically different from the control group.

The decline in satisfaction seen in the women in the control group is consistent with non-Latino couples in previous studies but to our knowledge, there is no other existing data on changes in dyadic satisfaction during pregnancy on Latino couples, thus it is difficult to determine if these findings are consistent with usual trends with this population. Furthermore, because both control and treatment group couples were willing and motivated to seek our intervention to create a healthy family, it is difficult to generalize these findings to all Latino couples during pregnancy. Thus more community research is needed to determine how satisfaction changes for Latino couples over time during and after pregnancy.

Still, it is notable that the women in the control group reported significant decrease in satisfaction postpartum, which is consistent with a recent unpublished doctoral dissertation comparing Latina mothers receiving an in-home parenting intervention to Latina mothers who did not receive the intervention (Flores, 2009). Mothers who did not receive the intervention reported significantly more relationship distress in the postnatal period.

Similarly, the slight increase in relationship satisfaction in the intervention group occurred around the time of the follow-up face-to-face intervention, which provides further evidence that the intervention itself might have had some effect on the couples' satisfaction. Furthermore, when examining intervention effects differences graphically (Figure 2), unlike the control group, the treatment group's level of satisfaction does not drop below initial reports of relationship satisfaction whereas the control group's satisfaction does. Thus, this brief couple intervention nested within a smoking cessation intervention appears to buffer, though only to a small degree, some of the erosion in relationship satisfaction that is known to occur during the transition from before and to after pregnancy. These findings are in contrast to similar interventions with non-Latino couples in which satisfaction and communication among couples in the intervention group also declined, but not at the steeper rate that communication and satisfaction deteriorated for couples in the control group (Halford et al., 2010; Schulz et al., 2006; Shapiro & Gottman, 2005). One possible explanation for the differing pattern could be due to specific cultural values among Latino couples such as the value of *familismo*, or the importance of family. In addition, the majority of couples in this study were not first-time parents, which differs from the previous studies that examined parents who were making the transition to parenthood for the first time. Finally, the nature of the intervention for this study was significantly different from previous studies in that it had a more holistic focus on creating a healthy family by engaging in better health behaviors. In this intervention, communication was not the focus of intervention but instead was presented as a tool for better *teamwork* around these healthy behavior changes.

Interestingly, constructive communication increased over time for couples in both the treatment and control groups. Because this pattern is the reverse of many previous findings, the increase in communication may be an artifact of the repeated measure design where participants were asked at the four time points about their communication, causing them to pay more attention to it and reflect on their behaviors, although the distance between assessments makes this unlikely. It also might be possible that they used the information provided in the guide about smoking cessation as motivation to create a sense of teamwork around this issue. In addition, perhaps they might have responded to the assessment in more socially desirable ways, which Latinos might be particularly likely to do (Hopwood, Flato, Ambwani, Garland, & Morey, 2009). However, because we did not see similar findings for relationship satisfaction, this pattern suggests the finding is not wholly due to social desirability and the increase in communication could be a unique finding specific to this treatment study or it could be specific to low-income Latino couples with low levels of acculturation. Again, more research on communication in this population, particularly during pregnancy, is needed. Although this program appeared to provide a boost to intervention couples' levels of satisfaction and communication posttreatment, this program was still an adaptation of a model based on research on Caucasian couples and the effects were small. Recent findings suggest that whereas avoidant communicative behavior is

considered to be a negative characteristic in Caucasian couples, it might serve a more positive function for Latino couples (Bermudez & Stinson, 2011). Perhaps further tailoring these interventions to reflect more specific cultural differences would provide greater and longer lasting effects.

The pattern of findings also suggests that the improvements in communication might not be the factor driving the increases in satisfaction postpartum because the increase in self-reported communication in the control group was not accompanied by corresponding changes in satisfaction. Thus, it is possible that the intervention might have affected a third variable in addition to communication that in turn improved satisfaction. It is possible that in teaching the principles of teamwork behind the communication and helping the couples use these principles to support their efforts to improve their health behaviors, the couples felt more united and connected in their relationships. Therefore, it might not be the skills per se that effected change, but the positive experience of working together to create a healthier family that brought the couples closer together. These mechanisms require additional investigation in future studies.

Unlike other transition to parenthood relationship interventions, the time spent on communication was focused on helping the couples to problem solve effectively about health behaviors and not on specific relationship concerns or conflicts. Our findings suggest that the incorporation of brief communication skills training into a larger physical health-related program may be effective for buffering the expected erosion of relationship quality during the birth of a new child, although the mechanisms of this effect still need to be determined. This finding is particularly notable for vulnerable populations, such as this one, who are underserved by both physical and mental healthcare institutions, and often have few opportunities for couple-based interventions. Along these lines, a recent review of the literature suggests that there are a growing number of couple- and family-based interventions to address health issues (for reviews of these literatures, see Fischer et al., 2016; Shields, Finley, Chawla, & Meadors, 2012). Many of these programs have been delivered effectively in home and via telephone calls by lay practitioners, which is similar to our program. Shields and colleagues note in their introduction that these particular kinds of modifications have advantages in that they may make it more economical to provide these interventions to a wider number of participants. Furthermore, many couple-based interventions focus on increasing communication skill and dyadic coping around health issues (e.g., Fischer et al., 2016), which is consistent with the intervention described here. As described earlier, given that the primary outcome for the study was smoking cessation, our intervention was originally adapted from cognitive-behavioral couple interventions for substance use (e.g., Epstein & McCrady, 1998). Consequently, this study potentially adds more support for the efficacy and utility of these kinds of systemic interventions for health problems.

There are several models that use home visits during the period after the birth of a child to deliver services and parent training to low-income mothers. One of the most successful models might be the Nurse–Family Partnership (e.g., Olds, 2006). Furthermore, this time period may be an ideal time to recruit and retain couples and families for preventative physical and mental health care. The focus on improving couple and individual health for the

wellbeing of the expected child may motivate participants to “pay attention” to aspects of their health (i.e., physical, relational, mental) that they normally may ignore (Pollak et al., 2015). Studies on this intervention published elsewhere indicate that pregnancy is a teachable moment for behavioral health change (Pollak et al., 2015) and that this intervention increased motivation for change and had high quit rates for smoking (Khaddouma et al., 2015). Furthermore, this study also had unintended positive effects in reducing men’s binge drinking up to 1 year later (Noonan et al., 2016). Combining these previous findings with the results described in this study provides evidence that this type of couple-based health intervention might successfully target a number of important outcomes in one efficient package.

For both relationship satisfaction and constructive communication, the positive effects of the intervention appear to fade out at time 4. This finding is similar to previous findings of the Marriage Check-up, another example of a brief couple intervention that is preventive in nature (Cordova et al., 2014). Cordova and colleagues found that across two waves of a yearly marriage check-up changes in relationship satisfaction took the shape of a climbing ‘M’. Whereas the initial bump in relationship satisfaction faded after the first marriage check-up, after the second marriage check-up (a year later), participants reported a higher and more sustained increase in relationship satisfaction. Thus, it is possible that brief booster sessions that focus more specifically on couples’ functioning might increase the effectiveness of this approach. Again, these kinds of brief booster sessions might be incorporated into existing home-visitation programs focused on other health outcomes. Finally, it is difficult to know what the mechanism of change is in this study and, as discussed above, it might be something different than changes in communication skill. Instead, it is possible that this process of taking time to listen to and try to understand each other created a greater sense of teamwork and motivation for change, not the skills per se. However, we have no way to measure this possible mechanism at this time, thus it would need to be evaluated in future studies. Understanding this mechanism will allow the field to target these brief interventions more accurately in the future and perhaps increase their effects.

Limitations and Future Research

This study is not without limitations. First, relationship satisfaction and constructive communication were reported in face-to-face interviews. Whereas this method can reduce the likelihood of missing data and circumvent inaccurate reporting due to illiteracy, it may increase the likelihood of responding to questions in a socially desirable manner. Also, the changes in communication were assessed using self-report measures instead of observational measures. Previous studies of relationship education find that observational measures typically reveal more change (Hawkins, Blanchard, Baldwin, & Fawcett, 2008). Furthermore, because of the cultural significance of *simpatia*, the desire of keeping agreement or harmony in the relationship, the Latino participants may respond in a manner that suits the desires of the researcher to maintain the relationship built during the study (Hopwood et al., 2009). Similarly, the cultural value of *simpatia* may also explain, in part, the high retention rate during the study. It should be noted that different individuals conducted the interview and the intervention and interacted with the couple at separate

times. In addition, this same value could lead to a reluctance to report negative aspects of the relationship on measures, which might explain the high level of skewness in the results. However, these couples were recruited into a study of healthy family behaviors during pregnancy, not marital distress, so the high level of couple satisfaction might be due to the recruitment strategy and goals. It is possible that there might be more differences between intervention and control families if high-risk couples were identified and recruited into the study (e.g., Halford et al., 2010).

Another limitation is the cultural accuracy of our measure of satisfaction, which may not adequately assess how satisfied the individual is with their relationship and even if individual satisfaction is an important indicator of relationship quality among Latino families. In other words, relationship quality among individuals in a “collectivist” culture may be a different construct than an individual’s report of his or her satisfaction with the relationship. Anecdotal evidence from couples and therapists in this study indicated that it may be more valid in this culture to target the more holistic construct of “family satisfaction.” Therefore, future studies may consider examining cultural differences in previously established constructs of relationship quality (e.g., relationship satisfaction, constructive communication) in addition to examining culturally appropriate constructs of relationship quality using grounded theory research methods (e.g., couple level satisfaction, effectiveness of the couple to parent).

Lastly, this study did not evaluate the extent to which improvements in relationship satisfaction were attributable to improvements in constructive communication (or vice versa). Thus, future research should utilize mediational models or dual growth curve models or even cross-lagged path analyses to examine whether increases in constructive communication among Latino partners are directly or indirectly associated with increases in relationship satisfaction over time, as well as whether increases in relationship satisfaction are associated with increases in constructive communication. These models would help to elucidate the specific mechanisms through which couple communication processes influence, and are influenced by, changes in relationship quality over time. Furthermore, there have been recommendations for public health interventions to examine family as a potentially untapped source of social support when effecting change in health behaviors (Trief, Wade, Britton, & Weinstock, 2002). This study is part of a larger study on smoking cessation; future research using this or other data should examine how relationship functioning inhibited or promoted the effectiveness of interventions for smoking cessation or other health behaviors interventions.

CONCLUSION

In conclusion, these findings suggest that brief communication skills training that is incorporated into a larger behavioral health intervention also might have secondary effects in preventing the decline of Latino couple satisfaction in the critical time period after the birth of a child. Consequently, it is possible that incorporating communication training into existing home-visitation programs that focus on other health outcomes might improve these health outcomes while simultaneously improving family functioning, thus impacting a wider range of outcomes.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Figure 1. The A priori model of the tested dyadic latent growth curve models.

Note. RS = Relationship Satisfaction; CC = Constructive Communication; The numbers next to slope and intercept paths indicate the value the path was fixed to when testing the latent growth curve model.

Figure 2. Relationship satisfaction over time for Latino men and women.

Note. Treatment and control groups only differ significantly at Time 3. Treatment and control groups trend toward significant differences ($p < .10$) at time 4 for men and women. Control and Intervention relationship satisfaction means are calculated from LGCM parameter estimates of slope and treatment effects.

Men's Communication Slope:

Women's Communication Slope:

Figure 3. Latino Men and Women's Communication over Time.

Note. Treatment and control groups only differ significantly at Time 2 and Time 3.

Treatment and control groups trend toward significant differences ($p < .10$) at time 4 for men and women. Control and Intervention means for constructive communication are calculated from LGCM parameter estimates of slope and treatment effects.

Table 1

Raw Scores and Variable Distribution for Men and Women's Relationship Satisfaction and Constructive Communication

	Means (SD)	Median	Observed Range	Skewness (SE)	Kurtosis (SE)
<i>Women's relationship satisfaction</i>					
T1	15.99 (3.93)	17.00	2–21	–1.30 (.13)	1.52 (.26)
T2	15.91 (3.73)	17.00	2–21	–1.42 (.14)	2.08 (.28)
T3	15.90 (3.76)	17.00	0–21	–1.73 (.14)	4.01 (.28)
T4	15.45 (4.18)	16.00	0–21	–1.56 (.15)	2.50 (.30)
<i>Women's constructive communication</i>					
T1	52.10 (10.54)	55.00	8–63	–1.50 (.13)	2.38 (.26)
T2	54.65 (8.82)	57.00	8–63	–1.89 (.14)	5.05 (.27)
T3	55.76 (8.85)	58.00	7–63	–2.45 (.14)	7.94 (.28)
T4	55.74 (8.46)	58.00	21–63	–1.76 (.15)	2.90 (.29)
<i>Men's relationship satisfaction</i>					
T1	16.54 (3.67)	17.00	5–21	–.78 (.13)	–.03 (.26)
T2	16.33 (3.45)	17.00	3–21	–.89 (.13)	.79 (.28)
T3	16.30 (3.36)	17.00	4–21	–.62 (.15)	.09 (.29)
T4	16.31 (3.52)	17.00	1–21	–1.02 (.15)	1.36 (.29)
<i>Men's constructive communication</i>					
T1	53.61 (9.59)	56.00	17–63	–1.50 (.13)	2.19 (.26)
T2	56.06 (7.98)	59.00	15–63	–1.66 (.14)	3.06 (.28)
T3	56.82 (7.67)	59.00	16–63	–2.20 (.15)	5.82 (.29)
T4	57.50 (7.22)	60.00	16–63	–2.71 (.15)	9.60 (.30)

Table 2

Chi-Square Difference Test for Similarity of Men and Women in the Relationship Satisfaction and Communication Models

	Relationship Satisfaction	Communication
Baseline Model	$\chi^2(20) 59.22, p < .05$	$\chi^2(20) 29.62, p = .08$
Intercept (Variance)	$\chi^2(1) 0.95, p = .33^a$	$\chi^2(1) 3.92, p < .05$
Intercept (Mean)	$\chi^2(1) 1.77, p = .18^a$	$\chi^2(1) 4.09, p < .05$
Slope (Variance)	$\chi^2(1) 1.77, p < .05$	$\chi^2(1) 7.97, p < .05$
Slope (Mean)	$\chi^2(1) 0.01, p = .92^a$	$\chi^2(1) 0.40, p = .53^a$
Repeated Measures (Variance)	$\chi^2(4) 24.28, p < .05$	$\chi^2(4) 6.17, p = .19^a$
Influence of Treatment (Time 2–4)	$\chi^2(3) 1.48, p = .69^a$	$\chi^2(9) 0.07, p = .99^a$
Final Model	$\chi^2(25) 78.42, p < .05$	$\chi^2(28) 38.45, p = .08^a$

Note. A significant Satorra–Bentler chi-square difference test indicates that the tested path significantly differed for men and women.

^aParameter constrained to be equal for men and women.

Table 3

Unstandardized Parameter Estimates and Effect Sizes for Treatment Effect for Relationship Satisfaction

Relationship Satisfaction		
	Mean (SE) ^a	Variance (SE) ^a
<i>Mean intercept</i>		
Men	16.22 (0.16) **	8.17 (0.84) **
Women	16.22 (0.16) **	8.17 (0.84) **
<i>Mean slope</i>		
Men	-0.18 (0.08) *	0.40 (0.16) *
Women	-0.18 (0.09) *	0.40 (0.16) *
	B (SE) ^b	Cohen's d ^c
<i>Treatment condition → T2 Relationship satisfaction</i>		
Men	.28 (0.22)	0.10
Women	.28 (0.22)	0.10
<i>Treatment condition → T3 Relationship satisfaction</i>		
Men	.56 (0.26) *	0.20
Women	.56 (0.26) *	0.20
<i>Treatment condition → T4 Relationship satisfaction</i>		
Men	.57 (0.32) [†]	0.20
Women	.57 (0.32) [†]	0.20

[†]
 $p < .010$ *
 $p < .05$ **
 $p < .001$.^a Means and Variances of growth curve factors. Growth curve factors were not regressed onto treatment condition because we tested the effects of treatment on the individual time points.^b Unstandardized regression coefficients.^c Effect sizes for treatment effect.

Table 4

Repeated Measures Analysis of Variance of Time 1 and Time 4 change for the control and intervention group while accounting for gender difference

	<u>Time 1</u>		<u>Time 4</u>		Cohen's <i>d</i>
	M	SE	M	SE	
<i>Relationship satisfaction</i>					
Control ARM	16.28	.22	15.76	.23	.14
Intervention ARM	15.94	.23	16.02	.24	.08
<i>Constructive communication</i>					
Control ARM	53.56	.60	56.40	.47	.32
Intervention ARM	52.41	.61	56.83	.48	.49

Table 5

Unstandardized Parameter Estimates and Effect Sizes for Treatment Effect in the Time Variant and Time Invariant Models of and Couple Communication

Constructive communication		
	Means (SE)^a	Variance (SE)^a
<i>Mean intercept</i>		
Men	54.00 (0.46) **	44.54 (8.31) **
Women	52.47 (0.54) **	55.89 (11.13) **
<i>Mean slope</i>		
Men	1.05 (0.17) **	4.20 (0.90) **
Women	0.89 (0.22) **	4.20 (0.90) **
	B^b	Cohen's d^c
<i>Treatment condition → T2 Constructive communication</i>		
Men	2.06 (0.48) **	0.10
Women	2.06 (0.48) **	0.10
<i>Treatment condition → T3 Constructive communication</i>		
Men	2.40 (0.51) **	0.20
Women	2.40 (0.51) **	0.20
<i>Treatment condition → T4 Constructive communication</i>		
Men	1.15 (0.60) [†]	0.20
Women	1.15 (0.60) [†]	0.20

*
 $p < .05$

**
 $p < .001$.

^a Means and variances of growth curve factors.. Growth curve factors were not regressed onto treatment condition because we tested the effects of treatment on the individual time points.

^b Unstandardized regression coefficients.

^c Effect sizes for treatment effect.