Appendix B
Loadings of the Principal Axis Factor Analysis: Sex Communication Scale (mother version)

Item	Factor 1: Mother-Daughter Communication
1. I have talked to my daughter about sex.	.79
2. When my daughter asks questions about sex, I give her honest answers.	.70
3. I can discuss sex with my daughter without feeling embarrassed.	.69
4. My daughter is afraid to ask me about sex.[a]	−.67
5. Sex is a topic my daughter avoids talking about to me.[a]	−.66
6. I have talked to my daughter about safe sex.	.59
7. I have talked to my daughter about HIV/AIDS.	.58
8. I have talked to my daughter about birth control.	.53
9. I find it easy to discuss sex with my daughter.	.53
10. If my daughter had a sexually transmitted disease, she would tell me.	.42
11. I am always accusing my daughter of having sex.[a]	−.32
12. If my daughter were pregnant, she would tell me.	.30
13. I worry a lot about my daughter getting pregnant.[a]	−.25
14. I do not trust that my daughter can make good decisions about sex.[a]	−.08

a. Reverse-score item. Items are rated on a scale ranging from 1 (*strongly disagree*), 2 (*moderately disagree*), 3 (*moderately agree*), 4 (*strongly agree*).

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Mother-Daughter Communication About Sexuality in a Clinical Sample of Hispanic Adolescent Girls

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Mother-daughter communication about sexuality within minority families has received little research attention at a time of increasing prevalence rates of adolescent HIV infection in these groups. Even less is known about communication in families with psychiatrically disturbed adolescents. As part of an HIV-intervention study, 110 adolescent girls (ages 13-18) and their mothers completed questionnaires assessing communication patterns and adolescent sexual behavior. Reported quality of general mother-daughter communication was more useful in predicting onset of sexual experiences than aspects of later sexual experiences. Communication about sexuality, specifically, however, was not related to adolescents' reported sexual behavior. Our findings emphasize the need to address sex education requirements at relatively young ages and to consider the range of information sources available to girls in communicating risk-prevention messages.

It is difficult to assess from past research how or in which ways parents' communication about sexuality with their children may actually influence

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adolescent sexual behavior. The findings from both large-scale national samples and most smaller research efforts generally fail to find direct relationships between parent-child communication about sex and sexual behavior (e.g., Furstenberg, Herceg-Burton, Shea, & Webb, 1984; Moore, Peterson, & Furstenberg, 1986; Newcomer & Udry, 1985; Weeks et al., 1997). However, some parents appear to influence their children's sexual behavior at least indirectly. For example, sexually active adolescents (ages 12-18) were less likely than nonactive adolescents to report feeling close to their parents and believing that their parents would be upset to learn that their child was sexually active (DiBlasio & Benda, 1990). Sexual activity and lack of contraception use among girls (ages 9-15) were related to girls' belief that their mothers would not care if they became pregnant (Stanton et al., 1994).

One fairly consistent finding in the research examining the association between parent-child communication and adolescent sexual behavior is that parents who have established a pattern of positive general communication with their children tend to have children who have later onset of sexual intercourse, fewer numbers of partners, and more consistent use of contraception (Brooks-Gunn & Furstenberg, 1989; Fisher, 1987). For example, adolescents' reports of higher quality of communication (i.e., more openness and fewer problems) with their mothers (but not fathers) were associated with greater extent of discussion about sexual topics (Baldwin & Baranoski, 1990). Retrospective reports of college students revealed that those who perceived their parents as having friendly, attentive styles of communication reported less sexual activity in junior high school, high school, and college, as well as more contraceptive use once becoming sexually active, than did those who perceived their parents as having contentious, dramatic, and dominant styles of communication (Mueller & Powers, 1990).

Communication About Sex Within Hispanic Families

Relatively little is known about the association between parent-child communication and sexual behavior in Hispanic families. In a sample of 1,257 female Mexican students (ages 12-19), sexually active girls reported having spoken less frequently with their mothers about sexual matters than nonactive girls (Pick & Palos, 1995). For sexually active girls, less frequent discussions with their mothers about sexual matters were associated with a higher percentage of reports of pregnancy and failure to use contraception.

The lack of information about the role of parent-child communication and adolescent sexual behavior in Hispanic families is particularly worrisome, given that there appears to be a number of social and cultural factors that

place female Hispanic adolescents at greater risk of STDs, including HIV. Of particular concern, Hispanic adolescents often live in impoverished, inner-city neighborhoods characterized by urban problems, such as high rates of illegal drug use and poverty. These conditions place adolescents at increased risk of exposure to infected sexual partners (Rotheram-Borus & Gwadz, 1993). In addition, Hispanic adolescents are less likely to use contraception and condoms when they become sexually active compared to non-Hispanic adolescents (Centers for Disease Control and Prevention, 1996; Flaskerud, Uman, Lara, Romero, & Taka, 1996; Ford & Norris, 1991), increasing the chances that girls will experience unintended pregnancies or be exposed to STDs.

Psychiatrically Referred Adolescents and Sexual Risk Behavior

Adolescents with psychiatric disturbance are at additional risk of experiencing the negative consequences of risky sexual activity. Rotheram-Borus and Gwadz (1993) reported that 18% of a sample of psychiatrically disturbed inner-city adolescents reported at least one STD infection, compared to 6.5% of a national sample of inner-city adolescents. Furthermore, 56% of a sample of Hispanic psychiatrically disturbed inner-city girls ages 15 to 19 years had been pregnant at least once, compared to 47% of a national sample of inner-city adolescents and 11% of a national sample of girls. Psychiatric disturbance may interfere with adolescents' ability to initiate and/or negotiate safer sex practices with partners, as has been found in a sample of psychiatrically disturbed inner-city women (Miller & Finnerty, 1996). Psychiatric disturbance among adolescents is also associated with higher levels of conflictual and negative communication with their mothers and lower rates of positive communication (Reed & Dubow, 1997). Thus, the focus of this report is a Hispanic sample of adolescent girls with a particularly high-risk profile: psychiatrically referred girls living in a major AIDS epicenter.

The Current Study

We expected that our sample would report higher rates of sexual risk behavior compared to rates obtained using national samples or rates obtained using inner-city or psychiatrically disturbed samples (see Rotheram-Borus & Gwadz, 1993, for a review) because of the additive risk effects of residing in inner-city impoverished neighborhoods and of psychiatric disturbance. Because little is revealed from past research about Hispanic families with regard to mothers' and daughters' communication about sex, we explored a

number of other hypotheses in the current study. Researchers examining patterns of communication tend to rely on one informant regarding parent-child interaction styles, such as retrospective reports from the "child" some years after adolescence (Fisher, 1987; Mueller & Powers, 1990). Those who use two or more informants typically find that mothers are more likely to report communicating with their children about sex than are fathers (Mueller & Powers, 1990) and that parents report higher levels of parent-child communication about sexuality than do their children (Jaccard, Dittus, & Gordon, 1998; Pick & Palos, 1995). In this study, we examined reports from both mothers and adolescent daughters and expected to find low levels of correspondence between their accounts of parent-child communication about sexual matters. In addition, parent-child communication about sexuality is often examined independently of general parent-child communication (e.g., Shoop & Davidson, 1994). In clinical samples, general communication between mothers and adolescent daughters is likely to be particularly strained (Reed & Dubow, 1997). Thus, we hypothesized that poorer quality of general mother-daughter communication in our clinical sample would be associated with adolescent risky sexual behavior.

Method

Sample

The sample of adolescents comprised 110 inner-city Hispanic girls between the ages of 13 and 18 who were clinically referred for psychiatric assessment. Girls and their mothers were recruited from outpatient clinics in the Washington Heights community of New York City to participate in an HIV-prevention intervention project described elsewhere in detail (Moreau et al., 1999).

Assessment

A battery of questionnaires assessing demographics, communication, sexual behavior, and psychiatric diagnoses was administered to participants in either English or Spanish during an interview as part of the baseline data collection for the HIV-prevention intervention project. All interviews were conducted after obtaining informed consent. All participants were interviewed by bilingual female staff in either English or Spanish, depending on the preference of the participant. Interviewers received intensive training to acquire reliable administration technique and were supervised individually

and in groups at weekly sessions to ensure continued consistent administration. In addition, audiotapes of the interview sessions were chosen randomly and checked for consistency. The entire protocol was approved by the institutional review board prior to administration.

Demographic questionnaire. A demographic questionnaire was administered to mothers to obtain background information, including age, ethnicity, place of origin, living circumstances, languages spoken, household composition, education and occupational status of parents, sources of income, and medical and psychiatric histories.

General mother-daughter communication. Two versions of the Parent-Adolescent Communication Scale (Barnes & Olson, 1982) were used to assess subjective quality of general mother-daughter communication. Parallel forms were administered to adolescents and mothers with appropriate referents. Participants endorsed each of 20 items on a scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Higher total scores indicate better subjective quality (i.e., greater openness, fewer problems) of communication. The test-retest reliability was .77 for a 2-week period (Barnes & Olson, 1985), although the authors did not clarify whether this rate was obtained for parents or adolescents. The Cronbach alphas in the current study were .89 and .84 for the adolescent and mother versions of this instrument, respectively.

Mother-daughter communication about sexuality. The Sex Communication Scale (SCS) was developed for the current study to assess subjective quality of mother-daughter communication about sexual issues. Items for the scale were derived from a review of relevant literature and the series of focus groups conducted in the pilot phase of the study and can be found in Appendices A and B. Parallel versions were administered to adolescents and mothers with appropriate referents. Participants endorsed each of 14 items on the following response scale: 1 (*strongly disagree*), 2 (*disagree*), 3 (*agree*), and 4 (*strongly agree*). Higher scores indicate better subjective quality of communication about sex.

Adolescent sexual behavior. To assess adolescent sexual behavior, we used the Sexual Risk Behavior Schedule for Sheltered Youths, Female, Baseline (SERBAS) (Meyer-Bahlburg, Ehrhardt, Exner, & Gruen, 1991) in a modified form (Meyer-Bahlburg, Ehrhardt, Exner, Gruen, & Dugan, 1995). The SERBAS is a semistructured interview schedule that incorporates a

dictionary of sexual terms and assesses sexual history in detail (e.g., age at initiation of various sexual practices, by gender of partner; total number of male and female partners; number and types of sexual occasions). The schedule requires approximately 40 minutes to administer.

To assess lifetime sexual experience involving some form of genital contact with a male partner, the adolescent girls were asked their age when, for the first time, "a guy/man touched your clitoris or vagina," "you first touched a guy's/man's penis and stimulated him," " a guy/man first put his penis into your vagina," "you first put your mouth or tongue on a guy's/man's penis," "a guy/man put his mouth or tongue on your vagina or clitoris," and "a guy/man first put his penis into your anus/rectum." Those reporting at least one such experience were then asked to calculate "all the different guys/men (they) have had any kind of sex with in (their) whole lifetime" (not restricted to vaginal intercourse partners), and the number of times they "had sex with all of these guys/men in (their) whole lifetime." To assess condom use during vaginal intercourse, the adolescent girls were asked, "Over your whole lifetime, when you think about how many times you had vaginal sex with guys/men, approximately how often did your partner use a condom?" Response options were the following: *all the time, almost all the time, usually, sometimes, rarely,* and *never.* Test-retest reliability was based on 20 adolescent girls who underwent a second interview by a different interviewer approximately 2 weeks after the original interview. Retest reliability for the lifetime variables used here was satisfactory; for instance, the Kappa statistic for lifetime experience of vaginal intercourse was 1.00, *r*s for sexual milestones (ages at initiation of particular sexual practices) ranged from 0.64 to 1.00.

Psychiatric diagnosis. The girls' psychiatric status was assessed using the NIMH Diagnostic Interview Schedule for Children, Child version (DISC-C [Version 2.3]) (Shaffer, Fisher, Dulcan, & Davies, 1996), an instrument designed to assess child psychopathology. This interview takes approximately 1 hour to administer. It has acceptable reliability with children (Shaffer et al., 1996) and moderate to good validity across diagnoses (Schwab-Stone, Shaffer, Dulcan, & Jensen, 1996).

Psychiatric impairment. The Columbia Impairment Scale (Bird et al., 1993) was used to assess psychiatric impairment in the adolescents' day-to-day functioning. Adolescents responded to 13 questions with a fixed prefix, "In general, how much of a problem would you say you have with," on a scale ranging from 0 (*no problem*) to 4 (*a very bad problem*). Thus, scores can range from 0 to 52. Response options address interpersonal relations, psychopathological domains (e.g., anxiety, depression), functioning at school or

at a job, and use of leisure time. Higher scores indicate greater impairment in functioning. The test-retest reliability was .63 for a 30-day period using a sample of both clinically referred and nonreferred urban and suburban children (ages 9-17 years) (Bird et al., 1993). The Cronbach alpha for the scale was .74. Children's scores were highly correlated with other established measures of impairment, such as a clinicians' Children's Global Assessment Scale scores ($r = -.48$) (the correlation is negative because these scales are scored in opposite directions).

Religiosity. The extent of participants' self-reported religiosity was assessed by the item, "On average, about how often do you attend church?" The response options were *never, 1 to 3 times a month, once a week,* or *more than once a week.*

Procedure

Mother-daughter dyads were referred by therapists from three local community clinics, including a suicide clinic, depression and anxiety clinic, and a school-based clinic. These clinics treat adolescents with psychiatric disorders. Participants were first contacted by mail by a research coordinator, then invited by telephone to take part in an intervention for mothers and daughters about "communication, relationships, and HIV." Coupons that could be exchanged for cash at the interview session were sent to mothers and daughters as incentives for participation, and transportation and child care services for younger children were also arranged. Interviews took place in satellite offices of the New York State Psychiatric Institute. Detailed information regarding the methodology of the intervention project can be found in Moreau et al. (1999).

Data Analysis

Our analyses concentrated on determining the extent to which the adolescent sample engaged in sexual risk behaviors, the degree to which Hispanic mothers' and daughters' reports of their general communication and communication about sexuality correspond, and ascertaining possible associations between mother-daughter communication and daughters' reported sexual behavior.

Descriptive data are provided for the psychiatric diagnoses of the adolescent sample, reported sexual behavior, and mothers' and daughters' reported quality of general communication and communication about sex. Missing values were distributed at random across cases, and an average of two

missing values were found for each variable. Chi-square analyses were conducted to examine differences in mothers' and daughters' endorsement of the individual communication items, and correlations were performed to examine the strength of association in mothers' and daughters' reports for each item on the 4-point scale, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). These analyses were preceded by Kappa statistics to capture the degree of concordance in mothers' and daughters' reports. The Kappa statistic consists of the ratio of times that the two groups agreed in their responses (i.e., both mother and daughter endorsed an item, or both did not endorse an item) to the maximum proportion of times that they could agree, corrected for chance (Siegel & Castellan, 1988). The responses "agree" and "strongly agree" were collapsed to represent endorsement of an item, whereas "disagree" and "strongly disagree" were collapsed to represent lack of endorsement.

Factor analyses were conducted separately on the adolescent and mother versions of the SCS, developed for this study. Unrotated principal components analyses were conducted first to assess the total number of factors with eigenvalues above 1.00, followed by an examination of scree plots to determine the number of factors to be specified in subsequent principal components analyses. Interpretability of the resulting factors determined the number of factors to be specified in a final principal axis analysis, followed by varimax rotation. Examination of item loadings and scale definition were followed by internal consistency analyses using the loadings of the varimax rotation as item weights.

To examine associations between mother-daughter communication and reported sexual behavior, regression analyses were conducted separately for younger girls (ages 13-14; $n = 43$) and older girls (ages 15-18; $n = 67$). Because few of the younger girls (13-14 years) reported sexual experiences involving genital contact ($n = 17$) or vaginal intercourse ($n = 10$), they were not included in analyses examining associations with age at first sexual experiences involving genital contact or vaginal intercourse, numbers of partners and encounters, or consistency of condom use. The distributions of numbers of sexual partners and encounters were first submitted to a log transformation procedure to reduce the skewness of their distributions. Logistic regression analyses were employed to evaluate the association between dichotomous dependent variables (i.e., sexual experience involving genital contact and vaginal intercourse experience) using adolescents' general and sex communication scores as independent variables. Linear regression analyses were used to examine the associations between continuous dependent variables (i.e., age at onset, number of sexual partners and encounters) with communication scores again as the independent variables. As the mother-daughter

general and sex communication scores were highly correlated (rs = .80 and .64, for the younger and older groups, respectively), zero-order correlations between the major sex variables and the two communication scores were also examined. We also examined the effect of religiosity and the associated sexual variables in the regression analyses as religiosity has been shown to be associated with differences in adolescents' sexual behavior (Cooksey, Rindfuss, & Guilkey, 1996; Murry, 1996). A parallel series of analyses was conducted examining the associations between adolescents' reported sexual behavior and mothers' general and sex communication scores. Finally, chi-square statistics were used to compare adolescents with high communication scores (i.e., those in the top one third of the distribution for communication about sex) to those of low communication scores (i.e., those in the bottom one third of the distribution), in terms of reported condom use to determine whether consistency of condom use was related to reported quality of mother-daughter communication about sexuality.

Results

Participant Characteristics

The mean age of the adolescents was 15.0 years (SD = 1.50). Almost two thirds (63.6%) were born in the United States, whereas the remainder were born in the Dominican Republic (26.2%), Puerto Rico (3.7%), other Caribbean countries (4.7%), or had other Spanish-speaking origins (1.8%). These origins reflect those of the Washington Heights community in New York City.

Biological mothers constituted the majority of mother-daughter dyads (90.9%), with grandmothers (7.2%), sisters (1.0%), and foster parents (0.9%) constituting the remaining pairs. The majority of adolescent girls (89%) were living with at least one parent at the time of the study, and the remainder were living with other relatives (8%), with an unrelated adult (2%), or with a boyfriend (1%). Biological mothers or caretakers ("mothers") ranged in age from 20 to 75 years (M = 41.1; SD = 9.0). Of the mothers, 21% had less than 7 years of school, 35% had some high school education, 15% had graduated from high school, and 29% had some college education or had completed college. Estimates of household income consisted of all sources of income, including public assistance. Two thirds of the mothers (66%) were receiving public assistance at the time of the interview. More than half of the mothers (53%) reported an annual household income of less than $10,000, 37% reported an income ranging between $10,000 and $25,000, and the

remaining 10% reported an income exceeding $25,000. English and Spanish were spoken in 57% of the households, whereas Spanish only was spoken in 43% of the households.

The adolescent girls in this sample met DSM-III-R criteria for the following current psychiatric diagnoses: 8.7% were diagnosed with depression (i.e., major depression, dysthymia, mania), 35.0% with anxiety disorders (i.e., simple and social phobia, agoraphobia, panic, separation anxiety, generalized anxiety, and obsessive compulsive disorder), 26.2% presented comorbid depression and anxiety, and 2.9% were diagnosed with other disorders (i.e., disruptive disorders and substance abuse). The remaining adolescent girls (27.2%) did not meet criteria for a specific psychiatric disorder at baseline. Their mean impairment scores (M = 11.3; SD = 8.9) were similar to those obtained for a sample of urban- and suburban-residing, psychiatrically referred children ages 9 to 17 years (M = 11.1; SD = 6.5) (Bird et al., 1993).

Girls' Reported Sexual Experiences

A primary objective of the current study was to determine the extent to which our clinical sample of Hispanic adolescent girls engage in risky sexual behaviors. These data are reported for all girls, and separately for the younger (13-14 years) and older (15-18 years) age groups (see Table 1). Their reports indicate that approximately half (50.9%) had engaged in some type of sexual activity involving genital contact. Sexual experiences for most of these girls began before 14 years of age (M = 13.7 years for onset). More than one third of the adolescents (40.0%) reported having engaged in vaginal intercourse at least once in the past (M = 14.3 years for onset). Of the girls who reported that they had engaged in vaginal intercourse, considerable variability was noted in terms of their reported frequency of condom use during vaginal intercourse encounters. Approximately 16% reported "never" using condoms during vaginal intercourse. Consistent use of condoms ("all the time") was reported by 29.5% of the adolescent girls.

Mother-Daughter General Communication

Scale scores for general communication. Scores on the Parent-Adolescent Communication Scale (Barnes & Olson, 1982) can range from 20, indicating low subjective quality, to 80, indicating high subjective quality. Girls' and mothers' average scores were 52.64 (SD = 9.34; range = 31 to 77), and 56.24 (SD = 7.80; range = 39 to 76), respectively. These scores were lower than the average scores of 75.6 and 66.6 obtained in Barnes and Olson's (1985) national sample of mothers and adolescents (both male and female). Similar

Table 1. Reported Sexual Experiences of Adolescent Girls

	All $N = 110$	Younger Girls: 13 to 14 Years $n = 43$	Older Girls: 15 to 18 Years $n = 67$
Sexual experience involving genital contact (%)	50.9	39.5	58.2
Age at first sexual experience[a]			
M	13.7	12.6	14.2
Mdn	13.5	13.0	14.0
Range	5-17	11-14	5-17
Number of past sexual partners[a]			
M	2.6	2.1	2.76
Mdn	2.0	2.0	2.0
Range	1-10	1-7	1-10
Number of past sexual encounters[a]			
M	82.8	85.8	81.5
Mdn	15.0	14.0	16.0
Range	1-594	1-557	1-594
Experience of vaginal intercourse (%)	40.0	23.3	50.7
Age at first vaginal intercourse[b]			
M	14.3	13.0	14.7
Mdn	14.0	13.0	15.0
Range	10-18	11-14	10-18
Consistency of condom use with vaginal intercourse[b] (%)			
All the time	29.5	40.0	26.5
Almost all the time	22.7	20.0	23.5
Usually	11.4	10.0	11.8
Sometimes	15.9	0.0	20.6
Rarely	4.5	10.0	2.9
Never	15.9	20.0	14.7
n	44	10	34

a. Numbers representative of those adolescents who reported at least one sexual experience involving genital contact.
b. Numbers representative of those adolescents who reported at least one experience of vaginal intercourse.

to Barnes and Olson (1985), mothers' scores were significantly higher than their daughters' scores, $t(104) = -3.43$, $p < .001$. The correlation between mothers' and daughters' total scores was $r = .31$, $p < .001$.

For individual items of the general communication scale, the Kappa statistic indicated little correspondence between daughters' and mothers' responses. The highest Kappa score (.26) was obtained for the item "I am very satisfied with how we talk together." The average Kappa was .13,

indicating low levels of concordance. Zero-order correlations assessing the degree of association between mothers' and daughters' reports of the individual items ranged from .01 to .31 (average $r = .14, p > .05$, i.e., not significant), again revealing little association between their reports.

Mother-Daughter Communication About Sexuality

Scale construction of the adolescent version of the SCS. Examination of the principal components scree plot of eigenvalues for the 14 items of the adolescent version revealed four factors (with eigenvalues above 1.00). Examination of the scree plots revealed a two- or three-factor solution to be appropriate. A second principal components analysis specifying a two-factor solution was more easily interpretable and more closely matched the intended design (i.e., differentiating open and problem communication items) compared to the analysis specifying a three-factor solution. The two factors obtained from the subsequent principal axis analysis (specifying two factors) reflected openness (10 items) and problems with communication (4 items). The items and their factor loadings can be found in Appendix A. The internal consistency score (Cronbach alpha) for the total scale was .89 using item loadings and after reverse scoring for the problem-communication items; the scores for the two subscales were .90 (open communication) and .72 (problem communication). Scores based on unit-weighted items were used in all subsequent analyses.

Scale construction of the mothers' version of the SCS. The analyses of the mothers' version of the sexual communication scale did not produce two clear scales assessing openness and problem communication. The initial unrotated principal components analysis produced five factors that could not be clearly interpreted. Therefore, a one-factor solution was specified in the principal axis analyses (see Appendix B). The internal consistency score using item loadings for the resulting total scale was .78. Internal consistency did not improve significantly by eliminating one item with a particularly low item loading (–.08), so it was retained to keep the mothers' version parallel in form to the adolescent version. Unit weighted items were used in all subsequent analyses.

Scale scores. Scores on both versions of the SCS can range from 14, indicating low subjective quality, to 56, indicating high subjective quality of mother-daughter communication about sexuality. The adolescent girls'

scores ranged from 18 to 56. Their average score was 37.36 ($SD = 8.65$). The mothers' scores for this scale ranged from 25 to 55 ($M = 39.33$; $SD = 6.14$). As with the general communication scores, mothers' scores were significantly higher than were daughters' scores, $t(106) = -2.45$, $p < .05$. Chi-square analyses of individual items were conducted to examine differences in mothers' and daughters' endorsement of the individual items. These analyses revealed that both mothers and daughters were more likely to endorse than not endorse the items assessing whether they had addressed particular sexual topics (e.g., HIV/AIDS, safe sex, birth control, sex generally). However, daughters were less likely than their mothers to report that their mothers trust them to make good decisions about sex and that they are able to have discussions about sex without embarrassment.

Concordance in adolescent girls' and mothers' reports of communication about sexuality. The correlation between mothers' and daughters' total scores was $r = .32$, $p < .001$. For the individual items, Kappa statistics were used to examine the ratio of times mothers and daughters agreed in their responses (i.e., both endorsed or did not endorse a particular item) to the number of times that they could agree, corrected for chance. The average Kappa statistic for mothers' and daughters' responses was .22, providing support for our hypothesis that there would be little concordance in their reports of mother-daughter communication about sex. Kappas ranged from .06 to .43. The highest degree of concordance in mothers' and daughters' reports (.43) was found for the item "Mother has talked to daughter about sex." Correlations were conducted to assess the extent to which mothers' ratings for individual items were associated with daughters' ratings. These scores ranged from .03 to .17. The mean correlation across items was .17, revealing little association.

Relationship between scores for general communication and communication about sex. The scores for general communication and communication about sex were highly correlated for adolescent girls ($r = .75$, $p < .001$). These scores were only moderately correlated for mothers ($r = .47$, $p < .001$).

Associations Between Adolescent Girls' Reports of Past Sexual Experience and Their General and Sex Communication Scores

No significant associations were found when the communication subscales (i.e., Openness and Problems with Communication) were included in the regression analyses as the independent variables. Thus, only the results

using the full scale scores for mother-daughter general communication and communication about sexuality are presented below. Religiosity was inversely related to the number of sexual encounters ($r = -.46, p < .05$) and marginally so to the number of sexual partners ($r = -.36, p = .056$). Thus, we controlled for the effect of religiosity in analyses involving these sexual variables. Religiosity was not significantly related to general and sex communication scores for girls ($rs = .03$ and $-.08$, respectively) or their mothers ($rs = -.15$ and $-.01$, respectively).

Sexual experience involving genital contact. Communication scores were not significantly related to reports of sexual experiences involving genital contact for the younger group of girls (13-14) (35.7% reported this experience), $\chi^2(2, n = 42) = 3.60, p > .05$. However, communication scores were significantly associated with reports for the older group, (58.5% of adolescents ages 15-18 reported this experience), $\chi^2(2, n = 65) = 7.15, p < .05$. Of the two scores, general communication was significantly associated with reports of this behavior, $\omega^2(1) = 3.53, p < .05$, in that adolescent girls with lower subjective ratings of quality of their mother-daughter general communication were more likely to report lifetime sexual experience involving genital contact compared to those with higher subjective ratings.

Furthermore, the analysis for age at first sexual experience for the older adolescent girls produced a significant association with the two communication scores, $R^2 = .16$, $F(2, 35) = 3.44$, $p < .05$. Higher ratings of mother-daughter general communication were associated with later ages of first sexual experiences involving genital contact ($r = .35$, $p < .05$); the association between quality of sex communication and age of first sexual experience was not significant ($r = -.06, p > .05$).

Vaginal intercourse. Adolescent girls' communication scores were not significantly associated with reports of vaginal intercourse experience (never vs. ever) for either the younger or older group of girls, $\chi^2(2, n = 42) = 1.57, p > .05$ and, $\chi^2(2, n = 65) = 1.81, p > .05$, respectively. Also, the two communication variables were not significantly associated with age at first vaginal intercourse for the older adolescent girls, $R^2 = .16$, $F(2, 30) = 2.85$, $p = .07$. Both the zero-order correlations and partial correlations (controlling for the effect of sex communication scores) revealed a significant positive relationship between general communication scores and age at first vaginal intercourse, $r = .39, p < .02$ and $r_p = .37, p < .05$. Thus, higher ratings of general communication quality were associated with later onset of vaginal intercourse

experience. Girls' sex communication scores were not significantly associated, however, $r = .14$ and $r_p = -.10$, $ps > .05$.

Number of sexual partners and encounters. Communication scores were not significantly associated with the older adolescent girls' reported numbers of sexual partners, $R^2 = .03$, $F(2, 33) = .44$, $p > .05$, even when religiosity was included in the model, $R^2 = .17$, $F(3, 23) = 1.60$, $p > .05$. Both general and sex communication scores revealed little association with the dependent variable, $rs = -.23$ and $-.08$, respectively. The two communication variables were also not significantly associated with lifetime number of sexual encounters, $R^2 = .02$, $F(2, 33) = .35$, $p > .05$. Again, no association was found when religiosity was included in the model, $R^2 = .26$, $F(3, 22) = 2.59$, $p > .05$. Moreover, the zero-order correlations revealed no significant associations with number of sexual encounters for general communication scores ($r = -.09$), nor sex communication scores ($r = .05$).

Because of the low rates of endorsement in some categories representing consistency of condom use, responses were first collapsed to represent use of condoms "always," compared to all other responses (i.e., "not always"). Adolescent girls with high and low scores for reported quality of mother-daughter communication about sexuality did not differ in the proportions reporting the responses related to frequency of condom use, $\chi^2(1, n = 33) = 2.36$, $p > .05$. Responses were then collapsed to represent use of condoms "never," compared to all other responses (i.e., "ever"), but again this analysis failed to distinguish between the two groups, $\chi^2(1, n = 33) = 0.59$, $p > .05$, suggesting little difference among adolescents with high and low sex-communication ratings in their reports of condom use during vaginal intercourse.

Associations Between Adolescent Girls' Reports of Past Sexual Experience and Mothers' General and Sex Communication Scores

We examined the associations between adolescents' reported sexual behavior and mothers' subjective ratings of the quality of their mother-daughter general communication and communication about sex. In no case were mothers' scores significantly associated with girls' reported sexual behavior. Specifically, mothers' general and sex communication scores were not found to be associated with reported sexual experience involving genital contact for the younger, $\chi^2(2, n = 42) = 5.80$, $p > .05$, or older adolescent girls, $\chi^2(2, n = 60) = 1.00$, $p > .05$. Similar results were found using reported

experience of vaginal intercourse as the dependent variable, where associations were not significant for either the younger, $\chi^2(2, n = 42) = 3.41, p > .05$, or older groups, $\chi^2(2, n = 60) = 0.58, p > .05$. Communication scores were not significantly associated with reported lifetime numbers of sexual partners for the older group of adolescents, $R^2 = .05$, $F(2, 33) = .83, p > .05$, or lifetime numbers of sexual encounters, $R^2 = .02$, $F(2, 32) = .36, p > .05$. Associations were also not significant for age at first vaginal intercourse, $R^2 = .002$, $F(2, 29) = .03, p > .05$, or age at first sexual experience involving genital contact, $R^2 = .01$, $F(2, 34) = .16, p > .05$, among the older adolescents.

In summary, these findings provide partial support for our hypothesis that perceived quality of mother-daughter general communication would be more strongly associated with adolescent sexual behavior than would be perceived quality of communication about sex. This relationship seems to hold for daughters' reports of perceived quality of communication but not for mothers' reports. Moreover, this relationship appears to hold for onset, rather than extent, of sexual experience.

Discussion

This article describes an investigation of mother-daughter communication about sexuality and general communication in Hispanic families of clinically referred adolescent girls. The patterns of agreement with the communication items in mothers' and daughters' reports indicated that they viewed their general communication style as being relatively easy and satisfactory, despite our expectation that this clinically referred sample would report strain in their communication. This finding may reflect a volunteer bias in that mothers and daughters who agreed to participate together in this intervention study were better at communicating than were other clinically referred families.

However, when it came to communication about sexuality issues, daughters were more likely than mothers to report embarrassment in discussions and perceived lack of trust. Similar to the findings of Barnes and Olson (1985), mothers reported better quality of mother-daughter communication than did their daughters. This discrepancy may reflect the different roles adopted in the communication process. Mothers try to prevent or limit their daughter's sexual experiences, whereas adolescent daughters try to resist attempts to restrict involvement in intimate relationships (Nolin & Peterson, 1992; O'Sullivan, Meyer-Bahlburg, & Watkins, 1999). Alternately, these mothers may have presented an enhanced version of their relationship with their daughters and/or their parenting skills to the female interviewers in line

with an emphasis on traditional roles for women in many Hispanic cultures (Flaskerud et al., 1996).

Approximately half of the adolescent girls (51%) reported having engaged in sexual activities with a male partner that involved genital contact of some type (i.e., manual, oral, vaginal, or anal intercourse). Somewhat fewer (40%) reported having engaged in vaginal intercourse, specifically. These sexual experiences first occurred around age 14, and most of the sexually active adolescents reported having had two to three sexual partners by the time of the study. The average age at first vaginal intercourse is not notably different from other samples of inner-city girls (Rotheram-Borus & Gwadz, 1993). This finding may indicate that psychiatric disturbance did not place our sample of girls at additional risk beyond that posed from residence in impoverished inner-city neighborhoods. Perhaps our sample was better adjusted, although still at risk, compared to other samples of psychiatrically disturbed adolescents, although their impairment scores appear to indicate that this was not the case. Less than one third of the girls who engaged in vaginal intercourse reported using condoms, consistent with other studies of Hispanic samples (e.g., Marin, Gomez, & Hearst, 1993), revealing further their risk of STD infection and early pregnancy. In fact, 13 of the girls had been pregnant prior to the study, 4 of whom reported more than one pregnancy.

These findings emphasize the need to begin addressing the sex education requirements of inner-city minority girls at relatively young ages. However, we did not find strong associations between communication scores and adolescents' reported sexual behavior. Neither the mothers' sex communication nor general communication scores were related to the girls' reported sexual behaviors. Daughters' communication scores were found to be related to their sexual experiences, although this is true only of the general communication scores obtained for the older girls in this sample. Those who reported lower ratings of perceived quality reported earlier onset of sexual experiences involving genital contact and, more specifically, earlier onset of vaginal intercourse experience.

Adolescents' communication scores were not associated with lifetime number of past sexual partners and sexual encounters, nor consistency of condom use. Thus, general mother-daughter communication as perceived by the adolescents may be useful in understanding girls' onset of sexual activity rather than later sexual experiences. Other sources of information, such as learning about sex from one's peers and partners, may have greater salience once a girl becomes increasingly sexually experienced (Jaccard & Dittus, 1993). Future research should address the range, salience, and impact of information sources available to adolescent girls.

There may have been several methodological reasons why we did not find stronger associations between mothers' and daughters' reports of the quality of their shared communication and adolescents' reported sexual behavior. One reason is that the adolescent girls and mothers were asked to recall lifetime experiences of their mother-daughter communication and, in the case of adolescents, their sexual behavior. Associations between these constructs may be more readily apparent when dealing with current experiences or recalling shorter, more recent time periods.

In addition, the instruments used in the current study may not be appropriately sensitive for capturing the specific aspects of communication that are most directly associated with sexual behavior. For instance, the scale we employed to assess mother-daughter communication about sexuality did not evaluate the nature of parental messages (e.g., prohibitive, cautionary, encouraging) when assessing the topics covered (e.g., "have talked about safer sex"). Pick and Palos (1995) found that frequency of communication about sex, an aspect of communication that we did not assess, was related to onset of sexual relations in their sample of Mexican adolescent girls. Future studies should involve an examination of the effects of quality of communication (i.e., openness, lack of avoidance) on sexual behavior as in the current study, as well as the content of the communication (including the issues covered and the perceived messages), the daughter's motivation to adopt a parents' attitudes regarding sexual involvement, and the frequency and context of the communications.

In conclusion, this article presents an investigation of mother-daughter communication about sexuality in the families of Hispanic, clinically referred adolescent girls. General communication was more closely related to adolescents' reported sexual experiences than was sexual communication. Furthermore, general communication was more useful in understanding the onset of sexual behavior rather than evolving patterns of sexual behavior. These findings are particularly significant in light of the risk for STDs, HIV specifically, and adolescent pregnancy indicated in the girls' reports. Future investigations are needed to assess further the extent to which mothers, and alternate sources of sexual information (social or otherwise), can influence girls' sexual lives.

Appendix A
Loadings of the Principal Axis Factor Analysis: Sex Communication Scale (adolescent version)

Item	Factor 1: Open Communication	Factor 2: Problem Communication
Open Communication Scale		
1. My [mother/mother figure] has talked to me about birth control.	.86	−.27
2. My [mother/mother figure] has talked to me about safe sex.	.79	−.17
3. When I ask questions about sex, I get honest answers from my [mother/mother figure].	.78	−.19
4. My [mother/mother figure] has talked to me about sex.	.71	−.12
5. I find it easy to discuss sex with my [mother/mother figure].	.70	−.38
6. I can discuss sex with my [mother/mother figure] without feeling embarrassed.	.68	−.32
7. My [mother/mother figure] has talked to me about HIV/AIDS.	.64	−.20
8. If I were pregnant, I would tell my [mother/mother figure].	.61	−.32
9. If I had a sexually transmitted disease, I would tell my [mother/mother figure].	.59	−.02
10. My [mother/mother figure] worries a lot about me getting pregnant.	.29	.15
Percentage of variance accounted for by factor = 44.0		
Problem Communication Scale		
11. My [mother/mother figure] does not trust that I can make good decisions about sex.[a]	−.12	.73
12. I am afraid to ask my [mother/mother figure] about sex.[a]	.05	.64
13. Sex is a topic I avoid discussing with my [mother/mother figure].[a]	−.36	.61
14. My [mother/mother figure] is always accusing me of having sex.[a]	−.26	.48
Percentage of variance accounted for by factor = 12.8		

a. Reverse-score item. Items are rated on a scale ranging from 1 (*strongly disagree*), 2 (*moderately disagree*), 3 (*moderately agree*), 4 (*strongly agree*).

Appendix B
Loadings of the Principal Axis Factor Analysis: Sex Communication Scale (mother version)

Item	Factor 1: Mother-Daughter Communication
1. I have talked to my daughter about sex.	.79
2. When my daughter asks questions about sex, I give her honest answers.	.70
3. I can discuss sex with my daughter without feeling embarrassed.	.69
4. My daughter is afraid to ask me about sex.[a]	−.67
5. Sex is a topic my daughter avoids talking about to me.[a]	−.66
6. I have talked to my daughter about safe sex.	.59
7. I have talked to my daughter about HIV/AIDS.	.58
8. I have talked to my daughter about birth control.	.53
9. I find it easy to discuss sex with my daughter.	.53
10. If my daughter had a sexually transmitted disease, she would tell me.	.42
11. I am always accusing my daughter of having sex.[a]	−.32
12. If my daughter were pregnant, she would tell me.	.30
13. I worry a lot about my daughter getting pregnant.[a]	−.25
14. I do not trust that my daughter can make good decisions about sex.[a]	−.08

a. Reverse-score item. Items are rated on a scale ranging from 1 (*strongly disagree*), 2 (*moderately disagree*), 3 (*moderately agree*), 4 (*strongly agree*).

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Parent-Adolescent Sex Communication Scale

indicating low levels of concordance. Zero-order correlations assessing the degree of association between mothers' and daughters' reports of the individual items ranged from .01 to .31 (average $r = .14, p > .05$, i.e., not significant), again revealing little association between their reports.

Mother-Daughter Communication About Sexuality

Scale construction of the adolescent version of the SCS. Examination of the principal components scree plot of eigenvalues for the 14 items of the adolescent version revealed four factors (with eigenvalues above 1.00). Examination of the scree plots revealed a two- or three-factor solution to be appropriate. A second principal components analysis specifying a two-factor solution was more easily interpretable and more closely matched the intended design (i.e., differentiating open and problem communication items) compared to the analysis specifying a three-factor solution. The two factors obtained from the subsequent principal axis analysis (specifying two factors) reflected openness (10 items) and problems with communication (4 items). The items and their factor loadings can be found in Appendix A. The internal consistency score (Cronbach alpha) for the total scale was .89 using item loadings and after reverse scoring for the problem-communication items; the scores for the two subscales were .90 (open communication) and .72 (problem communication). Scores based on unit-weighted items were used in all subsequent analyses.

Scale construction of the mothers' version of the SCS. The analyses of the mothers' version of the sexual communication scale did not produce two clear scales assessing openness and problem communication. The initial unrotated principal components analysis produced five factors that could not be clearly interpreted. Therefore, a one-factor solution was specified in the principal axis analyses (see Appendix B). The internal consistency score using item loadings for the resulting total scale was .78. Internal consistency did not improve significantly by eliminating one item with a particularly low item loading (–.08), so it was retained to keep the mothers' version parallel in form to the adolescent version. Unit weighted items were used in all subsequent analyses.

Scale scores. Scores on both versions of the SCS can range from 14, indicating low subjective quality, to 56, indicating high subjective quality of mother-daughter communication about sexuality. The adolescent girls'

scores ranged from 18 to 56. Their average score was 37.36 ($SD = 8.65$). The mothers' scores for this scale ranged from 25 to 55 ($M = 39.33$; $SD = 6.14$). As with the general communication scores, mothers' scores were significantly higher than were daughters' scores, $t(106) = -2.45, p < .05$. Chi-square analyses of individual items were conducted to examine differences in mothers' and daughters' endorsement of the individual items. These analyses revealed that both mothers and daughters were more likely to endorse than not endorse the items assessing whether they had addressed particular sexual topics (e.g., HIV/AIDS, safe sex, birth control, sex generally). However, daughters were less likely than their mothers to report that their mothers trust them to make good decisions about sex and that they are able to have discussions about sex without embarrassment.

Concordance in adolescent girls' and mothers' reports of communication about sexuality. The correlation between mothers' and daughters' total scores was $r = .32, p < .001$. For the individual items, Kappa statistics were used to examine the ratio of times mothers and daughters agreed in their responses (i.e., both endorsed or did not endorse a particular item) to the number of times that they could agree, corrected for chance. The average Kappa statistic for mothers' and daughters' responses was .22, providing support for our hypothesis that there would be little concordance in their reports of mother-daughter communication about sex. Kappas ranged from .06 to .43. The highest degree of concordance in mothers' and daughters' reports (.43) was found for the item "Mother has talked to daughter about sex." Correlations were conducted to assess the extent to which mothers' ratings for individual items were associated with daughters' ratings. These scores ranged from .03 to .17. The mean correlation across items was .17, revealing little association.

Relationship between scores for general communication and communication about sex. The scores for general communication and communication about sex were highly correlated for adolescent girls ($r = .75, p < .001$). These scores were only moderately correlated for mothers ($r = .47, p < .001$).

Associations Between Adolescent Girls' Reports of Past Sexual Experience and Their General and Sex Communication Scores

No significant associations were found when the communication subscales (i.e., Openness and Problems with Communication) were included in the regression analyses as the independent variables. Thus, only the results

Appendix A
Loadings of the Principal Axis Factor Analysis: Sex Communication Scale (adolescent version)

Item	Factor 1: Open Communication	Factor 2: Problem Communication
Open Communication Scale		
1. My [mother/mother figure] has talked to me about birth control.	.86	−.27
2. My [mother/mother figure] has talked to me about safe sex.	.79	−.17
3. When I ask questions about sex, I get honest answers from my [mother/mother figure].	.78	−.19
4. My [mother/mother figure] has talked to me about sex.	.71	−.12
5. I find it easy to discuss sex with my [mother/mother figure].	.70	−.38
6. I can discuss sex with my [mother/mother figure] without feeling embarrassed.	.68	−.32
7. My [mother/mother figure] has talked to me about HIV/AIDS.	.64	−.20
8. If I were pregnant, I would tell my [mother/mother figure].	.61	−.32
9. If I had a sexually transmitted disease, I would tell my [mother/mother figure].	.59	−.02
10. My [mother/mother figure] worries a lot about me getting pregnant.	.29	.15
Percentage of variance accounted for by factor = 44.0		
Problem Communication Scale		
11. My [mother/mother figure] does not trust that I can make good decisions about sex.[a]	−.12	.73
12. I am afraid to ask my [mother/mother figure] about sex.[a]	.05	.64
13. Sex is a topic I avoid discussing with my [mother/mother figure].[a]	−.36	.61
14. My [mother/mother figure] is always accusing me of having sex.[a]	−.26	.48
Percentage of variance accounted for by factor = 12.8		

a. Reverse-score item. Items are rated on a scale ranging from 1 (*strongly disagree*), 2 (*moderately disagree*), 3 (*moderately agree*), 4 (*strongly agree*).

Appendix B
Loadings of the Principal Axis Factor Analysis: Sex Communication Scale (mother version)

Item	Factor 1: Mother-Daughter Communication
1. I have talked to my daughter about sex.	.79
2. When my daughter asks questions about sex, I give her honest answers.	.70
3. I can discuss sex with my daughter without feeling embarrassed.	.69
4. My daughter is afraid to ask me about sex.[a]	–.67
5. Sex is a topic my daughter avoids talking about to me.[a]	–.66
6. I have talked to my daughter about safe sex.	.59
7. I have talked to my daughter about HIV/AIDS.	.58
8. I have talked to my daughter about birth control.	.53
9. I find it easy to discuss sex with my daughter.	.53
10. If my daughter had a sexually transmitted disease, she would tell me.	.42
11. I am always accusing my daughter of having sex.[a]	–.32
12. If my daughter were pregnant, she would tell me.	.30
13. I worry a lot about my daughter getting pregnant.[a]	–.25
14. I do not trust that my daughter can make good decisions about sex.[a]	–.08

a. Reverse-score item. Items are rated on a scale ranging from 1 (*strongly disagree*), 2 (*moderately disagree*), 3 (*moderately agree*), 4 (*strongly agree*).

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