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Relationships Among Constructive Communication, Self-Efficacy, and Motivation in Latino Men Who Smoke: A Path Analysis

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I am submitting herewith a thesis written by Alexander Malik Khaddouma entitled "Relationships Among Constructive Communication, Self-Efficacy, and Motivation in Latino Men Who Smoke: A Path Analysis." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Psychology.

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**Relationships Among Constructive Communication, Self-Efficacy, and
Motivation in Latino Men Who Smoke: A Path Analysis**

A Thesis Presented for the
Master of Arts
Degree
The University of Tennessee, Knoxville

Alexander Malik Khaddouma
August 2014

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Dedication

To all beings who find that love changes them for the better.

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Abstract

Previous authors have posited that the health and functioning of romantic relationships may play a role in individual partners' motivation to engage in healthier behavioral patterns. This effect of romantic relationship functioning may be particularly applicable to Latino couples, given the cultural value of *familismo* (Galanti, 2003). Utilizing specific factors of Lewis and colleagues' (2006) Interdependence Model, the present study tested a model of motivation for smoking cessation in which self-efficacy mediates the effect of perceived spousal constructive communication patterns on male partners' motivation to quit smoking. The model was tested in a sample of 173 Latino couples who underwent a couple-based intervention for Latino men who smoke. Results indicated that higher levels of perceived constructive communication among Latino male partners predicted subsequent increases in male's partners' self-efficacy and motivation to quit smoking. Interestingly, these results were only significant at measurements taken *after* completion of the intervention. Female partners' level of perceived constructive communication did not predict male partners' subsequent self-efficacy or motivation to quit smoking. Self-efficacy did not mediate associations between constructive communication and motivation despite significant paths to and from self-efficacy. These results provide preliminary evidence to support the utility of couple-based interventions for Latino men who smoke. Findings also suggest that perceptions of communication processes among Latino romantic partners (particularly male partners) may be an important target for interventions aimed increasing motivation for smoking cessation among Latino men who smoke.

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Chapter 1

Introduction

Smoking is a major health problem in the United States due to its connection with a broad range of negative health outcomes (Jha, Landsman, & Anderson, 2013). These negative health outcomes of smoking have led to a wide-spread call for effective interventions that target smoking behaviors among adults in the United States (Health & Services, 2004). Whereas smoking behaviors are a chronic health concern for individuals of all backgrounds and ethnicities, Latinos have only a slightly lower smoking prevalence as White Caucasians (12.5% vs. 19.3%; CDC, 2011), but are significantly less likely to quit smoking than White Caucasians (Pérez-Stable et al., 2001; Schoenborn, 2004; Schoenborn, Adams, Barnes, Vickerie, & Schiller, 2004). Additionally, recent data indicates that the leading causes of death among Latinos in the United States (i.e. cancer, cardiovascular disease, lung cancer) are all strongly related to smoking behaviors (Heron, 2012; USCS, 2013). Thus, reducing tobacco use among Latinos is essential for disease prevention efforts that target this minority population.

Unfortunately, most smoking cessation programs in the United States are developed for non-Hispanic adults, and few account for cultural differences (e.g., language barriers, socioeconomic status) that prevent many Latinos from getting help to quit smoking (Kandula, Kersey, & Lurie, 2004; Pérez-Stable, Sabogal, Marín, & Marín, 1991). Thus, several factors may make Latino populations particularly vulnerable to the adverse effects of smoking behaviors and also at a disadvantage when it comes to accessing aid. Additionally, previous research indicates that Latino populations tend to possess significantly lower self-efficacy to quit

smoking when compared to other ethnic populations, which may pose another barrier to quit among Latino smokers (Martinez et al., 2010).

Because of the difficulties faced by many Latinos to quit smoking, there is a great need for effective culturally-appropriate interventions to help Latino smokers overcome these barriers. Toward this goal, Latinos possess many qualities that make them a propitious target for dyad-level and family-level behavioral health interventions. Because of research indicating that the presence of an intimate relationship may provide a protective role against a broad array of unhealthy behavioral patterns (see Robles, Slatcher, Trombello, & McGinn, 2013), many researchers have begun to focus on the utility of dyad-level interventions for promoting the discontinuation of smoking behaviors among romantic partners (Carlson, Goodey, Bennett, Taenzer, & Koopmans, 2002; Holahan et al., 2012; Homish & Leonard, 2005; Pollak & Mullen, 1997). Specifically, some authors have posited that involvement in a committed romantic relationship may aid in bolstering partners' motivation to quit smoking, thereby leading to decreases in their smoking behaviors (Dohnke, Weiss-Gerlach, & Spies, 2011; Lewis et al., 2006). In fact, this motivational incentive provided by a romantic relationship may be particularly powerful for Latinos because of the cultural value of *familismo*. *Familismo* refers to the emphasis of many Latinos on strong family loyalty, closeness, moral adherence, and contributing to the wellbeing of the nuclear and extended family (Ayón, Marsiglia, & Bermudez-Parsai, 2010; Cauce & Domenech-Rodríguez, 2002). Evidence suggests that *familismo* plays a protective role for Latino families and couples (Ayón, Marsiglia, & Bermudez-Parsai, 2010), as it has been linked with favorable behavioral outcomes such as lower levels of substance and drug

use, increased health behaviors, and decreased rates of abusive behavioral patterns among Latinos in the United States (Coohey, 2001; Gil, Wagner, & Vega, 2000; Suarez, 1994; Unger et al., 2002). Furthermore, *familismo* may be a particularly strong motivator to engage in healthy behavioral patterns among Latino men (Galanti, 2003), as this cultural value might make Latino men more likely to engage in healthier behavioral patterns for the sake of familial health (Altarriba & Bauer, 1998; see Falcov, 2014). Thus, given the value of *familismo* within Latino family relationships, spousal relationships among Latinos may provide a particularly relevant window for examining the effects of relationship functioning on health behaviors, and specifically on motivation for smoking cessation.

Chapter 2

Theoretical Background

Interdependence Model

Driven by a desire to understand what factors influence the health behaviors of adults, researchers have found the presence of a romantic relationship to be a significant determinant of behavioral change. Specifically, previous researchers have posited that committed relationships may play an important role in the development and maintenance of health-promoting behaviors, and these healthy behaviors may be responsible for the more favorable health outcomes in married individuals when compared to non-married individuals (Kiecolt-Glaser & Newton, 2001; Lewis et al., 2006; Palmer, Baucom, & McBride, 2000). For example, involvement in an intimate relationship may provide a protective effect for individuals, buffering against engagement in behaviors such as smoking, drinking heavily, or engaging in illegal or high risk behaviors (Bachman, Wadsworth, O'Malley, & Johnston, 1997; Beaver, Wright, DeLisi, & Vaughn, 2008; Leonard & Rothbard, 1999; Schonbrun, Walsh, Stuart, & Strong, 2011).

Across multiple studies, married individuals have demonstrated lower rates of morbidity and mortality than non-married individuals for a variety of health conditions such as cardiovascular dysfunction, cancer, and surgery (see Robles, Slatcher, Trombello, & McGinn, 2013). Similarly, married couples also have been shown to live longer, engage in healthier behaviors, and maintain better overall health than non-married individuals (Burman & Margolin, 1992; Kiecolt-Glaser & Newton, 2001; Lillard & Panis, 1996; Murphy, Glaser, &

Grundy, 1997; Murray, 2000; Robards, Evandrou, Falkingham, & Vlachantoni, 2012).

Interestingly, this effect of marriage seems to be a stable phenomenon across multiple cultures and societies (Mastekaasa, 1994). Because of this protective effect, married individuals may be at an advantage over non-married individuals when encountering fairly common stressors and unhealthy temptations throughout the lifespan.

But what is it about romantic relationships that might lead to healthier behavioral patterns? Lewis and colleagues (2006) provide an operative framework (termed the *Interdependence Model*) for how relationship health may affect health behaviors, drawing from Interdependence Theory and communal coping approaches. Interdependence theory is a social psychological theory that focuses on the dyad as a unit for understanding the interpersonal context of social situations, how individuals respond to given situations, and the determinants of social interactions (Kelley et al., 1983; Kelley & Thibaut, 1978; Lewis et al., 2006; Rusbult & Buunk, 1993; Rusbult & Van Lange, 2003). Interdependence Theory focuses specifically on how partners within the dyad interact (i.e. constructively, argumentatively, competitively, etc.) and promotes examination of each spouse's individual perspective as well as the joint influence that each individual exerts on his or her partner. *Interdependence* refers to the combination of *actor effects* (an individual's influence on his own behavior) and *partner effects* (an individual's influence on his partner's behavior). Furthermore, interdependence theory considers how individual motives and spousal influences interact (*joint effect*) to influence an individual's behavior (Rusbult & Buunk, 1993; Rusbult & Van Lange, 1996). Lewis and colleagues (2006) have asserted that actor, partner, and, even more powerfully, joint effects, may be particularly

useful in promoting behavioral change, particularly through the process of transforming motivation.

Transformation of motivation is a key construct from Lewis and colleagues' (2006) Interdependence Model that attempts to explain how patterns of interdependence arise, cooperation among spouses is promoted, and why marital relationships are so influential on health outcomes. Specifically, transformation of motivation may take place in dyads as spouses begin to perceive particular behavioral changes as meaningful or important to their partner and necessary for the continuity and preservation of relationship health (Lewis et al., 2006; Rusbult & Van Lange, 1996). For example, a male partner may interpret his smoking habits as a risk to his own health and also as a major problem for his wife. This interpretation may provide the leverage necessary to elicit a behavioral change (smoking cessation), whereas a non-married individual may lack this particular motive and therefore be at a motivational disadvantage. Furthermore, partners with greater relationship quality and commitment may be more willing to sacrifice or make changes to fit the needs of their partner, thus furthering their motivation to alter behavioral patterns (Van Lange et al., 1997).

Based on this theory, Lewis and colleagues (2006) have proposed the following integrative model regarding the motivational process necessary for behavioral change:

“Transformation of motivation occurs when spouses consider health events in the context of relational roles, norms, and commitment to the relationship. These considerations prompt thoughts and feelings about

attaining mutually beneficial outcomes that may include behavior change as a coping strategy to reduce the threat. That is, when spouses cognitively and emotionally ascribe the health threat as meaningful for the relationship or partner, their motivation becomes more pro-relationship or partner-concerned, rather than self-centered, and the likelihood they will work collaboratively is enhanced.” (p. 1374-75)

This model explains why motivational processes may be better understood within a dyad-level framework when individuals are involved in an intimate relationship. In fact, dyadic models may have the potential to provide a stronger foundation for research and intervention on changing health behaviors than previous individual-level models (Ryff & Singer, 2000).

Constructive Communication

A notable weakness of much of the literature on marriage and health is its broad focus on marital *status* rather than on specific factors related to relationship functioning (e.g. level of commitment, satisfaction, communication patterns). In fact, previous research has indicated that perhaps it is factors related to relationship *quality*, such as healthier communication patterns and greater overall relationship satisfaction, that may be responsible for the protective effect of relationships against a variety of mental and physical illnesses (Coyne et al., 2001; Gallo, Troxel, Matthews, & Kuller, 2003; Horwitz, White, & Howell-White, 1996; Kiecolt-Glaser & Newton, 2001; Levenson, Carstensen, & Gottman, 1993; Ren, 1997; Robles & Kiecolt-Glaser, 2003).

In line with these findings, communication patterns among romantic partners is one relationship factor that is associated with relationship satisfaction across many studies (Carrère & Gottman, 1999; Gottman & Krokoff, 1989; Levenson et al., 1993; Markman, 1981; Rogge & Bradbury, 1999). Specifically, previous research has demonstrated that less satisfied couples report less mutually constructive communication, more demand-withdrawal communication, more avoidance of communication, and more conflict than couples with healthier relationships (Christensen & Heavey, 1990; Christensen & Shenk, 1991). Additionally, increased conflict and negative spousal exchanges have been shown decrease relationship satisfaction (McGonagle, Kessler, & Schilling, 1992; Morell & Apple, 1990). In contrast, healthier communicative patterns in couples have been linked with more favorable outcomes such as increased sexual satisfaction, better physical health, and increased satisfaction within relationships (Litzinger & Gordon, 2005; Markman, Renick, Floyd, Stanley, & Clements, 1993; Smith, Gallo, Goble, Ngu, & Stark, 1998).

More recently, a growing body of literature has focused specifically on the interplay of communication and physical health, finding across multiple studies that more positive communication patterns are associated with better physical and mental health in couple relationships (Bookwala, 2005; Bookwala & Jacobs, 2004; Ewart, Burnett, & Taylor, 1983; Kiecolt-Glaser, Glaser, Cacioppo, & MacCallum, 1997; Kiecolt-Glaser, Malarkey, Chee, & Newton, 1993; Kung, 2000; Malarkey, Kiecolt-Glaser, Pearl, & Glaser, 1994; Smith et al., 1998). Similarly, previous research also suggests that constructive communication (i.e., communication that is supportive, mutually respectful, direct, and non-violent) is associated

with healthier behavioral patterns in couples (Aida & Falbo, 1991; Lewis, DeVellis, & Sleath, 2008; Miller & Boster, 1988). These findings are further supported by Lewis and colleagues' (2006) assertion that positive, direct, and bidirectional (i.e., *constructive*) communication patterns among romantic partners are the most conducive to promoting favorable health behaviors within dyads, and the most conducive to positive behavioral change.

Self-Efficacy

One likely pathway through which constructive communication patterns may affect the behavioral patterns of married individuals is by increasing one's confidence in his or her ability to execute behaviors to meet desired goals (i.e. *self-efficacy*; Bandura, 1982, 1999). Few studies have examined the link between communication and self-efficacy in couples; however, previous research has shown that self-efficacy may play an intermediary role in the link between familial communication patterns and favorable behavioral outcomes (Tajalli & Ardalan, 2010). Previous authors also have linked self-efficacy with higher levels of motivation for behavioral change (Baldwin et al., 2006; Gwaltney, Metrik, Kahler, & Shiffman, 2009) and indicated that self-efficacy may be particularly predictive of initiating the change process (DiClemente, Prochaska, & Gibertini, 1985). In line with Social Learning Theory (Bandura, 1977; 1982), these findings indicate that motivation to engage in a behavioral change (e.g. quit smoking) will likely happen only after an individual begins to believe that he or she is *able* to initiate a behavioral change, and thus will be more likely to carry it out (Strecher, DeVellis, Becker, & Rosenstock, 1986). Indeed studies on behavioral change shows that self-efficacy is highly predictive of an individual's motivation to change problem behaviors (Baer, Holt, & Lichtenstein, 1986;

Cupertino et al., 2012; Kelly, Zyzanski, & Alemagno, 1991; McIntyre, Lichtenstein, & Mermelstein, 1983; O'Hea et al., 2004; Patten et al., 2008; Prochaska, 1982; Von Ah, Ebert, Ngamvitroj, Park, & Kang, 2004) and several studies have linked higher levels of self-efficacy with greater cessation from problem behaviors such as smoking (Borrelli & Mermelstein, 1994; Shiffman et al., 2000; Stuart, Borland, & McMurray, 1994). To date, few studies have examined the effect of romantic partners' constructive communication pattern on self-efficacy. Those that exist have found a positive correlation between marital quality, interspousal dependence, and self-efficacy in patients recovering from problematic heart conditions (Coyne & Smith, 1994; Rohrbaugh et al., 2004); however, none has examined the direct effects of constructive communication on motivation to engage in (or abstain from) certain behavioral patterns such as smoking.

Constructive Communication, Self-Efficacy, and Motivation

Taken together, this literature seems to support the notion that constructive communication patterns may promote higher levels of motivation to engage in health-promoting behaviors and abstain from less healthy behaviors. Combining previous lines of literature that document positive relationships between constructive communication patterns, self-efficacy, and motivation with the theoretical assertions of Interdependence Theory and the cultural value of *familismo* in Latino relationships, one can see how Latinos may be a propitious target for couple-based interventions aimed at decreasing destructive behavioral patterns (e.g., smoking) in individual partners. Specifically, based on previous data and theory, we proposed and tested a model in which perceived constructive communicative patterns among Latino

romantic partners predicted later levels of motivation to quit smoking, specifically by increasing the smoker's belief in his ability to quit. Since motivation to quit smoking is highly predictive of an individual's decision to continue or quit smoking (e.g. Borland, 2010), and motivation for behavioral change is an important precedent for behavioral change (Miller & Rollnick, 2002; Prochaska & DiClemente, 1986; Prochaska, DiClemente, Velicer, Ginpil, & Norcross, 1985), understanding factors that influence motivation to quit smoking is an important goal for current and future research. Specifically, understanding psychosocial influences that affect motivation to quit smoking will help inform interventions and educational programming aimed at decreasing the smoking behaviors of populations that are at particular risk for the adverse effects of smoking, such as Latinos (Pérez-Stable et al., 2001; Schoenborn, 2004; Schoenborn, Adams, Barnes, Vickerie, & Schiller, 2004).

Chapter 3

The Present Study

The present study evaluated a mechanistic model to predict Latino men's motivation to quit smoking. This is a secondary analysis of *Un Tiempo para Las Parejas* ("A Time for Couples"), a randomized trial which examined the effectiveness of a brief couple-based intervention in reducing smoking behavior for male partners, increasing healthy eating and exercise for female partners, and directly increasing positive communication for the couples among Latino male smokers and their non-smoking pregnant female partners. *Un Tiempo para Las Parejas* provides an excellent opportunity to test hypotheses in the present study because male partners' self-efficacy and motivation to quit smoking as well as male and female partners' perceived constructive communication were measured over time as participants in the intervention arm received a couple-based communication skills training intervention. Specifying how an intervention impacts motivation for behavior change through its impact on mediating psychosocial variables (Baranowski, Cullen, & Baranowski, 1999) may help us further understand *how* relationship functioning influences motivation for behavioral change by empirically testing theoretical mechanisms from the Interdependence Model (Lewis et al., 2006)

Thus, we used 4 waves of panel data to examine the longitudinal associations between constructive communication, self-efficacy, and motivation to quit smoking in Latino men who smoke. Given that data was collected for the current study during the female partners' pregnancies, two waves of data were collected during pregnancy and two the remaining two

waves were collected post-partum. Because both male partners' and female partners' reports of interspousal communication behaviors were measured in the current study, we included reports of constructive communication patterns from each partner respectively to predict male partner's motivation to quit smoking.

Guided by previous research and theory, we proposed that (1) higher levels of perceived constructive communication in each partner would positively predict motivation to quit smoking among Latino men who smoke, and (2) these links would be mediated by higher levels of self-efficacy.

Chapter 4

Methods

Participants

Eligible men were 18 years of age or older, living with their pregnant partner, of Hispanic 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. Because of our interest in the specific effects of changes in constructive communication on motivation to quit smoking, data for this study were drawn only from individuals in the intervention arm of the clinical trial.

Thus, a total of 173 (50%) of the 348 couples who participated in the larger study were included in the present analyses. Demographic information for these participants is presented in Table 1. Overall, men and women in the current study were primarily White or mixed race and most participants reported Mexico as their country of origin. Men and women had mostly completed either elementary or high school. Men's monthly income ranged from under \$500 to \$1,501 or more, whereas women primarily reported monthly income ranging from \$501 to \$1,000 or 1,001 to \$1,500. Most male partners were employed full-time, whereas most female partners were unemployed. Most partners were unmarried and cohabiting and had been involved in a relationship with their current partner for more than 3 years. Follow-up rates were 86%, 78%, and 79% for end of pregnancy (28-35 weeks gestation), 3-months postpartum, and 12-months after baseline, respectively. Results of attrition analyses revealed that

participants included in the analyses reported less household income and were more likely to report speaking only Spanish at home than those who were excluded from analyses.

Procedures

Latino couples were primarily recruited from two health and human service centers in a midsized Southeastern city during routine prenatal classes and obstetrician visits as well as through local outreach efforts, such as radio advertisements and paper flyers. Eligible couples participated in a two-arm randomized controlled trial that compared the efficacy of a two-session, culturally appropriate, couple-based, cognitive behavioral face-to-face treatment versus a control arm in which couples received a culturally appropriate self-help smoking cessation guide. The style of smoking cessation counseling was based on Motivational Interviewing (Miller & Rollnick, 2002) and couples communication sessions were based upon models of behavioral marital therapy that promoted mindfulness of family-related motivations for quitting smoking while also teaching communication skills training (Epstein & Baucom, 2002). Four face-to-face surveys of the couples were conducted throughout the duration of the study: at baseline (Time 1), end of pregnancy (28-35 week gestation; Time 2), 3 months postpartum (Time 3), and 12 months from baseline (Time 4). Survey follow-ups coincided with intervention procedures for couples in the intervention arm, such that the two-session, culturally appropriate, couple-based, cognitive behavioral face-to-face treatment protocol was completed by Time 2, and additional booster sessions and follow-up telephone calls were completed between Time 2 and Time 4. Each couple member received a \$10 gift certificate

each time they complete a survey and men had the opportunity to earn an additional \$10 each time they provided a saliva and breath sample.

Measures

Constructive Communication. Male partners' and female partners' perceived dyadic constructive communication patterns were assessed with the 7-item mutual Constructive Communication subscale of the larger 32-item Communication Patterns Questionnaire (Heavey, Larson, Zumtobel, & Christensen, 1996). This subscale is a bipolar scale in which high scores indicate adaptive, constructive communication behaviors between romantic partners, and low scores indicate more maladaptive or destructive communication behaviors between spouses. Items are rated on a 9-point scale (1= Very unlikely, 9 = Very likely) and sample items include "we both suggest possible solutions and compromises" and "we both blame, accuse, and criticize each other." This subscale has demonstrated high internal consistency, high levels of interspousal agreement, and strong associations with other measures of marital adjustment, such as the Dyadic Adjustment Scale, and with observational coding methods (Hahlweg, Kaiser, Christensen, Fehm-Wolfsdorf, & Groth, 2000; Spanier, 1976). Internal reliability of this scale for men in the current study was .81, .78, .81, .85 at Time 1 through Time 4, respectively. Internal reliability of this scale for women in the current study was .81, .79, .82, .82 at Time 1 through Time 4, respectively.

Self-Efficacy. Men were asked about their level of self-perceived ability to cease smoking behaviors using a single Likert scale item. Men were asked how confident they feel to quit

smoking at this time (1 = Not at all to 7 = Very much). This item has been previously used with Spanish-speaking Latino samples (Bock, Niaura, Neighbors, Carmona-Barros, & Azam, 2005).

Motivation. Men were asked about their level of readiness to quit smoking using a single Likert scale item. Men were asked how much they want to quit smoking at this time (1 = Not at all to 7 = Very much). This item has been previously used with Spanish-speaking Latino samples (Bock et al., 2005).

Data Analytic Plan

To handle missing data, full information maximum likelihood estimation (FIML) was used, which has been shown to provide more efficient and less biased estimates than alternative strategies such as pairwise or listwise deletion (Enders, 2010; Kline, 2011). Because measures of constructive communication were collected from both partners in each dyad, both male partners' and female partners' communication scores were included in the model to examine their unique effects on men's self-efficacy and motivation.

To test study hypotheses, we first used path analyses to examine the longitudinal effects of constructive communication on self-efficacy and motivation in a single three-variable four-wave cross-lagged panel model. Path analysis allows a series of structural regression equations to be analyzed simultaneously while estimating an overall covariance matrix. The extent to which the estimated covariance matrix reflects the actual covariance matrix of the data represents the overall "fit" of the model. All path models were constructed using Mplus Version 6.12. Following procedures outlined by Hu & Bentler (1999) and Schermelleh-Engel, Moosbrugger, and Müller (2003), model fit was assessed using the chi-square test of model fit,

comparative fit index (CFI), Tucker-Lewis Index (TLI), root-mean-square error of approximation (RMSEA), and the standardized root-mean-square (SRMR) with the following cutoff values: CFI $\geq .95$, TLI $\geq .95$, RMSEA $< .06$, SRMR $< .08$. Because a significant chi-square value leads to the rejection of the null hypothesis that the model fits the data, a nonsignificant chi-square value ($p > .05$) indicates that the model has acceptable fit.

After obtaining adequate model fit, individual paths among variables of interest were analyzed. According to Shadish, Cook, and Campbell (2002), cross-lagged models contain three types of relationships. Synchronous correlations comprise non-directional associations between variables measured at the same timepoint (e.g. T1 self-efficacy and T1 motivation). Temporal stability refers to autoregressions in which a construct assessed at a previous time point predicts its subsequent measurement (e.g. T1 motivation to T2 motivation). Lastly, and most relevant to the current study, are the lagged paths between two conceptually distinct constructs measured at different time points (e.g. T1 self-efficacy to T2 motivation). Because all regression equations are examined simultaneously, these predictive paths show whether explanatory relationships remain after accounting for temporal stability and synchronous correlations.

Next, the bias-corrected bootstrap method procedure was used to test whether male partners' and female partners' level of constructive communication indirectly predicted increases in male partners' motivation through increases in male partners' self-efficacy. Because normal distributions are rare in small to moderate sample sizes (MacKinnon, Lockwood, & Williams, 2004), bootstrapping resampling allows for a more accurate estimate of

indirect effects without relying on the assumption of a normal distribution (Shrout & Bolger, 2002). As described by MacKinnon, Lockwood, and Williams (2004), bias-corrected confidence intervals provide more accurate weight between Type I and Type II errors and a more precise assessment of indirect effects. Thus, 5000 bootstrap samples and 95% bias-corrected confidence intervals (CI) were used to examine the significance of indirect effects of constructive communication on motivation through self-efficacy. According to this method, an indirect effect is significant at the .05 level if the value of 0 is not included in the bias-corrected confidence interval.

Chapter 5

Results

Preliminary Analyses

Descriptive statistics and bivariate correlations for variables of interest across time points are presented in Table 1. As expected, individual variables were autocorrelated positively across time points. Additionally, the sample means of each variable were higher at each subsequent time point than at prior time points, indicating that each variable increased over time. Correlational analyses also revealed that motivation was positively related to self-efficacy across time points, and that self-efficacy was positively related to male partners' (but not female partners') constructive communication scores. Lastly, male partners' motivation was significantly positively related to male partners' (but not female partners') constructive communication scores, but only at post-intervention time points.

Path Analyses

Results of path analyses are illustrated in Figure 1. Model fit statistics indicated that the model fit the data well, $\chi^2(55, 173) = 67.11, p = .13, RMSEA = .04, CFI = .98, TLI = .98, SRMR = .07$. Paths representing temporal stability were highly significant, indicating that all three constructs were relatively stable over time. Results also showed that higher levels of male partner's self-efficacy at one time point significantly predicted increases in male partner's motivation at the next point in time. Additionally, results showed that higher levels of male partners' (but not female partners') perceived constructive communication significantly predicted subsequent increases in male partner's self-efficacy and motivation. Interestingly,

these aforementioned paths between constructive communication and self-efficacy, as well as paths between constructive communication and motivation, were only significant at post-intervention time points, indicating that higher levels of constructive communication among male partners significantly predicted increases in self-efficacy and motivation only *after* receiving the couple-based intervention.

Mediation Analyses

Results of indirect mediational tests revealed that male partners' perceived constructive communication at Time 1 did not predict male partners' motivation to quit smoking at Time 3 through self-efficacy at Time 2 ($\beta = .04$, CI = [-.439, .358]). Male partners' perceived constructive communication at Time 2 did not predict male partners' motivation to quit smoking at Time 4 through self-efficacy at Time 3 ($\beta = .08$, CI = [-.125, .290]).

Similarly, results of indirect mediational tests also revealed that female partners' perceived constructive communication at Time 1 did not predict male partners' motivation to quit smoking at Time 3 through male partners' self-efficacy at Time 2 ($\beta = .01$, CI = [-.635, .205]). Female partners' perceived constructive communication at Time 2 did not predict male partners' motivation to quit smoking at Time 4 through male partners' self-efficacy at Time 3 ($\beta = .01$, CI = [-.102, .076]).

Overall, findings from tests of indirect effects indicate that neither male partners' nor female partners' levels of perceived constructive communication indirectly predicted male partners' motivation to quit smoking specifically through male partners' self-efficacy.

Chapter 6

Discussion

Utilizing data from a sample of Latino couples who underwent a brief couple-based communication skills training intervention that targeted Latino male smokers, the present study examined the longitudinal associations between perceived constructive communication patterns, self-efficacy, and motivation to quit smoking in Latino men who were involved in a committed relationship. Specifically, we hypothesized that higher levels of perceived constructive communication patterns in male partners and female partners would predict higher levels of subsequent motivation to quit smoking among male partners who smoke via increases in male partners' self-efficacy. These hypotheses were partially supported by the study findings.

Overall, findings from the current study indicated that higher levels of perceived constructive communication among male partners who smoke predicted greater self-efficacy and, to a lesser degree, motivation to quit smoking at post-treatment follow-ups. However, contrary to our hypotheses, female partners' levels of perceived constructive communication did not predict male partners' self-efficacy or motivation to quit smoking at any later time point. Taken together, these results suggest that perceptions of more constructive dyadic communication processes among male partners' (but not their female partners') positively predict later increases in male partners' self-efficacy and motivation to quit smoking.

Complimenting findings of positive relationships between self-efficacy and motivation in previous studies (e.g., Berg et al., 2008; Joseph et al., 2003; Martin et al., 2006), male partners'

levels of self-efficacy were positively predictive of subsequent levels of motivation to quit smoking. These results indicate that men in the current sample who felt that they *could* quit smoking were more motivated to quit smoking at a later time point. These results are consistent with Social Learning Theory which argues that greater confidence in one's ability to engage in (or abstain from) a particular behavior will lead to an increased desire to do so (see Strecher, DeVellis, Becker, & Rosenstock, 1986; Bandura, 1982). Furthermore, results of the present study also revealed positive links between male partner's reports of constructive communication at previous time points and subsequent levels of self-efficacy at later time points, although it does not appear that communication affects motivation through these changes in self-efficacy. However, in sum, these results suggest that greater levels of perceived dyadic constructive communication among male partners who completed the intervention were significantly related to greater self-efficacy at follow-up, which was in turn related to greater motivation to quit smoking at a subsequent follow-up. This pattern of findings suggests a mechanistic model whereby male partners' perception of more constructive communication in their relationship predicts subsequent increases in their level of self-efficacy, which also predicts later increases in motivation to quit smoking.

Importantly, these relationships were significant only among variables measured *after* couples in the current study had received a two-session couple-based face-to-face intervention that promoted mindfulness of family-related motivations for quitting smoking while also teaching communication skills training. This pattern of significant findings may be interpreted in several ways. First, because earlier levels of each variable were included in the model to

examine the stability of each construct over time, participants' scores on each variable were examined while controlling for earlier scores on each variable. Conceptually, this means that previous levels of perceived constructive communication, self-efficacy, and motivation were accounted for at each time point, and therefore any changes in significance in the interrelationships among variables can be attributed to changes that occurred in participants between measurement time points. Because the relationships among male partners' perceived communication patterns, self-efficacy, and motivation were significant only at time points after participants had received the intervention and before the birth of their child, we attribute these findings to changes in male partners' perception of constructive communication patterns with their partner that occurred during intervention procedures. These results compliment findings from previous studies that indicate the efficacy of couple-based communication-skills training to promote healthier communicative interchanges among romantic partners (Blanchard, Hawkins, Baldwin, & Fawcett, 2009; Bradley, Friend, & Gottman, 2011). Thus, findings from the present study suggest that the provision of a communication-skills training intervention that promoted more constructive communication patterns among Latino partners improved male partners' perception of their communication patterns with their partners, which were positively predictive of subsequent increases in self-efficacy and motivation to quit smoking.

Perhaps because healthier communication patterns among romantic partners is related to less physiological stress (see Robles & Kiecolt-Glaser, 2003), greater commitment to one's partner (Ballard-Reisch & Weigel, 1999), and greater overall relationship satisfaction (Smith, Heaven, & Ciarrochi, 2008; Egeci & Gençöz, 2006), increases in perceived dyadic constructive

communication among men in the current sample may have bolstered men's level of confidence and motivation to quit because of positive changes in their relationship with their partner. Previous studies of Latino families appears to support this theory, as higher levels of commitment to and value of one's familial relationships (i.e., *familisimo*) is positively associated with healthier behavioral patterns such as less drug and alcohol use (Gil, Wagner, & Vega, 2000; Unger et al., 2002) and increased likelihood of seeking out mammogram exams (Suarez, 1994). Thus, by improving male partners' perceived constructive communication patterns via a couples-based intervention, male partners may have been more confident in their ability to quit smoking and also possibly more motivated to do so because healthier interchanges with their romantic partner bolstered their dedication to maintaining familial health and increased their sense of satisfaction and support in their intimate relationship.

It is important to note that items on the communication measure used in the current study reflect partners' perceptions of constructive communication patterns *as a couple* rather than as individuals (e.g. "we both try to discuss the problem"). Thus, partners' reports of communication in this study reflect each partner's *perception* of the constructiveness of their communication with their romantic partner, rather than the frequency of individual constructive communication behaviors. Given that both partners completed identical assessments of dyadic communication patterns within their relationship, but only male partners' reports of such patterns were related to their self-efficacy and motivation, communication behaviors may not have actually changed as a result of the intervention in the current study. Instead, what changed may simply have been male partners' *perception* of

communication processes within their relationship. Thus, increased levels of perceived constructive communication among male partners may have reflected an increasingly positive perception of the couples' interactions regarding healthy family life in which cigarette smoking was conceptualized as a problematic behavior that affected male partners' family system rather than consequential only to the male partner individually. This interpretation compliments Lewis and colleagues' (2006) Interdependence Model in which the development of sense of *we-ness* (see Reid, Dalton, Laderoute, Doell, & Nguyen, 2006) may contribute to behavioral change by shifting motivation from being primarily individual-based to couple-based. This shift may foster a greater sense of urgency and desire behavioral change because such a change becomes important both for one's individual health and for the health and functioning of one's family system. Thus, the participation in a couple-based intervention in the current study may have contributed to a greater sense of positivity surrounding couple communication among male partners rather than actually altering their communication behaviors. Further, this increase in male partners' awareness of their health behaviors having an impact on a family system that they view positively may have subsequently contributed to greater self-efficacy and motivation to quit smoking, as predicted by the Interdependence Model (Lewis et al., 2006).

Additionally, because cigarette smoking is often used as a buffer against stress (e.g., Slopen et al., 2012; Rosario, Schrimshaw, & Hunter, 2011), and conflict among romantic partners is connected with increased physiological and psychological stress (Robles & Kiecolt-Glaser, 2003; Jacobson, Gottman, Waltz, Rushe, Babcock, & Holtzworth-Munroe, 1994), decreases in stress-provoking interchanges among couples with less healthy communication

patterns may have led to a decreased need or desire for cigarettes among men who smoked. In other words, by promoting more positive perceptions of dyadic communication processes among male partners in the current sample, men may have felt less desire to smoke because of less distress in their relationship that would normally have elicited tobacco use in order to “buffer” against this distress.

It is also important to note that communication-skills training in our intervention did not happen in isolation. Rather, the intervention used communication-skills training as a vehicle to promote healthier communicative exchanges among partners *about smoking*. Thus, the finding that communication, self-efficacy, and motivation were positively related only after receiving the intervention is not entirely surprising, given that the intervention procedures targeted all of these constructs in the context of a couple-based intervention. Therefore, positive interrelationships among these constructs post-intervention may be partially attributable to the provision of a multifaceted intervention, which connected relationship functioning to smoking habits, thereby connecting these constructs in the minds of participants. Nonetheless, the finding that increases in men’s constructive communication patterns with their partner positively predicted later increases in their sense of efficacy and motivation to quit smoking are notable since our measure of partners’ communication assessed the *general* level of constructive communication within one’s romantic relationship (rather than simply constructive communication *about smoking*).

The fact that these results were not found for female partners’ levels of perceived constructive communication might indicate that female partners’ perceived constructive

communication simply did not influence male partners' efficacy or motivation to quit smoking in the current sample. These results appear to contrast research and theory indicating that romantic partners often influence each other's behaviors (Lewis et al., 2006) and that improvements in the health habits or relationship behaviors (e.g. communication, less alcohol consumption) of one partner often lead to improvements in the other partner (Homish & Leonard, 2008; 2005). Because no previous studies have examined the hypotheses of the current study in Latino samples, it is difficult to conceptualize why female partners' reports of constructive communication patterns did not influence male partners' self-efficacy or motivation to quit smoking in the present sample. It is possible that the insignificant influence of female partners' constructive communication scores may also be attributable to the fact that female partners completed separate measures than their male partners. Since men completed measures of communication, self-efficacy, and motivation together at each time point, their scores may have been correlated simply due to the fact that the same individual was completing a measure of each construct at the same time point. However, these explanations are only hypothetical, as a lack of information regarding female partners' perceptions of their male partners' efficacy and motivation to quit smoking prevented us from formally testing these assertions in the current study.

Lastly, the finding that male partners' self-efficacy did not mediate the relationship between their (or their female partners') perceived constructive communication and later motivation did not support our second hypothesis, as we predicted that self-efficacy would act as a mediator in this link. However, results did indicate that male partners' perceived

constructive communication was simultaneously positively related to later motivation and self-efficacy. Thus, even though a significant indirect effect was not found, results suggest a mechanistic model whereby constructive communication positively predicts increases in self-efficacy, which in turn predicts increases in motivation to quit smoking. It also is important to note that the relationship between male partner's perceived constructive communication and later motivation was relatively weak in the presence of significant, stronger associations with self-efficacy and between self-efficacy and later motivation. Given that the association between communication and motivation was relatively weak, these findings suggest that constructive communication may have a stronger effect on self-efficacy than on motivation for smoking cessation. Furthermore, the lack of an indirect effect of perceived constructive communication on motivation through self-efficacy suggests that other variables may explain the communication-motivation link. More research is needed to better understand the link between Latino males' communication and their sense of self-efficacy in quitting smoking.

Limitations and Directions for Future Research

This research has several limitations that should be considered when interpreting results. Foremost, the present sample is not representative of all couples for a number of reasons. First, the present sample consisted entirely of Latino men and women; thus, findings may not generalize to couples of other ethnic backgrounds. Second, inclusion criteria for the larger study from which these data were drawn required all female partners to be pregnant and pregnant couples may significantly differ from non-pregnant couples. It is possible that the knowledge of a future child may have affected the couples' communication patterns and men's

self-efficacy and motivation in ways that were not accounted for in the current analyses. Additionally, the current study utilized single-item measures of self-efficacy and motivation to quit smoking in order to reduce the measurement burden on participants. Whereas these items have been used in other studies of Latino smokers (Bock et al., 2005), their brevity precluded the examination of more nuanced elements of these constructs (e.g. intrinsic vs. extrinsic motivation). Furthermore, we utilized a self-report measure of communication behaviors to assess constructive communication behaviors in the current study. Rather than measuring constructive communication behaviors directly (e.g. observational coding), we relied on the reports of dyadic communication behaviors, which were provided by male and female partners separately. Thus, constructive communication scores in the current study reflected male and female partners' level of *perceived* constructive communication within their relationship rather than frequency of patterns of objective constructive communication behaviors. Thus, findings from the current study do not provide evidence that improving the communication behaviors of romantic partners might influence self-efficacy or motivation to quit smoking, but rather that promoting a more positive *perception* of dyadic communication process among romantic partners may influence self-efficacy or motivation to quit smoking. Additionally, because the intervention provided to participants in the current study targeted both communication behaviors *and* smoking behaviors simultaneously, it is currently unknown whether communication-skills training alone would also have led to increases in male partners' self-efficacy and motivation to quit smoking. Finally, though the effect of male partners' post-intervention perceived constructive communication on their level of motivation to quit smoking

was statistically significant in the current study, the association between these constructs was relatively weak. Given this small but significant effect, results from the current study should be considered preliminary until additional studies have replicated these findings (see also Prentice & Miller, 1992).

Despite these limitations, the current study provides promising initial evidence that dyadic communication behaviors may influence the efficacy and motivation to quit smoking among romantically-involved Latino men who smoke. These results suggest that couple-based communication skills training may be a propitious method for increasing Latino men's motivation to quit smoking and engage in healthier behavioral patterns. Additionally, these results provide empirical support for the interdependence model of behavior change and contribute to a growing body of literature that indicates the utility of dyad-level interventions for individual-level behavioral change. Given the applicability of present study findings, replication with additional variables (e.g. objective ratings of constructive communication behaviors) and in more diverse samples will be crucial for establishing the generalizability of these findings and directly informing interventions.

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Appendix

Table 1. Participant characteristics and demographics

	Men		Women	
	%	<i>n</i>	%	<i>n</i>
Race				
White	47.3	79	45.4	74
African-American	0.6	1	3.1	5
American Indian/Alaskan Native	1.8	3	0.0	0
Mixed race	47.3	79	49.1	80
Other	3.0	5	2.5	4
Employment				
Full-Time	64.0	110	14.0	27
Part-Time	29.1	50	11.6	19
Unemployed	7.0	12	74.4	126
Education				
Grades 0-6	30.1	52	29.5	51
Grades 6-9	32.9	57	37.0	64
Grades 10-12	27.7	48	24.9	43
Vocational Schooling	0.6	1	1.2	2
Some College	6.4	11	4.0	7
College Degree	1.7	3	2.9	5
Post Grad	0.6	1	0.6	1
Monthly Individual Income				
\$0-\$500	24.4	40	18.4	27
\$501-\$1,000	26.2	43	33.3	49
\$1,001 - \$1,500	25.0	41	34.0	50
\$1,501 or more	24.4	40	14.3	21
Living Situation				
Married and living with partner	33.5	58	33.5	58
Unmarried but living with partner	66.5	115	66.5	115
Relationship Length				
Less than 6 months	9.3	16	9.3	16
6 months – less than 2 years	16.9	29	16.9	29
2-3 years	10.5	18	10.5	18
More than 3 years	63.4	109	63.4	109
Age (years)	M = 30.08	SD = 6.39	M = 28.18	SD = 6.19

Table 2. Means, standard deviations, and bivariate correlations among study variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. T1 Men's CC	52.55	10.18	-	.53***	.49***	.49***	.24**	.25**	.30**	.28**	.16*	.18**	.03	.05	.11	.01	.04	.01
2. T2 Men's CC	56.39	8.16		-	.66***	.73***	.26**	.36**	.21*	.28**	.09	.25**	.16*	.03	.06	.17**	.16*	.16*
3. T3 Men's CC	57.60	7.71			-	.84***	.31**	.42**	.52**	.52**	.18*	.22*	.21*	.25**	.07	.08	.16*	.16*
4. T4 Men's CC	57.45	8.34				-	.42**	.40**	.51**	.51**	.16*	.25**	.15	.24**	.01	.05	.16*	.17**
5. T1 Women's CC	52.05	10.57					-	.48***	.61***	.57***	.04	.01	.07	.02	.05	.11	.00	.01
6. T2 Women's CC	55.34	8.01						-	.47***	.52***	.04	.05	.06	.04	.06	.03	.01	.07
7. T3 Women's CC	56.49	8.76							-	.84***	.02	.11	.10	.17	.03	.05	.16	.07
8. T4 Women's CC	56.20	8.71								-	.08	.16	.13	.29	.01	.13	.13	.15
9. T1 SE	6.10	1.27									-	.38**	.28**	.33**	.29**	.28**	.18*	.33**
10. T2 SE	6.15	1.16										-	.42**	.37**	.21*	.48**	.33**	.41**
11. T3 SE	6.27	1.10											-	.64**	.26**	.40**	.70**	.63**
12. T4 SE	6.27	1.22												-	.20*	.38**	.43**	.60**
13. T1 Motivation	6.30	1.20													-	.47**	.34**	.42**
14. T2 Motivation	6.42	1.13														-	.46**	.45**
15. T3 Motivation	6.45	1.12															-	.67**
16. T4 Motivation	6.49	1.03																-

Note. CC = constructive communication. SE = self-efficacy.

T1 = Baseline. T2 = End of pregnancy (28-35 weeks gestation). T3 = 3-months postpartum. T4 = 12-months after baseline.

*** $p < .001$ ** $p < .01$ * $p < .05$.

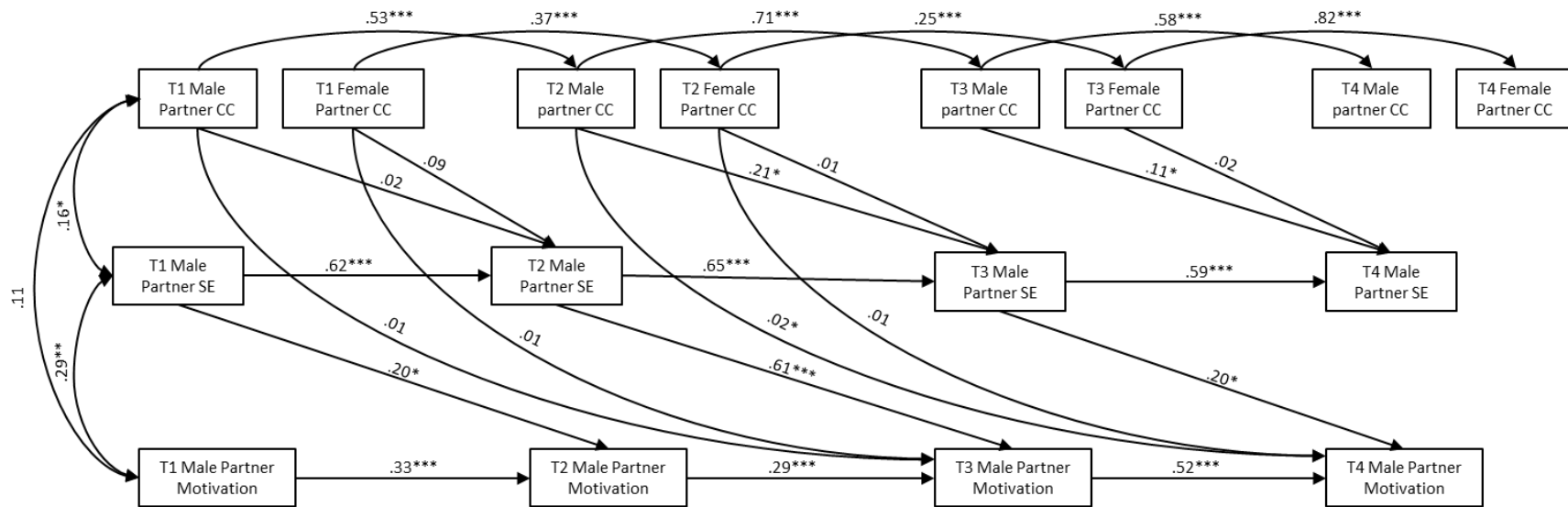


Figure 1. Path diagram of the associations between constructive communication, self-efficacy, and motivation to quit smoking
 Note. CC = constructive communication. SE = self-efficacy.

T1 = Baseline. T2 = End of pregnancy (28-35 weeks gestation). T3 = 3-months postpartum. T4 = 12-months after baseline.

Standardized estimates are shown.

*** $p < .001$ ** $p < .01$ * $p < .05$.

Alexander Khaddouma was born and raised in Knoxville, Tennessee. He earned his Bachelor of Arts degree in Psychology at the University of Tennessee – Knoxville. He began his doctoral training in Clinical Psychology at the University of Tennessee – Knoxville in 2012. His research interests include factors that contribute to healthy romantic relationships and the effects of relationship health on motivated behavioral systems.