

**Do Perceptions of Friends' Behaviors Affect Age at First Sex?
Evidence from Cebu, Philippines**

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Abstract

Purpose

To explore: a) the effect of perceptions of friends' romantic and physical behaviors on adolescent sexual activity in Cebu, Philippines; b) the temporal order of perceptions of friends' sexual activity and adolescent sexual activity; and c) the relative influence of friends' sexual behaviors and parental attitudes on age at first sex.

Methods

Using longitudinal data from 1,943 adolescents collected in 1998-2000 and 2002 in Cebu, Philippines, logistic regression and proportional hazards analysis were employed to assess whether adolescents' perceptions of friends' sexual behaviors, as measured at ages 14 to 16, increased the odds of having first intercourse, and the hazard of having first intercourse by ages 17 to 19. Final models adjusted for sociodemographics, mother's disapproval of premarital sex, living with a caretaker, and the adolescents' own behaviors, measured at baseline.

Results

Boys and girls who perceived that their friends had ever had boyfriends/girlfriends, dated, held hands, kissed, petted or had sex at ages 14 to 16 were significantly more likely to be engaging in that behavior by ages 17 to 19. For each additional behavior an adolescent perceives his or her friends to be engaging in, the hazard of having sex at an earlier age increases by 1.15 ($p < 0.017$) among boys and by 1.19 ($p < 0.002$) for girls even after adjusting for mother's disapproval of premarital sex and other factors.

Conclusions

These results lend insight into the role of peers in light of competing influences in adolescents' lives. They provide support for asking adolescents at early ages what romantic and physical behaviors they think their friends are engaging in. With this knowledge, interventions can better prepare adolescents to make responsible and informed decisions about sexuality.

Introduction

Substantial research has established that adolescents are strongly influenced by the sexual attitudes and behaviors of their friends. This relationship is well documented in the US (Kinsman et al. 1998; Kirby 2002; Metzler et al. 1994) and research is finding a similar association in developing countries (Isarabhakdi 1999; Karim et al. 2003; Magnani et al. 2001; Park et al. 2002). In an international review of risk and protective factors of becoming sexually active, 10 out of 10 studies found an association between the adolescents' perception of their peers' sexual behavior and their sexual experience (Mmari and Blum 2006). In Ecuador adolescents who thought their peers were sexually active were 2.5 times more likely to have had sex (Park et al. 2002). A Peruvian school-based study also found that boys having some friends who have had sex were twice as likely to have had sex and girls having some friends who have had sex were 2.5 times more likely (Magnani et al. 2001).

These results must be taken with caution, however. First, it is unclear whether the adolescents are mimicking the actual or imagined sexual behavior of their peers, or whether once they initiate sexual activity, they tend to associate with others whom they perceive to be sexually active (Hartup 2005). Most studies examining the timing and determinants of first sex are cross-sectional and thus are unable to sort out the temporal order (Jaccard, Blanton and Dodge 2005; Murray et al. 1998). Analysis of longitudinal data where information on friends' sexual behavior and other influences are collected before sexual initiation may help sort out the relationship.

Second, innumerable studies have found that adolescents are strongly influenced by their parents' attitudes. Throughout the socialization process, parents transmit their own standards of

conduct through their parenting practices and style (Kotchick et al. 2001; Meschke, Bartholomae and Zentall 2002; Sieving, McNeely and Blum 2000). Adolescents tend to choose friends on the basis of their own values which are shaped by their parents' attitudes and rules (Novak and Pelaez 2004). Thus, parenting behavior is an important direct and indirect source of influence on age at first sex (Huebner and Howell 2003) as well as the types of friends an adolescent keeps.

Study setting

Premarital sex is generally not approved of in the Philippines, and this may be explained, in part, by the strong presence of the Catholic Church. The majority of Filipino women have first sexual intercourse after marriage. Nevertheless, premarital sex is becoming more common especially in urban areas, as are many other intimate behaviors such as dating and kissing (Medina 2001).

Because of moral standards, girls are made to feel guilty about their sexuality, while boys are encouraged to engage in sexual activities (Cruz, Laguna and Raymundo 2001; Medina 2001; Santa Maria 2002). Males initiate in dating and sexual activities sooner than females. Men are allowed more freedom related to sexuality than women are.

A national 2002 survey of adolescents aged 15-24 found that 33% of first sexual experiences were not planned, and more than half (57%) were either not planned or something they did not want to happen at the time. Males tend to have had more than one sexual partner: 49% of sexually active males have had more than one compared with 11% among women. Condoms were used in only one-fifth of first sexual encounters (Raymundo 2003). (Raymundo

2003) These data indicate that many Filipino youth are engaging in sexual activity yet are ill-prepared to protect themselves from pregnancy and STIs (Balk et al. 1997; Raymundo 2003).

The average age at first sex is still relatively high compared with many other developing countries, however (Singh et al. 2000). It appears to be declining dropping slightly from 18 in 1982 and 1994 to 17.5 in 2002 (Raymundo and Cruz 2004). Similarly, the proportion of adolescents having premarital sex is increasing (Commission on Population and United Nations Population Fund 2003; Raymundo 2003).

Friends play a large role in the lives of Filipino youth. The common term “Barkada” is used to describe a close circle of friends that adolescents attend socials and engage in other activities with (Medina 2001). This time in adolescence is associated with trial and error, learning and experimentation. In the Philippines, friends and peers are among adolescents’ primary sources of information about sex (Commission on Population and United Nations Population Fund 2003).

Hypotheses

The present study aims to explore how perceptions of friends’ behaviors influence age at first sex in Cebu, Philippines. The following hypotheses are tested:

- Adolescents who report that their friends are engaging in romantic and physical behaviors in 1998-2000 are more likely to be engaging in those behaviors by 2002 than adolescents whose friends are not engaging in romantic and physical behaviors;

- The more behaviors adolescents perceive their friends to be engaging in, the more likely they are to have had sex at an earlier age, controlling for parental attitudes, their own progression through romantic and physical behaviors, and other possible confounders.

Methods

Data Collection

The Cebu Longitudinal Health and Nutrition Survey (CLHNS) provided the data for the present study. The CLHNS is an ongoing study of a cohort of over 3,000 Filipino women who gave birth between May 1, 1983 and April 30, 1984. Follow-up surveys in 1998-2000 and 2002 included expansive interviews with the now adolescent children of the women. The 1998-2000 round of the CLHNS occurred over the course of 2 years. Because of survey implementation issues, the survey was conducted with all girls the first year and the boys the second year.

All surveys were approved by the University of North Carolina School of Public Health Institutional Review Board for research involving human subjects. The 2002 survey and secondary analysis of the data collected were also approved by The Johns Hopkins Bloomberg School of Public Health Committee on Human Research. For each survey round, the risks and benefits were explained to parents and adolescents and written parental informed consent and adolescent assent were obtained. Parents and adolescents were assured that responses would be kept confidential. All names were stripped from the data and identification numbers were used instead to identify participants.

Primary Outcome Variables

The primary outcomes in the analysis are related to the adolescents' sexual activity as measured in 2002. The first part of the analysis focused on the determinants of adolescents having experienced several romantic and physical behaviors, including whether they had ever had boyfriends or girlfriends, dated, held hands, kissed, petted, or had sex by 2002. The adolescents who reported doing more than kissing were asked open ended questions about what behaviors they had engaged in, resulting in self-defined measures of having petted or having had sex. These behaviors are described more in depth elsewhere (Upadhyay, Hindin and Gultiano 2005). In the second part of the analysis age at first sex as reported in 2002 was the primary outcome of interest.

Primary Independent Variables

The primary independent variables for the analysis were the adolescents' perceptions of their close friends' romantic and physical behaviors as measured in 1998-2000. Close friends could include friends of either sex. The adolescents were asked whether they think their close friends have ever engaged in dating, holding hands, kissing or more than kissing. Those who responded that their close friends have done more than kissing were asked what behaviors they think their friends have engaged in, resulting in data on perceptions of friends petting and having sex. The adolescents responded with yes, no, or don't know for each question. For each behavior less than 12% of the adolescents responded "don't know," and in these cases responses were coded as "no."

Adolescents' perceptions of whether their friends were engaging in each of the romantic and physical behaviors were combined to form a single "Friends' Behaviors Score". The variable was formed by adding up each behavior, resulting in a score from 0 to 5.

Also of interest is adolescent perceptions of their mothers' approval of premarital sex and teenage sex. The 1998-2000 survey asked the adolescents whether their mother or caretaker agrees with the following statements:

- Only married couples should have sex
- Boys your age or aged 14-16, should not have sex yet
- Girls your age or aged 14-16, should not have sex yet

If the adolescents thought their mothers would agree to all three statements, they were coded as having mothers who strongly disapproved of premarital sex. If they thought their mothers would disagree to, or they didn't know how their mothers felt about at least one statement, they were coded as not strongly disapproving of premarital sex. Adolescents who were living with a caretaker were asked to report their perceptions of their caretakers' attitudes towards premarital sex.

The analysis adjusted for the adolescents' own romantic and physical behaviors at baseline (1998-2000) including whether the adolescent had ever had a boyfriend or girlfriend, had dated, held hands, or kissed. While all boys were asked whether they had ever kissed, only girls in romantic relationships were asked if they had ever kissed due to concerns about asking them sensitive questions since they were interviewed at an earlier age than the boys. For the

purposes of the multivariate analysis, it was assumed that any girl not currently in a relationship had never kissed.

Data Analysis

The analysis was done in four parts. First, the characteristics of the sample from the 1998-2000 (baseline) and 2002 surveys are described. Second, perceptions of friends' sexual behaviors are compared with the adolescents' own behaviors at baseline using McNemar's and paired t-tests to allow for the paired design between adolescents' own reports and their reports on their friends (McNemar 1947).

Third, logistic regression is employed to explore whether the perception of friends engaging in a romantic or sexual behavior in 1998-2000 is associated with greater odds of the adolescent engaging in that behavior by 2002. Finally, Cox proportional hazards models are used to prospectively examine how friends' sexual behaviors are associated with age at first sex, taking into account other factors (Cox 1972; Zaba et al. 2002).

All analyses were done separately for boys and girls because the context within which adolescents form sexual partnerships is strongly gender specific and the determinants of the timing of first sex are quite different between them (Murray et al. 1998; Rani, Figueroa and Ainsle 2003; Regan et al. 2004; Singh et al. 2000). All standard errors in the analysis were adjusted for any clustering that would arise due to lack of independence of adolescents from the same barangay (community). All analyses were conducted using STATA version 7 (Stata Corporation 2003).

Study Sample

The descriptive analyses (parts 1 and 2) include 2,117 adolescents from the baseline survey (1998-2000) and 2,050 adolescents from the 2002 survey. Between surveys, 101 adolescents were lost to follow up mainly due to out migration. A comparison of sociodemographic variables and friends' sexual behaviors at baseline found no significant differences between those who migrated out and those who stayed in the sample. In the 2002 survey, 35 adolescents who were not captured in the 1998-2000 survey, were located and added back to the sample. Thus, the 2002 survey includes a total of 2,050 adolescents.

In order to build a truly prospective design, the multivariate analysis (parts 3 and 4) was limited to only those adolescents who did not already have sex by the date of their 1998-2000 survey, using their age at first sex as reported retrospectively in 2002. Thus 69 boys and 4 girls were removed leaving a sample of 1943 adolescents (1,002 boys and 941 girls) for the multivariate analysis.

Results

Major sociodemographic characteristics of the sample in 1998-2000 (at baseline) and in 2002 are presented in Table 1. There were no unexpected significant differences between boys and girls within or across survey rounds.

Table 1. Characteristics of the Adolescent Sample, by Sex

	1998-2000		2002	
	Males	Females	Males	Females
Age (mean)	15.6	14.6	18.2	18.2
Range (SD)	15-16 (0.49)	14-16 (0.50)	17-19 (0.39)	17-19 (0.42)
Urban (%)	74.2	74.8	74.2	74.8
Frequent church attendance (3 or more times/month) (%)	58.9	72.0	39.9	58.3
Highest grade completed (mean)	8.7	8.8	9.7	10.8
Range (SD)	9-12 (2.42)	1-11(1.70)	0-16 (2.86)	1-14 (2.23)
Ever had sex (%)	2.3 ^a	0.2 ^a	30.8	19.5
N	1,110	1,007	1,089	962

^aNote: The 1998-2000 survey asked only those adolescents who were in romantic relationships about sexual experience, due to concerns about asking sexually explicit questions.

Perceptions of Friends' Behaviors

The adolescent's perceptions of their friends' behaviors were significantly different from their own reported behavior. Both boys and girls reported that their friends' were engaging in behaviors at significantly higher rates than they themselves engaged in the behaviors (see table 2).

Table 2. Comparison of Reported Behaviors Among Friends and Adolescents, by Sex, 1998-2000

	Males			Females		
	% who believe their friends... (n=1,110)	% who have reported that they themselves... (n=1,110)	p ¹	% who believe their friends... (n=1,007)	% who have reported that they themselves... (n=1,007)	p ¹
Have boyfriends/girlfriends	69.73	34.05	0.001	62.46	18.27	0.001
Have dated	67.03	35.14	0.001	54.12	22.64	0.001
Have held hands	64.50	37.21	0.001	52.63	27.01	0.001
Have kissed	40.45	24.77	0.001	20.36	— ²	
Have petted	1.62	— ²		0.79	— ²	
Have had sex	6.22	— ²		1.79	— ²	
Total friends' behavior score (mean)	2.50	1.35	0.001	1.92	0.76	0.001
Range (SD)	0-5 (1.77)	0-5 (1.75)		0-5 (1.59)	0-5 (1.24)	

¹Note: McNemar's Tests used to calculate p-values for comparisons of proportions and paired t-tests used to calculate p-values for comparison of means.

²Note: The 1998-2000 survey asked all boys about kissing but only girls if they were in romantic relationships. The survey asked only those boys and girls who were in romantic relationships about petting, or sexual experience, due to concerns about asking sexually explicit questions.

Odds of Engaging in Behaviors by 2002

Bivariate logistic regression showed that perception of friends engaging in a behavior in 1998-2000 was significantly associated with adolescent reports of engaging in that behavior themselves by 2002. Almost all unadjusted odds ratios were significant at the level of $p < 0.001$. Even after adjusting for residence, church attendance, and education, these associations remained strongly significant. The primary exception was petting for both boys and girls (see table 3).

Table 3. Odds of engaging in a behavior by 2002 if friends have engaged in the behavior by 1998-2000

	Males		Females	
	Unadjusted OR	Adjusted OR ^a	Unadjusted OR	Adjusted OR ^a
Having boyfriends/girlfriends	2.81***	2.85***	2.60***	2.59***
Dating	2.98***	2.96***	2.86***	2.86***
Holding hands	2.62***	2.59***	2.95***	3.00***
Kissing	3.10***	3.20***	3.75***	3.62***
Petting	2.16*	2.16†	1.01	0.80
Ever had sex	2.62***	2.49**	4.99**	3.97*
Total friends' behavior score	1.64***	1.63***	2.04***	2.05***
N	1,002	1,002	941	941

*** $P \leq 0.001$; ** $P \leq 0.01$; * $P \leq 0.05$; † $P \leq 0.10$

^a Odds ratios adjusted for urban/rural residence, church attendance, and education

All models adjusted for clustering by barangay

Mothers' Influence

The great majority—88% of boys and 96% of girls said they thought their mother (or caretaker) would agree to all three statements that assessed strong disapproval of premarital or teen sex. About 12% of boys and 4% of girls said they thought their mother would disagree to at least one statement, or they did not know how their mothers felt about at least one statement. This difference was significantly different between boys and girls ($p < 0.0001$) and in the expected direction in a setting that has more conservative views about sexual behavior for women.

Almost 10% of boys and 6% of girls were living with a non-parental caretaker in 1998-2000. Most caretakers were aunts, grandmothers, sisters or non-relatives. A few of the adolescents reported living with an employer. Adolescents living with caretakers were no more or less likely to be disapproving of premarital sex than those living with their parents.

The effect of maternal disapproval was strongly associated with age at first sex. The independent effect of maternal disapproval was associated with a lower risk of having sex at an earlier age among boys ($HR=0.71$, $p<0.05$), and among girls ($HR=0.51$, $p<0.0001$).

Multivariate Hazards Models: Friends Influence on Age at First Sex

After confirming that the proportionality assumption was met using Kaplan Meier plots (not shown), hazards models were run to assess the factors associated with the hazard of having sex by a given age. The analysis examined the influence of the composite Friends' Behaviors Score based on perceptions of friends' behaviors in 1998-2000. Table 4, Model 1 shows the association between the perception of friends' behaviors score and age at first sex by 2002. Model 2 shows the same association after controlling for perceptions of mothers' disapproval of premarital sex as measured in 1998-2000. Finally, Model 3 shows the same associations but additionally controlling for other sociodemographic variables and the adolescent's own romantic and sexual behaviors as measured in 1998-2000.

Among boys, the friends' behavior score was significantly associated with age at first sex ($HR=1.30$, $p<0.0001$) in the bivariate (model 1). For each additional behavior a boy perceived his friends to be engaging in, his hazard of having sex at an earlier age increased by 1.30. When

mothers' disapproval was added to the model with the friends' behavior score (model 2), the friends' behavior score remained strong but the significance of mothers' disapproval was attenuated (HR=0.76, $p<0.09$). In the final model (model 3), adjustment for residence, church attendance, education, currently residing with a caretaker, and the boys' own romantic and physical behaviors further attenuated the influence of friends' behaviors but it remained statistically significant (HR=1.15, $p<0.02$). Rural residence (HR=0.66, $p<0.0001$) and more years of schooling (HR=0.91, $p<0.0001$) also reduced the hazard of having sex at an earlier age. Among the boys' own behavior variables, having ever kissed and having ever held hands were associated with earlier age at first sex.

Among the girls, for each additional behavior a girl perceived her friends to be engaging in, her hazard of having sex at an earlier age increased by 1.38 ($p<0.0001$) (model 1). When mothers' disapproval was added to the model with the friends' behavior score, both covariates remained strongly significant and relatively unchanged (model 2). In the final model (model 3), the magnitude and significance of the friends' behaviors score were attenuated somewhat (HR=1.19, $p<0.002$), after adjusting for sociodemographic variables, including, residence, church attendance, and education, currently residing with a caretaker, and the adolescents' behaviors in 1998-2000. Like the boys, education was protective (HR=0.91, $p<0.0001$), but rural residence was not. Living with a caretaker was significantly associated with the hazard of having sex at a younger age (HR=1.91, $p<0.018$). Among the girls' romantic and sexual behaviors, having had a boyfriend (HR= 2.20, $p<0.002$) and holding hands (HR=1.60, $p<0.002$) were strongly associated with age at first sex.

Table 4. Multivariate hazard models predicting risk of having sex by friends' sexual experience, socio-demographics, and mothers' influence

Boys n=1002									
	Model 1			Model 2			Model 3		
	Hazards Ratio	95% CI		Hazards Ratio	95% CI		Hazards Ratio	95% CI	
Friends Behavior score	1.30***	1.18	1.45	1.30***	1.18	1.45	1.15*	1.02	1.28
Strong maternal disapproval				0.76†	0.55	1.04	0.85	0.64	1.13
Residing with a Caretaker							1.12	0.76	1.64
Adolescent has had a girlfriend							1.19	0.54	2.62
Adolescent has been on a date							1.35	0.85	2.14
Adolescent has held hands							1.58†	1.00	2.52
Adolescent has kissed							1.49*	1.00	2.19
Rural Residence							0.66***	0.54	0.80
Frequent church attendance							0.95	0.74	1.22
Highest Grade							0.91***	0.87	0.94

Girls n=941									
	Model 1			Model 2			Model 3		
	Hazards Ratio	95% CI		Hazards Ratio	95% CI		Hazards Ratio	95% CI	
Friends Behavior score	1.38***	1.22	1.57	1.38***	1.23	1.56	1.19**	1.07	1.33
Strong maternal disapproval				0.48***	0.32	0.74	0.55**	0.37	0.82
Residing with a Caretaker							1.91*	1.12	3.27
Adolescent has had a boyfriend							2.20**	1.34	3.63
Adolescent has been on a date							0.86	0.57	1.30
Adolescent has held hands							1.60**	1.13	2.24
Adolescent has kissed							1.34	0.92	1.95
Rural Residence							1.02	0.78	1.32
Frequent church attendance							0.87	0.60	1.28
Highest Grade							0.88***	0.83	0.92

***P ≤0.001; **P ≤0.01; *P ≤0.05; † P ≤0.10

Note: All models adjusted for clustering by barangay

Discussion

This study finds that perceptions of friends' behaviors strongly affect adolescent sexual behavior. The longitudinal nature of the CLHNS data provides a unique opportunity to clarify this relationship by establishing the temporal order and by controlling for several potential confounders, measured well before first sex. The results of the analysis show that the influence of perceived peer behaviors has an impact on adolescent sexual initiation above and beyond adolescents' trajectory of sexual behaviors measured in 1998-2000. The influence is also strong even after adjusting for maternal influence.

Both boys and girls who perceive that their friends are engaging in certain romantic and physical behaviors in 1998-2000 are more likely to be engaging in that behavior by 2002 than those who did not perceive their friends to be engaging in the behavior, even after adjusting for sociodemographic variables. Also, the more behaviors that adolescents perceive their friends to be engaging in in 1998-2000, the greater the adolescents' risk of having sex at an earlier age. This effect persists among both girls and boys even after controlling for mothers' disapproval of sex, living with a caretaker, residence, church attendance, education and the adolescent's own behaviors at baseline.

The current analysis finds that adolescents in the Philippines report their friends are engaging in romantic and physical behaviors at very high rates, higher than they report they themselves are. Adolescent reports of peer behaviors may not reliably measure peer actual behaviors, as they are a measure of what adolescents think their peers are doing (Kinsman et al.

1998). Another explanation for this discrepancy is that adolescents are underreporting their own behaviors but feel more comfortable reporting their friends' behaviors.

Living with a caretaker was found to increase the risk of having sex at an earlier age among girls, but not among boys. This finding is not surprising based on the results that girls are strongly influenced by their mother's opinions on sex. Consistent with other studies, mothers influence the timing of first sex of their daughters more than their sons (McNeely et al. 2002; Mmari and Blum 2006). When girls are not living with their mother, they may lose the protective effect that mothers provide,. Young people in the Philippines commonly work as domestic workers and live with their employers. In 1995 there were almost 300,000 domestic workers ages 15 to 19 nationwide. A 2001 International Labor Organization survey counted 120,000 children living away from home employed in private households, most of them were girls (Flores-Oebanda, Pacis and Alcantara 2004; Murray 2004).

Limitations and Strengths of the Study

One of the primary concerns in the current research is that all data come from adolescent self-reports, and may be subject to recall bias or social desirability bias. Due to the strong conservative culture in the Philippines, the self-reported data may under-represent true behavior (Gregson et al. 2002; Singh et al. 2000). When compared with the results from nationally representative data on adolescents in the Philippines, the results from the current study appear valid. Demographic and Health Surveys data from 2003 show that 28% of boys and 21% of girls have had sex by age 19 (National Statistics Office (Philippines) and ORC Macro 2004). The

current data falls well within these ranges with 31% of boys and 20% of girls ages 17-19 having had sex.

Another limitation of the current study is that, mothers' disapproval alone does not represent parental approval. A measure which captures the adolescents' perceptions of both mothers' and fathers' attitudes towards premarital sex would have been more valid for the study. Also, as a categorical variable, the variable assessing mothers' disapproval had little variability and is highly skewed. Only 12% of boys and 4% of girls reported some uncertainty about their mothers' approval of premarital sex. These limitations may under-represent the influence of parental attitudes.

This study has several important strengths. Many other studies of adolescent sexual behavior are done in schools, which exclude those who are out-of-school, stay at home or go to work, and may be more likely to engage in high-risk behaviors. This study is representative of all adolescents in Cebu since there were no selection criteria when their pregnant mothers were first enrolled in 1983-84. Other than losses to follow up, these cohort data should be generalizable to other major urban areas in the Philippines.

Conclusion

The finding that perceptions of friends' behaviors have a strong influence on adolescents' behavior provides support for asking adolescents at early ages about what romantic and physical behaviors they think their friends are engaging in. This information can help better tailor prevention messages. Programs can intervene with such adolescents early and ensure that they are able to make responsible and informed decisions about their sexuality.

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