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Cover Page Note

I could not take credit for this paper without first acknowledging the help of my academic mentors and peers at the University of North Carolina Wilmington. Despite many changes to my paper, Dr. Maria G. Espinosa-Hernandez and her lab were steadfast in their support, always offering constructive criticism and words of encouragement. I would also like to thank the members of my thesis committee, Dr. Antonio Puente and Dr. Jorge Figueroa, for contributing their insight and time. Moreover, this paper would not have been possible without the unconditional support from my parents and friends at UNCW who gave me company during the all-nighters at Randall Library. I also thank God for giving me strength and the faith that future research may bring us closer to solving some of the world's challenges.

ADOLESCENT RISKY SEXUAL BEHAVIOR IN THE UNITED STATES

Risky sexual behavior, or the act of engaging in any sexual activity that places an individual at risk for HIV infection, other sexually transmitted diseases, and unintended pregnancy, is a significant health concern in the U.S., particularly among adolescents (CDC, 2011). Teenage pregnancies in the U.S. remain high: an estimated 2,000 become pregnant every day (CDC, 2000a). In addition, STDs are spreading at alarming rates in the adolescent population. Recent findings estimate that there are at least 15 million new cases of STDs each year, one-fourth of which infect American youth (CDC, 2000a). This may be in part due to the fact that adolescents are more likely than other age groups to engage in unprotected sex and to have sex with multiple partners (CDC, 2000a). Latino youth are particularly at risk for STD infection and early pregnancy. Ten percent of Latino adolescents in the US are sexually active before the age of 13 and 46% of Latino adolescents reported not using a condom during their last sexual intercourse (CDC, 2000b).

Although Latinos constituted just 13% of the total US population in 2003, they comprised up to 20% of the reported AIDS cases (CDC, 2004). Mexicans, who constitute 30% of the documented Latino population and 56% of the undocumented Latino population, account for the largest amount of HIV infected youth out of all Latino nationalities (Casas, 2009; HIV Surveillance, 2010). Latino adolescents also have the highest teenage birth rate in the U.S. (CDC, 2008). In 2006, the U.S. Institute of Education Sciences found that Mexican-American female adolescents had higher rates of teenage pregnancy than did Latinos of other nationalities (IES, 2006). These findings suggest that Mexican-Americans may be a critical force in driving teenage pregnancy rates and the incidence of STD infection in the U.S.

ADOLESCENT RISKY SEXUAL BEHAVIOR IN MEXICO

To better understand the high adolescent pregnancy and STD infection rates in the United States' Mexican-American population, it is necessary to view these trends in Mexico. Following the U.S. and Brazil, Mexico has the third highest reported number of AIDS cases in the Americas (CENSIDA, 2003). Mexican states with the highest concentration of inhabitants with AIDS are the Federal District, Mexico, Veracruz, Jalisco, and Puebla. Since 1983, there have been 3,363 reported AIDS cases in adolescents between the ages of 10 and 19. Ninety-six percent of the notified cases were transmitted sexually, as opposed to blood (0%) and prenatal transmission (1.1%) (CENSIDA, 2012).

As with the high birth rates of Mexican-American female adolescents in the US, there is also a high rate of teenage pregnancy in Mexico. Approximately 7% of Mexican adolescents aged 15 to 17 and 19.2% of Mexican adolescents between the ages of 18 and 19 have been pregnant (Gobierno Federal, 2010). Births to mothers age 20 and under make up 17.1% of the total birth count and contribute to 13.6% of the overall fertility rate in Mexico. These figures are in part due to the rise in the adolescent population, resulting in a disproportionate number of reproductive female youth (Núñez-Urquiza, Hernández-Prado, García-Barrios, González, & Walker, 2003).

Moreover, 33.6% of Mexican adolescents between the ages of 15 and 19 have had sexual intercourse. Mexican adolescents are choosing to engage in sex at increasingly

younger ages. In 2000, 22.3% of Mexican adolescents ages 15 to 19 reported having had sexual intercourse and in 2010, nearly 34% reported having done so (Gobierno Federal, 2010). These figures of sexual engagement are slightly higher than those in the U.S., where about 30% of adolescents between 15 and 17 years old report having sex (CDC, 2009).

The health consequences of STDs and teenage pregnancies merit research on adolescent risky sexual behavior. Research on this topic tends to focus on variables such as age of first coitus, whether or not subject is currently sexually active, intended sexual behavior and contraception use, effective methods of contraception (e.g. condom use, birth control pills), number of sexual partners, and relationship to partner (Somers & Paulson, 2000; Hutchinson et al., 2003; Hadley, Brown, Lescano, Kell, Spalding, DiClemente, Donenberg, Project STYLE Study Group, 2009; Guzman et al., 2003; Atienzo et al., 2009).

This study will assess three adolescent risky sexual behaviors: (1) whether or not the adolescent has had vaginal intercourse, (2) age of first coitus, and (3) contraception use during first sex. Vaginal sex, rather than anal or oral sex, was measured because anal sex is less common among adolescents and oral sex poses fewer health threats than does vaginal sex (ACOG, 2008; Halpern-Felsher, Cornell, Kropp, Tschann, 2005). Contraception use (e.g., condom use, birth control pills, or unspecified contraception) is an important measure for risky sexual behavior because condoms and birth control pills can protect against early pregnancy as well as STDs in the case of condom use (Hadley et al., 2009). Age of first coitus is also used to measure risky sexual behavior because previous studies suggest it is a health risk to engage in sex at age 15 or younger (Meschke, Zweig, Barber, & Eccles, 2000). Adolescents who engage in early sexual activity before the age of 15 are less likely to use contraception than adolescents that wait to have sex until age 16 to 18. Other psychosocial factors such as alcohol use and poor school performance are correlated more strongly with early onset of adolescent sexual intercourse as compared to onset between the ages of 16 to 18 (Zimmer-Gembeck & Helfand, 2008). Age of first coitus is therefore an important factor for adolescent risky sexual behavior.

COMMUNICATION AND RISKY SEXUAL BEHAVIOR

Although the focus of the present study is on how barriers to communication are associated with risky sexual behavior among adolescents in Mexico, little research on the subject has been produced in Mexico. Therefore, the hypotheses of this study were primarily based on research conducted on Latino adolescents living in the U.S. Family dynamics such as parental monitoring, support and supervision are associated with Latino adolescent sexual decision-making and behavior in the U.S. (Lescano, Brown, Raffaelli, & Lima, 2009; Velez-Pastrana, Gonzalez-Rodriguez, & Borges-Hernandez, 2006). Parental monitoring is thought to influence Latino adolescent sexual behavior as adolescents of parents who report higher levels of monitoring have fewer sexual partners and have sex less often (Lescano et al., 2009). In addition, Latino adolescents who report greater parental support (as shown by involvement in adolescent's decision making, problem solving and activities) are more likely to delay sexual activity (Velez-Pastrana et al., 2006). Parent-adolescent communication about sex has also been found to be

associated with decreased sexual activity and pregnancy rates amongst Latino adolescents in the U.S. (Gilliam, Berlin, Kozloski, & Hernandez, 2007).

Research has been conducted on a variety of aspects of Latino parent-adolescent communication about sex (e.g., style, frequency, content, process) and their relation to adolescent sexual behavior. These studies suggest that there is an association between Latino parent-adolescent communication about sex and risky sexual behavior (age of first coitus, contraception use, frequency, number of partners) of adolescents ranging from the ages of 11 to 19. Findings from this research consistently demonstrate that more parent-adolescent communication about sex is associated with a delay in the adolescents' age of first coitus and greater use of contraceptive methods (Guzman et al., 2003; Hutchinson et al., 2003; Atienzo et al., 2009; Romo, Lefkowitz, Sigman, Terry, 2002). Another consistent finding is that Latina mothers play a larger role than fathers in adolescent sexual decision making and communicate more frequently with adolescents about sexual topics (Hutchinson et al., 2003; Guzman et al., 2003; Mckee & Karasz, 2006; Atienzo et al., 2009). The current study therefore only focused on communication about sex between adolescents and their mothers.

Romo and colleagues (2002) conducted a longitudinal study on Latina mothers in the U.S. about how messages about sex are associated with Latino adolescent sexual behavior. Adolescents ranged in age from 12 to 15 years old (*M* age of 13) and the mother-daughter dyads were interviewed twice over the period of a year. Adolescents were asked to report their experience with sexual behavior (e.g. kissing, touching under the clothes, sexual intercourse) while the mothers described the topics of conversations about sex (e.g. advice about what adolescent should or should not do, consequences of sexual engagement). Results demonstrated that more talk about sexual beliefs and values was associated with adolescents' abstaining from or delaying sexual activity a year after the first interview (Romo et al., 2002). This supports other research findings, which likewise suggest that parental messages about sex are associated with adolescent sexual behavior (Guzman et al., 2003; Hutchinson et al., 2003).

Similar associations have been found amongst adolescents in Mexico. Atienzo and colleagues (2009) administered surveys to adolescents (*M* age of 15) in Morelos, Mexico to assess the impact of a parent-based intervention that teaches parents communication skills for speaking to their adolescents about sexual topics (i.e. pregnancy, HIV/AIDS, sexuality). The majority of adolescents (83.1%) reported having spoken with at least one parent about sex, but communication was more common with mothers than with fathers. In addition, discussions about risk and prevention prior to first sexual debut were associated with higher condom use and age at first intercourse (Atienzo et al., 2009). These results run parallel to research findings in the U.S. which also suggest that mother-adolescent communication about sex a significant predictor of positive sexual behavior in adolescents.

BARRIERS TO COMMUNICATION AND RISKY SEXUAL BEHAVIOR

Again, there is no research to our knowledge that has been conducted on maternal barriers to communication in adolescents in living in Mexico. Our understanding and subsequent hypotheses are therefore based on research conducted in the U.S. on Latino adolescents. Research consistently finds a negative association between Latino parent-

adolescent communication about sex and adolescent risky sexual behavior (Guzman et al., 2003; Hutchinson et al., 2003; Atienzo et al., 2009). Although this association is critical to our understanding of Latino adolescent risky sexual behavior, it fails to explain the reasons why only 29% of Latino parents discuss birth control and contraceptive methods with their adolescent (Planned Parenthood, 2012). It is therefore pertinent to study the barriers to parent-adolescent communication about sex. Research identifies age, comfort level, talk perceived as unnecessary, parental lack of knowledge/self-efficacy, and talk perceived as promoting sex as important barriers to parent-adolescent communication about sex in the U.S. (Jerma n & Constantine, 2010; Mena et al., 2008; Mckee & Karasz, 2006; Jaccard et al., 2000). Most research focuses on these perceived barriers in relation to the frequency and ease of conversation about sex (Jerma n & Constantine, 2010; Mena et al., 2008).

Age has been identified as the strongest barrier to communication about sex because parents are more likely to initiate discussions with older adolescents than with younger ones (Somers & Paulson, 2000; Jerma n and Constantine, 2010; Lefkowitz, Boone, Sigman, and Au, 2003; Wilson, Dalberth, Koo, & Gard, 2010). As the age of the adolescent increases, mothers feel more comfortable speaking about sex but also fear that the adolescent will not take her seriously (Jaccard et al., 2000). Parents may also speak less to younger adolescents because they believe it is not yet appropriate to talk about sex at such a young age (Wilson et al., 2010). One study suggests that parents only begin communicating as a means of protection after they have discovered the adolescent to be sexually active (Romo et al., 2002). Nonetheless, speaking with older adolescents may have a weaker effect on their sexual decision-making because sexual activity becomes more normative with age level (Whitbeck, Yoder, Hoyt, & Conger, 1999).

In addition to age, parent lack of confidence/knowledge about sex, talk perceived as unnecessary, and talk perceived as encouraging sex are considered barriers to communication about sex (Mena et al., 2008; Jerma n & Constantine, 2010; Jaccard et al., 2000). Parent lack of confidence assessed the level confidence and knowledge parents felt that they had about sex. Talk perceived as unnecessary evaluated the parent's view of importance to talking about sex and birth control with the adolescent. Lastly, talk perceived as encouraging sex assessed the extent to which parents believed communication about sex would signify their approval of the adolescent engaging in sex. Mena and colleagues (2008) assessed these barriers among Latino adolescents between the ages of 14 and 17 living in the U.S. Results revealed a positive association between parental knowledge/confidence about sex and frequency of birth control and sex talk. In other words, the more knowledge or confidence the parent has on the subject of sex, the more likely he or she is to talk to the adolescent about birth control and sex. No associations were found for talk perceived as unnecessary or talk perceived as encouraging sex (Mena et al., 2008). These findings are similar to other studies that have likewise regarded limited parent knowledge about sex as a barrier to communication about sex (Jerma n & Constantine, 2010; Jaccard et al., 2000).

Mena and colleagues' study is one of the few studies that have been conducted on barriers to communication about sex in Latino families. Because most research has been done on European Americans in the U.S, more information is needed to understand whether or not these barriers exist in Mexican families (Jerma n & Constantine, 2010; Jaccard et al., 2000). The present study assessed what barriers Mexican adolescents

believe affect parent-adolescent communication about sex. It is important to study the adolescent perspective because mothers tend to perceive themselves as having communicated more about sexual issues than do adolescents (Kapungu et al., 2010; DiIorio et al., 2000; Jaccard et al., 2000). Jaccard and colleagues (2000), for example, found that mothers perceived having discussed sexual topics (73%) more than their adolescents (46.1%). Moreover, Jaccard and colleagues (1998) found that adolescents' reports of communication about sex were a better predictor of adolescent sexual behavior than were maternal reports.

Most research on barriers to communication focuses on its association with frequency of parent-adolescent communication about sex (Mena et al., 2008). Because the negative association between the two variables is widely supported, this study seeks to better understand the association between parent-adolescent barriers to communication about sex and adolescent risky sexual behavior (Mena et al., 2008; Jerman & Constantine, 2010). This approach allowed us to understand what barriers to communication are greater in the Mexican culture and whether or not barriers to communication are associated with the risky sexual behavior among adolescents in Mexico.

BARRIERS TO COMMUNICATION AND GENDER

The gender of the parent and adolescent may influence the content and frequency of parent-adolescent communication about sex (DiIorio et al., 2000; Raffaelli & Green, 2003; Jaccard et al., 2000; Kapungu et al., 2010; Jerman & Constantine, 2010). As previously mentioned, mothers communicate more about sex with adolescents than do fathers (DiIorio et al., 2000; Raffaelli & Green, 2003; Jaccard et al., 2000; Kapungu et al., 2010; Jerman & Constantine, 2012). Considering the salience of this finding, the current study will focus on whether or not barriers to maternal communication about sex vary by the gender of the adolescent. Research has found gender differences in the frequency of Latina mother-adolescent communication about sex where mothers speak more with adolescent daughters than with sons (Raffaelli & Green, 2003). In addition to frequency, research has found gender differences in the content of communication where Latina mothers are more conservative and protective with daughters than with sons (Guilamo-Ramos, 2006; O'Sullivan, Meyer-Bahlburg & Watkins, 2001). For example, mothers are more likely to discuss topics such as condom use with sons and sexual values with daughters (Jerman & Constantine, 2012).

To better understand why discrepancies in the content and frequency of communication about sex exist, we must understand how specific barriers to communication may differ by the gender of the adolescent. As previously noted, important barriers to Latino parent-adolescent communication about sex include parent lack of confidence/knowledge about sex, talk perceived as unnecessary, and talk perceived as encouraging sex (Mena et al., 2008; Jerman & Constantine, 2010; Jaccard et al., 2000). Certain values within the Latino culture, such as *marianismo* and *machismo*, are thought to influence these barriers differently depending on the gender of the adolescent (Guilamo-Ramos, 2006).

The traditional Latino gender roles of *machismo* and *marianismo* may discourage or encourage parents to talk about sex (Guilamo-Ramos, 2006). *Marianismo* is a gender

construct in which females are encouraged to be submissive to men and to maintain an asexual virgin-like status (Basham, 1976). *Machismo*, on the other hand, promotes a domineering and often times misogynistic stature in males (Sobral, 2006). These gender constructs have created a double standard with regards to adolescent romantic relationships and sexual behavior. Research suggests that Latino parents give boys dating and sexual freedom while they expect girls to remain virgins (Bouris et al., 2012; Crawford & Popp, 2003; Shearer, Hosterman, Gillen, & Lefkowitz, 2005; Guilamo-Ramos, 2006).

These social traditions may encourage Latina mothers to speak to their daughters in a conservative manner about sex in an effort to sustain their virginity (Guilamo-Ramos, 2006). Mothers may also experience fewer barriers in speaking with their daughters about sex than with their sons. One study found that mothers believed communication about sex would be more important in delaying sexual activity in daughters than in sons, and that daughters would be more receptive than sons to messages about the benefits of delaying sexual engagement (Wilson et al., 2010). Due to the mother's expectation to remain asexual herself unto male counterparts, she may disregard or avoid conversations about sex with her son, thus demonstrating a lack of knowledge or confidence about sex (Guilamo-Ramos, 2006). More research is needed on the specific barriers to communication between Latina mothers and adolescents to understand how these cultural values affect communication about sex across adolescent genders.

BARRIERS, RISKY SEXUAL BEHAVIOR AND GENDER

Research suggests that mothers are expected to discuss more sexual topics with girls than with boys (Guilamo-Ramos et al., 2006). Because of this expectation, the absence of communication about sex (i.e. the presence of more barriers) may have a greater impact on sexual behavior in girls than in boys. Associations between barriers to communication about sex and adolescent risky sexual behavior may vary by gender.

CURRENT STUDY

Few studies have been conducted to understand the association between barriers to communication, adolescent risky sexual behavior and gender. Other studies that have assessed barriers to communication have only looked at its association with the frequency of communication about sex between parents and children (Mena et al., 2008). Moreover, the majority of this research was conducted in the U.S. The hypotheses of this study will therefore be primarily based on findings from studies conducted in the U.S., despite the differences of context. The present study addressed three hypotheses concerning Latino mother-adolescent communication about sex, gender, and risky sexual behavior.

1. More perceived barriers to communication about sex (i.e., parent lack of confidence/knowledge about sex, talk perceived as unnecessary, and talk perceived as encouraging sex) would be associated with riskier adolescent sexual behavior (i.e., sexual engagement, contraception, and age of sexual debut).

2. Girls would perceive fewer barriers to communication about sex (i.e., parent lack of confidence/knowledge about sex, talk perceived as unnecessary, and talk perceived as encouraging sex) with their mothers than boys.

3. The association between barriers to communication and risky sexual behavior would be stronger for girls than for boys.

METHOD

PARTICIPANTS

This study was part of a larger project which included additional measures on the questionnaire assessing psychological adjustment, parent-child relationships, and romantic relationships. This study, however, focused on the variables of sexual behavior and barriers to communication. The recruited participants were 1,436 students in a large metropolitan city in Mexico at eight schools, five of which were private. It was a convenient sample; the participants were recruited based on their availability and class schedule. The sample is, however, representative of the schools themselves as the majority of students participated. There were seven middle schools (70.9%) of which two were public, and one public high school. The age of participants ranged from 12 to 19 years with an average age of 15.13 ($SD=1.49$). The majority of participants (71.4%) lived with both biological parents and 7.9% lived in households with one birth parent and one stepparent or two adoptive parents (e.g. aunt, grandparent). Forty-seven percent of participants were female and 53% male. Most participants (71.8%) reported following a religion, 63.9% of which practiced Catholicism. There was no exclusion criterion; only surveys that had missing data were omitted from the analysis.

PROCEDURE

Data were collected in May and June, 2010 in a large metropolitan city of Mexico. The principals of the middle and high schools gave consent to conduct the study. Researchers followed IRB procedures. Students who gave consent to participate completed the survey in their classroom. Students took surveys (for an approximate duration of 60 to 90 minutes) under the supervision of a lead researcher and three undergraduate UNCW assistants. After completing the surveys, students were given candy and encouraged to express any questions or concerns regarding the study. No other compensation was given in return for participation.

MEASURES

Risky Sexual Behavior. This study assessed three adolescent risky sexual behaviors: (a) whether or not the adolescent has had sexual intercourse, (b) age at first coitus, and (c) contraception use during first sexual encounter. Adolescents were asked to report (yes/no) if they had engaged in sexual intercourse (i.e., sex in which the penis penetrates the vagina). If the adolescents reported being sexually active, they were asked the age when they first had sex, and whether or not (yes/no) they had used contraception during this first sexual experience. The first variable for risky sexual behavior (sexual engagement) was scored such that adolescent who had not engaged in sex were coded with a 0 and those who had were coded with a 1. Contraception use was measured such that adolescents who did use contraception were coded with a 0 and those who did not use contraception were coded with a 1.

Barriers to Communication about Sex. The perceived barriers to communication measure was adapted and modified from the Parent Questionnaire of Add Health to include the adolescents' perception (Mena et al., 2008). We focused on assessing the adolescents' perception because adolescents' reports of communication about sex are a better predictor of adolescent sexual behavior than maternal reports (Jaccard et al., 2000). The perceived barriers to communication about sex measure includes three subscales: (1) Parent Lack of Knowledge/Confidence, (2) Talk Perceived as Unnecessary, and (3) Talk Perceived as Encouraging Sex. Scales were modified so that responses would range from strongly disagree (1) to strongly agree (4). Higher scores indicated greater barriers to communication. Parent Lack of Knowledge/Confidence includes four items, which assess the adolescents' perception of his/her mother's level of knowledge and confidence in talking about sex (i.e. "My mother thinks she does not know enough about sex and birth control to talk to me about it."). Talk Perceived as Unnecessary examined the adolescents' perception of the parent's view of the importance of talking about sex and birth control. This subscale included 5 items with statements such as "My mother thinks she does not need to talk to me about sex and birth control; I already know what I need to know." Talk Perceived as Encouraging Sex contained two items, which assessed the adolescents' perception of the extent to which the mother viewed talk about sex to encourage sexual behavior. Higher scores indicate more perceived barriers in each domain (i.e. confidence/knowledge about sex, talk perceived as encouraging sex, and talk perceived as unnecessary). This measure has been effective in assessing barriers to communication in Latino adolescents in the U.S.. Mena and colleagues (2008) found a positive association between parental knowledge/confidence about sex and the frequency of birth control and sex talk. Moreover, previous studies have found that this measure has good reliability, except for talk perceived as encouraging sex subscale: the Parental Lack of Knowledge/Confidence scale has an alpha of .81, the Talk Perceived as Unnecessary has an alpha of .79, and the Talk Perceived as Encouraging Sex has an alpha of .64. In this study, reliability was adequate for all three scales: confidence .72, unnecessary .76, and encouraging sex .73.

DATA ANALYSIS

The first hypothesis predicted that more perceived barriers to communication would associate with riskier adolescent sexual behavior (i.e., sexual engagement, less contraception use, and younger age of sexual debut). We performed one linear regression to test the association between barriers to communication and age of first coitus (a dichotomous variable, with no sexual engagement coded as 0 and sexual engagement coded as 2). Responses for barriers to communication were scored on a Likert scale of 1-4, with four representing greater barriers to communication. In addition, two logistic regressions were conducted to assess the association between barriers to communication and both contraception use and sexual engagement. The second hypothesis was that girls would perceive fewer barriers to communication about sex (i.e., parent lack of confidence/knowledge about sex, talk perceived as unnecessary, and talk perceived as encouraging sex) with their mothers than boys. A one-way ANOVA was performed to analyze the main effect of gender on perceived barriers to communication. Lastly, the third hypothesis predicted that the association between barriers to communication and adolescent risky sexual behavior would be stronger for girls than boys. We performed six

regressions separate by gender to test differences in the association between the three perceived barriers to communication and risky sexual behavior between boys and girls. The variables for risky sexual behavior (vaginal sex and contraception use) were coded the same as in the previous analyses.

RESULTS

Descriptive analyses of sexual behavior and contraception use. Initial descriptive analyses revealed that 22% of participants had experienced vaginal sex at the time they completed the survey. Twenty-four percent of boys and 17% of girls reported having had vaginal sex. The average age of engaging in sexual intercourse was 14.4 years ($SD=2.53$) for all participants, 14.04 ($SD=2.52$) for boys, and 15 ($SD=2.46$) for girls. Of those sexually active, 68% used contraception at the first time of intercourse. Nearly 74% of boys and 62% of girls reported using contraception/birth control during this first time.

Barriers to Communication and Adolescent Risky Sexual Behavior. In hypothesis 1, we predicted that more perceived barriers to communication would associate with riskier adolescent sexual behavior (i.e., sexual engagement, less contraception use, and younger age of sexual debut). We performed one linear regression and two logistic regressions to test this hypothesis. In the first logistic regression, we tested the association between the three barriers to communication and vaginal sex. Two out of the three predictors were associated with vaginal sex (i.e., confidence and knowledge about sex, and talk perceived as encouraging sex) (see Table 1). In other words, adolescents who reported that their mothers had little knowledge or confidence about sex were more likely to have had sexual intercourse.

Table 1

Barriers to Communication predicting vaginal sex and contraception use.

Barriers to Communication	Vaginal Sex			Contraception Use		
	B	SE B	Exp(B)	B	SE B	Exp(B)
Conf./Knowledge	-.062**	.03	.94	-.032	.055	.968
Unnecessary	-.038	.028	.962	.037	.052	1.038
Encouraging Sex	.334***	.053	1.396	-.109	.101	.896

Note. Sample size for vaginal sex was 1268, which includes the whole sample, both those sexually active and not sexually active. Sample size for contraception use was 267.

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

Similarly, adolescents who reported that their mothers believed talking about sex would encourage sex were more likely to have had sexual intercourse. There were no significant results for the second logistic regression, which analyzed the association between perceived barriers to communication and contraception use. Lastly, we performed a regression to test the association between the three perceived barriers to communication and age of first intercourse. There was no significant association between perceived barriers to communication and age of first coitus (see Table 2).

Table 2

Barriers to Communication predicting age of first intercourse controlling for adolescent sex.

Barriers to Communication	Age of First Intercourse	
	B	SE B
R ²	.038	
Conf./Knowledge	-.039	.062
Unnecessary	.053	.056
Encouraging Sex	-.145	.113

Note. Sample size was 272, representing only the participants who were sexually active at the time of the survey.

***p<.001.

Barriers to Communication and Gender. In hypothesis 2, we predicted that boys would report more perceived barriers to communication about sex than would girls. We performed a one-way ANOVA to analyze the main effect of gender on perceived barriers to communication. Results revealed a significant main effect for gender on each of the perceived barriers to communication subscales ($p < .001$), where boys were more likely to report greater barriers to communication about sex than were girls (see Table 3).

Table 3

ANOVA of Barriers to Communication and Gender.

Barriers to Communication	Boys		Girls		F
	M	SD	M	SD	
Conf./Knowledge	8.38	2.69	7.94	2.82	8.96***
Unnecessary	10.08	3.09	9.1	3.23	34.19***
Encouraging Sex	3.59	1.49	3.21	1.43	23.75***

Note. Sample size ranges from 1408 to 1415. These figures include the whole sample, both those sexually active and not sexually active (77.6%).

*** $p < .001$.

Gender Differences in Barriers to Communication and Risky Adolescent Sexual Behavior. Our third hypothesis predicted that the association between perceived barriers to communication and risky adolescent sexual behavior would be stronger for girls than for boys. We performed six regressions separate by gender to test differences in the association between the three perceived barriers to communication and risky sexual behavior between boys and girls. For boys, there was an association between two different perceived barriers to communication (i.e., talk perceived as unnecessary and talk perceived as encouraging sex) and vaginal sex. Boys who reported more talk perceived as encouraging sex were less likely to engage in sexual intercourse. In contrast, boys who reported more talk perceived as unnecessary were less likely to have had sexual intercourse (see Table 4). There were no significant associations between barriers to communication and contraception use or age at first intercourse among boys (see Table 4 and 5). For girls, there was a significant association between vaginal sex and two different perceived barriers to communication (i.e., confidence and knowledge about sex and talk perceived as encouraging sex) such that girls who reported more barriers to communication were more likely to have had sexual intercourse (see Table 4). There was also a significant association between contraception use and confidence and knowledge about sex such that girls perceived their mother had little knowledge or confidence about sex were more likely to have had sexual intercourse. In contrast, there was no association found between perceived barriers to communication and age of first intercourse for girls (see Table 5).

Table 4

Barriers to Communication predicting sexual engagement and contraception use for Mexican boys and girls.

Barriers to Communication	Boys					
	Vaginal Sex			Contraception		
	B	SE B	Exp(B)	B	SE B	Exp(B)
Confidence and Knowledge	-.037	.043	.964	.097	.081	1.102
Unnecessary	-.076**	.039	.927	.007	.068	1.007
Encouraging Sex	.411***	.077	1.508	-.17	.132	.843

Barriers to Communication	Girls					
	Vaginal Sex			Contraception		
	B	SE B	Exp(B)	B	SE B	Exp(B)
Confidence and Knowledge	-.09**	.044	.914	-.168**	.084	.845
Unnecessary	.008	.041	1.008	.084	.086	1.088
Encouraging Sex	.249***	.077	1.283	-.061	.168	.941

Note. Sample size for vaginal sex was 538 for boys and 701 for girls. Sample size for contraception use was 147 in boys and 121 for girls. These figures include the whole sample, both those sexually active and not sexually active.

p<.05. *p<.001

Table 5

Barriers to Communication predicting age of first intercourse for male and female adolescents.

Barriers to Communication	Age of First Intercourse			
	Boys		Girls	
	B	SE B	B	SE B
R ²	.017		.004	
Conf./Knowledge	-.02	.082	-.057	.096
Unnecessary	.059	.07	.025	.098
Encouraging Sex	-.21	.142	-.033	.194

Note. Sample size was 118 for girls and 153 for boys, representing only the participants that were sexually active at the time of the survey.

*** $p < .001$

DISCUSSION

The objective of this study was to examine the role of perceived barriers to mother-adolescent communication about sex and adolescent risky sexual behavior (i.e. sexual engagement, contraception use, and age of first coitus). It is important to note that perceived barriers to communication were reported by the adolescents. We chose this angle because research suggests that mothers tend to perceive themselves as having communicated more about sexual issues than do adolescents (Kapungu et al., 2010; DiIorio et al., 2000; Jaccard et al., 2000). We examined the extent to which boys and girls reported barriers to communication differently, based on gender. Findings revealed that boys were more likely to report each of the perceived barriers to communication about sex. In addition, we found gender differences in the association between perceived barriers to communication and adolescent risky sexual behavior.

PERCEIVED MATERNAL BARRIERS TO COMMUNICATION AND ADOLESCENT RISKY SEXUAL BEHAVIOR

To our knowledge, this is the first study to examine the direct association between perceived maternal barriers to communication and adolescent risky sexual behavior. Most research has instead focused on the association between barriers to communication and frequency of communication about sex (Mena et al., 2008; Jerman & Constantine, 2010). For example, research continuously finds that more barriers to communication are associated with less frequency of communication, and that less frequency is associated with more adolescent risky sexual behavior (Mena et al., 2008; Jerman & Constantine, 2010; Guzman et al., 2003; Hutchinson et al., 2003; Atienzo et al., 2009; Romo, Lefkowitz, Sigman, Terry, 2002). Considering these findings, we predicted that more barriers to communication would be associated with more adolescent risky sexual behavior. Analyses supported this prediction: adolescents who reported more perceived barriers to communication (i.e. lack of confidence and knowledge about sex, talk perceived as encouraging sex) were more likely to have engaged in vaginal sex.

Our first finding was that adolescents who perceived their mother as having little knowledge or confidence about sex were more likely to have had sexual intercourse. The theoretical perspective of Bandura's (1997) Social Cognitive Theory may explain this association. Bandura (1977) proposed that weaker self-efficacy (i.e., the confidence one has in performing a behavior in a given situation) decreases the probability of positive outcomes. In other words, people are less likely to change their behavior when they have little confidence in their ability to do so. Therefore, adolescents who have a weak self-efficacy for communicating about sex with their partners may be more likely to engage in unplanned sexual behavior and use less contraception (Pearson, 2006). In the present study, it may be the case that the mothers of the adolescents who were perceived to have little knowledge or confidence about sex also had little self-efficacy. The adolescents may have in turn learned to have little self-efficacy in communicating about sex, resulting in more risky sexual behavior. Future studies should examine the role of self-efficacy in the association between barriers and risky sexual behavior in order to support this assumption.

Our second finding was that adolescents who reported that their mother believed communication about sex would encourage sex were more likely to have engaged in sex. This is a paradoxical finding; the mothers who believed speaking about sex would encourage sex were more likely to have adolescents who engaged in sexual behavior. Research demonstrates that mothers often fear speaking about sex because they believe it would signify their acceptance of the behavior (Mckee & Karasz, 2006; Wilson et al., 2010). Such fears may discourage mothers from discussing sex with adolescents, despite the fact that engaging in sex during late adolescence is normative behavior (Zimmer-Gembeck & Helfand, 2008). Without parental guidance on sexual topics, adolescents may be more likely to engage in risky sexual behavior (Guzman et al., 2003; Hutchinson et al., 2003; Atienzo et al., 2009; Romo, Lefkowitz, Sigman, Terry, 2002).

There were no significant associations between perceived barriers to communication and the other two measures for risky sexual behavior (contraception use and age of first coitus). This is contrary to our predictions, as we hypothesized that more barriers to communication would be associated with less contraception use and risky

sexual behavior among adolescents. As previously mentioned, this may be the first study to assess the association between perceived barriers to communication and adolescent risky sexual behavior. It is possible that barriers to communication are not as important of a predictor for adolescent risky sexual behavior as are other factors of communication, such as frequency and content. Previous research has found these variables to be good predictors of contraception use and age of first intercourse in Latino adolescents (Guzman et al., 2003; Hutchinson et al., 2003; Atienzo et al., 2009; Romo, Lefkowitz, Sigman, Terry, 2002). It may therefore be more important to study frequency and content in relation to contraception use and age of first intercourse.

BARRIERS TO COMMUNICATION AND GENDER

As predicted, boys reported more perceived barriers to communication than did girls on each of the three perceived barriers to communication (lack of confidence/knowledge about sex, talk perceived as unnecessary, and talk perceived as encouraging sex). Our first finding was that boys were more likely than girls to perceive their mother as having little confidence or knowledge about sex. This finding may be explained by the traditional Latino gender role of *marianismo* (Guilamo-Ramos, 2006). *Marianismo*, which takes root in the Catholic belief system and the iconic image of the Virgin Mary, encourages women to maintain chastity and an asexual image (Villavicencio, 2009; Gil & Vazquez, 1996). Latina mothers may therefore be discouraged from communicating to their sons about sex in an effort to maintain their asexual stature towards male counterparts (Guilamo-Ramos, 2006; Basham, 1976). As a result, boys may be more likely than girls to perceive this lack of confidence in their mother.

Our second finding was that boys were more likely than girls to report that their mother believed talk about sex was unimportant or irrelevant. This may be due to the finding that mothers believe communication about sex is more important for girls than for boys. One study, for example, found that mothers believed communication about sex would be more important in delaying sexual activity in daughters than in sons (Wilson et al., 2010). Mothers also believed that daughters would be more receptive than sons to messages about the benefits of delaying sexual engagement (Wilson et al., 2010). This research may explain why the boys of this study were more likely than girls to report that their mother believed communication about sex was unimportant.

Lastly, we found that boys were more likely than girls to report their mother believed talk about sex would signify their acceptance of the behavior. This is consistent with other research, which likewise finds talk perceived as encouraging sex to be more prevalent in mother-son dyads than in mother-daughter dyads (Jaccard et al., 2000). This finding may be explained by the fact that boys are often given sexual freedom and sometimes even encouraged to have multiple sex partners (Prado et al., 2006; Sobralske, 2006). Mothers may therefore feel like speaking about sexual topics with their sons would signify their acceptance of such behaviors, and boys may in turn observe their mothers' reluctance.

ASSOCIATIONS BETWEEN BARRIERS TO COMMUNICATION AND RISKY ADOLESCENT SEXUAL BEHAVIOR BY GENDER

Our first finding was that talk perceived as encouraging sex was a predictor for vaginal sex among girls and boys. In other words, the adolescents who reported their mother believed communication about sex would signify her acceptance of the behavior were more likely to have engaged in vaginal sex. This supports our previous result, which revealed that more perceived barriers to communication was associated with more risky adolescent sexual behavior.

Our second finding was that maternal lack of knowledge and confidence about sex is a predictor for risky sexual behavior (i.e. contraception use, and vaginal sex) among girls but not boys. This may be explained by the fact that mothers are expected to discuss more sexual topics with girls than with boys (Guilamo-Ramos et al., 2006). If mothers are expected to speak more with daughters about sex, then presence of more barriers may have a greater impact on sexual behavior in girls than in boys. Mothers are oftentimes more influential role models for daughters than for boys (Kreppner, 2000). Therefore, if mothers display little confidence and knowledge about sex, their daughters may in turn develop a weak self-efficacy for sexual decision-making. Because low levels of self-efficacy are associated with negative health outcomes (Rutkowski & Connelly, 2011), girls who develop a weak self-efficacy for discussing sex may be more likely to engage in unplanned and risky sexual behavior.

Contrary to predictions, our third finding revealed that talk perceived as unnecessary was a predictor for vaginal sex in boys but not in girls. More talk perceived as unnecessary was associated with less vaginal sex in boys. A correlation was conducted between talk perceived as unnecessary and age (separate by gender) to examine whether the barrier was weaker among older adolescents. The analysis was run separate by gender as to understand whether boys and girls experienced the barrier talk perceived as unnecessary differently at different ages. It was expected that younger adolescents would report more talk perceived as unnecessary as compared to older adolescents. This was thought to explain the association between more talk perceived as unnecessary and less sexual behavior, as younger adolescents may be engaging in less sexual activity than older adolescents because it is not yet normative behavior. In addition, more barriers may exist for younger adolescents due to the parent perceiving communication as unnecessary when the adolescents are sexually inactive. Surprisingly there were no significant correlations. Future studies that assess barriers to communication should examine age separately, as barriers may carry a different meaning depending on the age of the adolescent. Moreover, sexual activity has a different significance depending the age of the adolescent because it is only considered normative behavior until older adolescence (Whitbeck, Yoder, Hoyt, & Conger, 1999).

LIMITATIONS

While the current study has contributed to our body of knowledge on the role of barriers to communication in adolescent risky sexual behavior, it is important to note certain limitations. First, we collected surveys from a convenient sample in a large metropolitan

city in Mexico. These findings should therefore not be generalized to all adolescents of that particular city, or to all adolescents living in Mexico.

Second, this was not a longitudinal study. It is uncertain as to whether particular barriers developed after the adolescent had already engaged in sexual activity. For example, some research suggests that parents only begin communicating as a means of protection after they have discovered the adolescent to be sexually active (Romo et al., 2002). Because we only examined one wave of surveys, we cannot claim a cause-effect relationship between perceived barriers to communication and adolescent risky sexual behavior. For intervention purposes, it is important to conduct a longitudinal study in order to understand when perceived barriers to communication about sex are greatest.

Third, surveys were only administered to adolescents, and not to parents. Although research finds adolescents' reports of communication about sex to be a better predictor of adolescent sexual behavior than maternal reports (Jaccard et al., 1998), it is important to compare both to ensure consistency. It is possible that the adolescents do not accurately perceive what barriers to communication their mothers are in fact experiencing. If interventions wish to effectively diminish maternal barriers to communication, they must first identify which ones are present for both the mother and adolescent.

Finally, we conducted correlations separate by gender to assess how strong of a predictor perceived barriers to communication were for risky sexual behavior in both genders. With this form of analysis, we cannot claim that certain barriers to communication were stronger predictors for risky sexual behavior in girls than in boys. Future studies should instead utilize gender as a moderator to understand whether or not certain barriers to communication predict more strongly for girls than for boys.

FUTURE DIRECTIONS

More research should be done to expand on and replicate this study's findings on barriers to communication and risky sexual behavior among Latino adolescents. Because this study did not include a measure on frequency of communication, future studies should do so in order to understand whether the perceived barriers to communication that were associated with risky sexual behavior are also associated with low frequency of communication. If certain barriers were found to be associated with low frequency of communication and riskier sexual behavior, clinicians would have a better idea of what aspects of communication to target.

Qualitative measures may also be a valuable method in evaluating barriers to communication. Discussion groups, conducted separately with both adolescents and parents, would allow researchers to examine the different barriers experienced by both parties. It would also give participants the opportunity to explain why such barriers exist.

This study referred to traditional Latino values and norms (e.g., *marianismo* and *machismo*) to explain the gender differences found in perceived barriers to communication. Although these explanations make sense conceptually, some research suggests that globalization has weakened the importance of these values in Mexico, especially in the metropolitan areas. Future studies should incorporate measures for *marianismo* and *machismo* to examine whether these gender constructs predict particular perceived barriers to communication.

With a better understanding of barriers to communication and adolescent risky sexual behavior, researchers and clinicians may be able to create a culturally sensitive intervention program in an effort to reduce the rising STD and teenage pregnancy rates of Latino adolescents. These programs have been proven to be effective in mother-daughter dyads in the U.S. With more knowledge on the culturally specific barriers to communication in Latino families, these intervention programs may be tailored to best suit Latino populations.

CONCLUSION

This study's findings provide us with a better understanding of the particular perceived barriers to communication associated with adolescent risky sexual behavior. Furthermore, it highlights both the cultural and gender differences of perceived barriers to communication among Mexican adolescents. Few studies have addressed such variables and more research is needed to understand how gender and mother-adolescent communication about sex affect adolescent sexual behavior.

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