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Factors Associated With Early Sexual Experience Among American Indian and Alaska Native Youth

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A B S T R A C T

Purpose: American Indian and Alaska Native (AI/AN) youth experience disparities associated with sexual and reproductive health, including early age of sexual initiation. Identifying factors that are most proximally related to early sexual intercourse and that are modifiable through health promotion interventions may help to reduce these disparities. Using a multisystem approach, we assessed individual (biological, psychological, and behavioral), familial, and extrafamilial (peer behavioral) factors associated with lifetime sexual experience among AI/AN early adolescents living in three geographically dispersed U.S. regions.

Methods: We analyzed cross-sectional data from 537 AI/AN youth aged 12–14 years, recruited from 27 study sites in Alaska, Arizona, and the Pacific Northwest. We used multilevel logistic regression models to estimate associations between independent variables and lifetime sexual intercourse (oral and/or vaginal sex) individually, within discrete systems, and across systems.

Results: The analytical sample was 55.1% female, with a mean age of 13.2 years (standard deviation = 1.06 years); 6.5% were sexually experienced. In the final model, we found that lower next-year intentions to have oral or vaginal sex (psychological factors), avoidance of risky situations, and nonuse of alcohol (behavioral factors) were associated with lower odds of lifetime sexual intercourse (all $p \leq .01$). No other variables were significantly associated with lifetime sexual intercourse.

Conclusions: Interventions that reduce sexual intentions, exposure to risky situations, and alcohol use may help to delay sexual initiation among AI/AN early adolescents.

IMPLICATIONS AND CONTRIBUTION

Using a multisystem approach, this study identified factors associated with early sexual experience among American Indian and Alaska Native adolescents living in three diverse geographic regions. These findings may assist in the development of age-appropriate and culturally appropriate sexual health promotion interventions for American Indian and Alaska Native youth.

American Indian and Alaska Native (AI/AN) youth experience inequalities associated with sexual and reproductive health. In 2012, AI/AN females aged 15–19 years had the third highest teen birth rate in the United States (35 per 1,000 vs. 29 per 1,000 nationally) [1]; and in 2010, they had the highest prevalence of repeat teen births (21.6% vs. 20.9%, 20.4%, and 14.8% among Hispanic, black, and white females, respectively) [2]. In 2011,

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AI/AN females aged 15–24 years reported the highest age-specific rates of chlamydial infections among all women in the United States [3]. These health disparities underscore the need for effective sexual health promotion interventions for AI/AN youth.

National data indicate that AI/AN youth initiate sexual intercourse at a significantly earlier age than white youth [4,5]. Early sexual debut has been associated with increased risk of pregnancy and sexually transmitted infections (STI) [6,7]. Across racial/ethnic groups, youth who initiate sex at age 14 years or younger are more likely than youth who initiate sex at an older age to have multiple lifetime sexual partners, engage in greater frequency of sex, use alcohol or drugs before sex, and have sex without a condom [7,8]. Identifying factors that are most proximally related to early sexual experience and are modifiable through health promotion interventions may help to reduce the health disparities experienced by AI/AN youth.

Early sexual experience is influenced by multiple factors within the individual, familial, and extrafamilial systems [9–13]. In the individual system, biological factors such as age and gender are known to impact sexual initiation. Nationally, across racial/ethnic groups, age is the single factor most strongly associated with sexual experience [14]. Among AI/AN youth, specifically, female gender may be protective of early sexual experience [9,11,13]. Psychological factors such as higher reported academic performance [9], valuing school achievement [9], self-efficacy to abstain from sex [9], and sexual health knowledge [15] have been associated with delayed sexual initiation among AI/AN youth. Positive Native identity and a sense of belonging to a Native community may also be protective [11]. Conversely, individual behaviors such as early initiation of substance use [10,13]; exposure to risky situations, for example, parties where drugs or alcohol are available [11]; and experience of violence victimization and perpetration, including dating violence [10], have been identified as risk factors for early sexual initiation among AI/AN youth.

In the familial system, greater perceptions of parental monitoring [9] and parent–child communication about sexual health topics [10] are protective, whereas household structure (e.g., number of adults in the household) [10,13], financial hardship, and lower parental education levels [13] may be risk factors for early sexual initiation among AI/AN youth. In the extrafamilial system, having peers with less prosocial attitudes [13] and perceiving that one's friends engage in less risky behaviors [9] have been identified as risk and protective factors, respectively, for sexual initiation among AI/AN youth. Other extrafamilial factors, such as school connectedness [10,13] and access to substance abuse treatment [10], are associated with reduced sexual initiation among AI/AN youth; however, these factors are less amenable to change via sexual health promotion interventions.

Although existing studies provide insight into potential risk and protective factors for sexual initiation among AI/AN youth, several questions remain. First, because most existing studies involved older AI/AN youth (aged 14 years and older) [10–13,15], it is unclear whether these factors also apply to early-adolescent AI/AN youth. Second, because existing studies include youth living in discrete tribal communities or regions in the Northern Plains [11,13,15], Minnesota [10], the Midwest [9], and the Northwestern United States [12], it is unclear whether these factors apply to youth raised in other or multiple AI/AN traditions. Third, existing studies reflect data that were collected one to two decades ago [9–13,15]; thus, it is unclear to what extent these findings apply to the current generation of AI/AN youth.

Accordingly, we analyzed cross-sectional data from early-adolescent AI/AN youth (aged 12–14 years) living in three geographically dispersed regions of the United States to assess individual, familial, and extrafamilial factors. Because sexual initiation is influenced by the combined effects of multiple factors, we used a multisystem approach, adapted from Bronfenbrenner's ecological model [16,17], to systematically examine potential protective factors from the three ecological systems (individual, family, and extrafamilial) to better understand their independent association with early sexual experience and their relative strength within and across systems. Our findings may help to inform the development of more salient sexual health promotion interventions for early-adolescent AI/AN youth.

Methods

Participants

Participants were youth aged 12–14 years from 27 study sites who participated in baseline surveys for two pilot intervention trials to assess the feasibility and effectiveness of Native It's Your Game, a Web-based HIV, STI, and pregnancy prevention program for AI/AN youth across three geographically dispersed regions in the United States [18]. The sites were located in 10 urban and 17 rural/tribal settings, including schools, tribal community centers, after-school and summer youth programs. The studies were approved by the Alaska Area Institutional Review Board (IRB), the Portland Area Indian Health Services IRB, the University of Texas Health Science Center IRB, and 22 tribal organizations (i.e., tribal councils, tribal health boards, tribal health organizations, villages, and community agencies) in Alaska, Arizona, and the Pacific Northwest.

In each region, recruitment and baseline data collection were coordinated by an organization that serves the regional AI/AN population (Figure 1). Collectively, the three organizations serve 295 tribes. Because community confidentiality is as important as individual confidentiality when working with AI/AN communities [13], specific tribal names have been withheld. Given the pilot status of the studies, we used a convenience nonrandom sampling technique to recruit AI/AN communities that were interested in participating in an early-adolescent sexual health trial. This sampling procedure was developed with input from the tribes and what would work best for their particular tribe. Regional staff recruited study sites for the pilot studies by sending flyers to local and regional schools, tribal community centers, after-school and summer camp programs, and advertising on organizational Web sites, social media outlets, and/or newsletters. Alaska staff also distributed interest letters and recruitment packets using school mailing lists, at local community events, and via other existing tribal programs.

At each study site, trained community site coordinators (e.g., school nurses, counselors, wellness or parent involvement coordinators, and after-school program providers) described the purpose, general design, and enrollment criteria to eligible youth during classroom time (schools), regular tribal community center programming, after-school and summer program sessions and sent information home to parents. Follow-up packets were provided for nonrespondents. Following IRB and tribal guidelines, Alaska and Arizona staff also held parent meetings to recruit youth through direct parent contact.

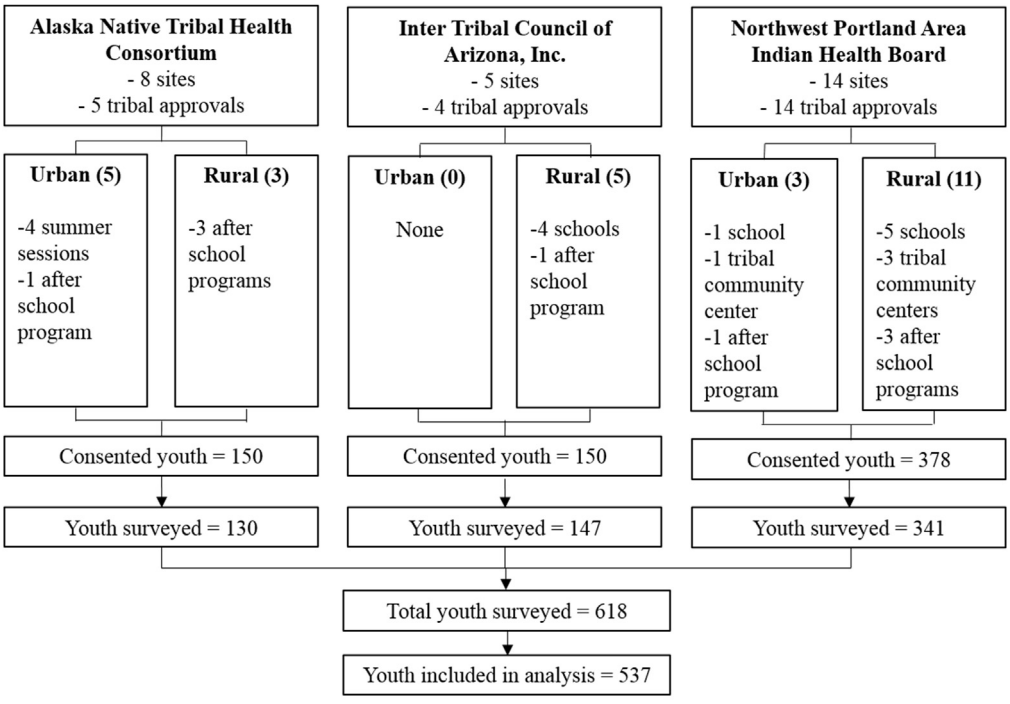

Figure 1. Flow diagram showing participant recruitment and final analytical sample.

Survey development

We developed the survey using measures previously validated with urban middle school–aged youth or AI/AN youth (Table 1). We conducted cognitive testing of selected items with 15 AI/AN middle school–aged youth in two of the three regions. After minor modifications, the survey was programmed into Qualtrics [26], an Internet-based survey program, and pilot-tested for usability and comprehension with 25 AI/AN middle school–aged youth in all three regions. Minor modifications were made before baseline survey implementation. Pilot survey data were excluded from final analyses.

Data collection

We obtained written parent consent and youth assent before baseline data collection. We administered surveys during regular school or after-school program hours using Qualtrics [26]. At each study site, trained site coordinators logged participants into the survey on computers with Internet access located in a quiet location, for example, an empty classroom, computer laboratory, or library. An automated skip pattern in the software program limited sexually inexperienced participants' exposure to sexually explicit items. The survey took about 30 minutes to complete. To maintain confidentiality, we downloaded survey data to a secure database for tracking and analysis purposes. Youth received a unique study ID number when they entered the study. No names were associated with the surveys. Youth received $5 for completing the survey.

Dependent variable

We examined the dependent variable, lifetime sexual experience, as a composite variable comprising lifetime experience of oral sex and/or vaginal sex. Youth often initiate oral sex and vaginal sex at a similar age [27]; however, each sexual behavior contributes unique risk for STI and pregnancy. We defined oral sex as, "When someone puts his or her mouth on their partner's penis or vagina, or lets their partner put his or her mouth on his penis or her vagina" and vaginal sex as, "When a boy puts his penis inside a girl's vagina."

Independent variables

We categorized independent variables using a multisystem classification scheme previously adapted from Bronfenbrenner's ecological model [16] and applied to adolescent sexual behavior by Kotchick et al. [17]. We examined potential protective factors in the individual (biological, psychological, and behavioral), familial (family structure and family process), and extrafamilial (peer behavioral) systems. In the individual system, biological factors included gender and age. Psychological factors included academic performance, educational intentions, cultural identification, HIV/STI knowledge, sexual beliefs, and sexual refusal self-efficacy. We included next-year intentions to engage in oral or vaginal sex and intentions to remain abstinent until the end of high school because of the strong correlation between sexual intentions and sexual behavior in other racial/ethnic groups [28]. Behavioral factors included avoidance of risky situations that may lead to sex, lifetime alcohol and drug use, and past-year experience of dating violence victimization and perpetration. In the familial system, factors included household structure, financial hardship, parental education level, parental monitoring, and parent–child communication about sexual topics. In the extrafamilial system, one factor assessed youth's perception of friends' sexual beliefs (Table 1). We coded measures so that a higher score denoted greater protective value.

Table 1
Description of independent variable measures by system[a]

Variable	Sample item	Number of items	Response options[b]	Cronbach's alpha[c]
Individual system				
Biological				
Gender	What is your gender?	1	Male, female	NA
Age	What is your date of birth?	1	Month, day, year	NA
Psychological				
Academic performance	In general, how well do you do in school?	1	Fs to As	NA
Educational intentions	How much education do you intend to get?	1	Don't plan to finish high school to graduate with an advanced degree (doctor, lawyer, dentist)	NA
Cultural identification[d]	Being American Indian or Alaska Native is a major part of my identity	5	10-point scale (strongly disagree to strongly agree)	.80
HIV/STI knowledge	Some STIs put you at higher risk of getting infected with HIV	5	True, false, not sure	.68
Beliefs about sex	I believe it's OK for people my age to have sex with a steady boyfriend or girlfriend	4	Four-point scale (strongly agree to strongly disagree)	.79
Sexual refusal self-efficacy	Could you stop this person you like if they wanted to have oral sex with you, if you did not want to?	7	Four-point scale (I definitely could not to I definitely could)	.92
Intention to have oral sex in the next year	How likely is it that you will have oral sex in the next year?	1	Five-point scale (definitely likely to not at all likely)	NA
Intention to have vaginal sex in the next year	How likely is it that you will have vaginal sex in the next year?	1	Five-point scale (definitely likely to not at all likely)	NA
Intention to remain abstinent until the end of high school	How likely is it that you will remain sexually abstinent (i.e., not have sex) from now until the end of high school?	1	Five-point scale (not at all likely to definitely likely)	NA
Behavioral				
Avoidance of risky situations that could lead to sex	In the past 3 months, how often have you been alone with someone you are very attracted to?	7	Six or more times to never	.84
Alcohol use [19]	Have you ever had more than a few sips of beer, wine, sweetened alcohol drinks, or liquor?	1	Yes, no	NA
Drug use	Have you ever used the following drugs not prescribed for you by a doctor, even once?	23	Yes, no	NA
Dating violence victimization [20]	How often has a boyfriend or girlfriend hit, kicked, or pushed you in a mean way in the past year?	6	Three-point scale (often to never)	NA
Dating violence perpetration [20]	How often have you hit, kicked, or pushed a boyfriend or girlfriend you in a mean way in the past year?	6	Three-point scale (often to never)	NA
Familial system				
Household structure	Think about the household you live in most of the time. Who lives with you in this household?	2	14 options (e.g., biological mother/father; grandparent; aunt or uncle; other relative; nonrelative)	NA
Financial hardship or difficulty [21]	In the past 12 months, how often did your household not have enough money for food/heat/electricity?	3	Four-point scale (often to never)	NA
Parental education	Please mark the highest level completed in school by your mother/father.	2	Five-point scale (did not finish high school to graduated from college)	NA
Parental monitoring [22]	How much does this person know about who your friends really are?	5	Four-point scale (they don't know to they know a lot)	.89
Parental communication about sexual topics [23]	How many times has your parent ever talked to you about how to about preventing pregnancy or birth?	8	Four-point scale (never to most of the time)	.88
Extrafamilial system				
Perceived friends' beliefs about sex	Most of my friends believe people should wait until they are older before they have sex	3	Four-point scale (strongly disagree to strongly agree)	.80

NA = not applicable; STI = sexually transmitted infection.
[a] Unless otherwise noted, measures come from the It's Your Game…Keep It Real survey [24,25].
[b] All items were coded so that a higher score indicated greater protection.
[c] Reliability indices were calculated using the analytical sample.
[d] Stephanie Craig-Rushing, Personal communication, October 13, 2014.

Statistical analysis

We structured analysis to systematically examine each independent variable and its association with lifetime sexual experience, first on its own, then within a system, and finally across systems in a comprehensive model. We used multilevel logistic regression models to examine associations between the independent variables and the dependent variable. A multilevel modeling framework was necessary because participants were sampled from within multiple sites. This clustering yielded varying degrees of intraclass correlation because participants within a single site were more similar with respect to the study

outcomes than those from different sites. We adjusted the standard errors of the regression coefficients from the models and resulting statistical tests for the site level error. The referent category for lifetime sexual experience was no engagement in oral and/or vaginal sex. We first explored the binary relationship between each independent variable and sexual experience separately, unadjusted for other factors. We then created discrete system-level models by entering all variables within a system that were significantly related to sexual initiation at $p \leq .20$ in binary analyses [29]. This allowed us to investigate which independent variables had the strongest association with sexual experience within each system. We created a comprehensive multisystem multivariate model by retaining those independent variables that remained significant at $p \leq .20$ in the discrete system–level models. The final multivariate model comprised only those variables that were significantly related to sexual experience at $p \leq .05$. This approach allowed us to systematically examine many potential protective factors and their relationship to sexual experience and to assess their relative strength independently, within, and across systems. We conducted all analyses using Stata version 13 (StataCorp, College Station, TX).

Results

Participant characteristics

Of eligible youth, 92% with written parental consent completed baseline surveys (n = 618) between December 2012 and October 2014. Reasons for nonparticipation included being absent on survey dates or declining to participate. The final analytic sample comprised 537 self-identified AI/AN youth (86.9% of the total sample; Figure 1). Excluded were those who self-identified as solely other race/ethnicity including white (4.2%); "other" (4.1%); black (1.6%); multiracial (non-AI/AN; 1.6%); and Hispanic, Asian, or Pacific Islander (1.1%). The analytical sample was 55.1% female, with a mean age of 13.2 years (standard deviation = 1.06 years); 6.5% reported ever having had oral sex and/or vaginal sex (Table 2).

Bivariate analysis

In the binary models, unadjusted for other factors, we found that sexual beliefs, sexual refusal self-efficacy, and sexual intentions (psychological factors); avoidance of risky situations and nonuse of alcohol or drugs (behavioral factors); lack of financial hardship, higher levels of parental education and parental monitoring (familial factors); and friends' perceived beliefs about sex (extrafamilial factors) were associated with lower odds of sexual experience ($p \leq .20$). Age (biological factor), HIV/STI knowledge (psychological factor), and any experience of dating violence victimization/perpetration in the past year (behavioral factors) were associated with higher odds of sexual experience ($p \leq .20$). No other variables were significantly associated with sexual experience (Table 3).

System-level multivariate analysis

In the discrete system–level models, we found that lower next-year intentions to have oral or vaginal sex (psychological factors); avoidance of risky situations and nonuse of alcohol (behavioral factors); parental monitoring (familial factor); and friends' perceived beliefs about sex (extra-familial factor) retained a significant association with lower odds of sexual experience ($p \leq .20$).

Table 2
Characteristics of American Indian/Alaska Native youth by system (N = 537)

Variable	n[a]	Valid % or mean (standard deviation)	Scale range[b]
Lifetime sexual experience			
Never had oral or vaginal sex	488	93.5	—
Ever had oral and/or vaginal sex	34	6.5	—
Individual system			
Biological			
Gender			
Male	240	44.9	—
Female	295	55.1	—
Age	530	13.2 (1.06)	—
Psychological			
Academic performance			
Usually As and Bs	361	67.9	—
Usually Cs, Ds, or Fs	171	32.1	—
Educational intentions			
High school or less	167	31.5	—
Greater than high school	364	68.5	—
Cultural identification	516	7.8 (1.90)	1–10
HIV/STI knowledge	481	.4 (.34)	0–1
Conservative beliefs about sex	526	3.3 (.66)	1–4
Sexual refusal self-efficacy	521	3.3 (.75)	1–4
Intention to have oral sex in the next year[c]	522	3.6 (.68)	1–4
Intention to have vaginal sex in the next year[c]	517	3.6 (.72)	1–4
Intention to remain abstinent until the end of high school	519	2.6 (1.11)	1–4
Behavioral			
Avoidance of risky situations that could lead to sex	507	3.6 (.59)	1–4
Alcohol use			
Never used alcohol	367	72.8	—
Ever used alcohol	137	27.2	—
Drug use			
Never used drugs	345	70.1	—
Ever used drugs	147	29.9	—
Dating violence victimization			
No boyfriend/girlfriend in past year	223	44.2	—
Was not a dating violence victim[d]	181	35.8	—
Was a dating violence victim[d]	101	20.0	—
Dating violence perpetration			
No boyfriend/girlfriend in past year	223	45.1	—
Was not a dating violence perpetrator[d]	198	40.1	—
Was a dating violence perpetrator[d]	73	14.8	—
Familial system			
Household structure			
One adult	198	37.5	—
Two or more adults	330	62.5	—
Financial hardship or difficulty in the past year			
No financial hardship	310	58.4	—
Experienced financial hardship	221	41.6	—
Parental education			
High school or less	172	32.5	—
Greater than high school	228	43.0	—
Don't know	130	24.5	—
Parental monitoring	506	2.7 (.98)	1–4
Parental communication about sexual topics	508	2.2 (.75)	1–8
Extrafamilial system			
Perceived friends' beliefs about sex	522	2.2 (.75)	1–4

SD = standard deviation; STI = sexually transmitted infection.
[a] Numbers vary due to missing data.
[b] All items were coded so that a higher score indicated greater protection.
[c] A higher score denotes lesser intentions to have sex in the next year.
[d] Among students who reported having a boyfriend or girlfriend in the past year.

Age (biological factor), HIV/STI knowledge (psychological factor) and any past-year experience of dating violence victimization (behavioral factor) were associated with higher odds of sexual experience ($p \leq .20$). No other variables were significantly associated with sexual experience (Table 3).

Table 3
Bivariate associations and discrete system–level associations between independent variables and lifetime sexual experience among early-adolescent American Indian/Alaska Native youth

Variable (referent)	n	Bivariate odds ratios (95% confidence interval)	*p* value	n	Discrete system–level odds ratios (95% confidence interval)	*p* value
Individual system						
Biological						
Gender (male)				515		
Female	521	1.09 (.54–2.21)	.81			
Age	515	1.79 (1.24–2.58)	<.001		1.79 (1.24–2.58)	<.001
Psychological				460		
Academic performance (usually Cs, Ds, or Fs)						
Usually As and Bs	521	1.12 (.28–1.14)	.11		.99 (.33–2.97)	.99
Educational intentions (≤high school)						
Greater than high school	518	.89 (−.88 to .64)	.76			
Cultural identification	507	.90 (.76–1.08)	.27			
HIV/STI knowledge	473	4.99 (1.62–15.35)	.01		3.24 (.70–14.96)	.13
Conservative beliefs about sex	516	.17 (.09–.30)	<.001		.73 (.28–1.91)	.52
Sexual refusal self-efficacy	512	.53 (.36–.78)	.01		.97 (.51–1.84)	.92
Intention to have oral sex in the next year[a]	512	.16 (.09–.26)	<.001		.33 (.15–.68)	.003
Intention to have vaginal sex in the next year[a]	507	.15 (.09–.26)	<.001		.26 (.12–.56)	.001
Intention to remain abstinent until the end of high school	509	.70 (.50–.96)	.03		1.07 (.59–1.96)	.82
Behavioral				446		
Avoidance of risky situations that could lead to sex	501	.10 (.06–.19)	<.001		.13 (.07–.27)	<.001
Alcohol use (ever used alcohol)						
Never used alcohol	497	.05 (.02–.13)	<.001		.23 (.06–.85)	.03
Drug use						
Never used drugs	485	.10 (.04–.24)	<.001		.85 (.25–2.94)	.80
Dating violence victimization (no boyfriend/girlfriend in past year)	498					
Did not experience dating violence[b]		3.54 (1.11–11.30)	.03		.75 (.12–4.72)	.76
Experienced dating violence[b]		12.0 (3.94–36.53)	<.001		3.72 (.91–15.17)	.07
Dating violence perpetration (no boyfriend/girlfriend in past year)	488					
Did not perpetrate dating violence[b]		4.15 (1.34–12.84)	.01		1.12 (.31–3.97)	.87
Perpetrated dating violence[b]		11.90 (3.74–37.84)	<.001		Unable to estimate	—
Familial system				497		
Household structure (one adult)						
Two or more adults	515	.72 (.35–1.49)	.38			
Financial hardship or difficulty in the past year (experienced financial hardship)						
No financial hardship	520	.57 (.26–1.23)	.15		.61 (.28–1.33)	.22
Parental education (high school or less)	520					
Greater than high school		.76 (.33–1.73)	.14			
Do not know		.80 (.32–2.02)	.44			
Parental monitoring	499	.74 (.51–1.06)	.01		.77 (.54–1.11)	.16
Parental communication about sexual topics	499	1.26 (.80–1.98)	.32			
Extrafamilial system				512		
Friends' perceived beliefs about sex	512	.23 (.13–.41)	<.001		.23 (.13–.41)	<.001

STI = sexually transmitted infection.
[a] A higher score denotes lower intention to have sex in the next year.
[b] Among students who reported having a boyfriend or girlfriend in the past year.

Multisystem multivariate analysis

In the initial multisystem multivariate model, which retained variables that were statistically significant at $p \leq .20$ in discrete system–level models, and in the final multivariate model, which retained variables that were statistically significant at $p \leq .05$, we found that lower next-year intentions to have oral sex or vaginal sex (psychological factors) and avoidance of risky situations and nonuse of alcohol (behavioral factors) were associated with lower odds of sexual experience ($p \leq .05$). No other variables were significantly associated with sexual experience (Table 4).

Discussion

We examined factors associated with lifetime sexual experience among early-adolescent AI/AN youth using a multisystem approach. Overall, our findings corroborate those of existing studies with older AI/AN youth regarding associations between exposure to risky situations, early substance use, and sexual experience [10,11,13]. However, our findings regarding the potential protective influence of reduced sexual intentions provide additional insight into factors that may be salient for the current generation of early-adolescent AI/AN youth.

Although some factors from the family and extrafamilial systems were significant in the binary and discrete system–level models, only individual system factors (psychological and behavioral) were statistically significant in the final model. Specifically, youth who reported lower next-year intentions to have oral or vaginal sex, avoidance of risky situations, and nonuse of alcohol had lower odds of sexual experience than their peers. Sexual intentions and avoidance of risky situations (e.g., time home alone) have been identified as stable predictors of sexual behavior among other racial/ethnic groups [28] and may be modifiable via the implementation of early-adolescent sexual

Table 4
Final multivariate model indicating associations between independent variables and lifetime sexual experience among early-adolescent American Indian/Alaska Native youth (n = 480)[a]

Variable	Odds ratio (95% confidence interval)	*p* value
Individual system		
Psychological		
Intention to have oral sex in the next year[b]	.32 (.14–.73)	.01
Intention to have vaginal sex in the next year[b]	.27 (.12–.63)	.01
Behavioral		
Avoidance of risky situations that could lead to sex	.13 (.05–.33)	<.001
Alcohol use		
Never used alcohol	.16 (.04–.61)	.01

[a] The sample was restricted to participants with a valid response for all variables included in the final model.
[b] A higher score denotes lower intention to have sex in the next year.

health promotion interventions [24,25]. Avoidance of risky situations may be facilitated by a parent's knowledge and supervision of their child's friendships and whereabouts. Thus, providing activities that enhance AI/AN parents' ability to effectively monitor their child's behavior may help to delay sexual initiation among AI/AN youth [30]. Similarly, integrating substance use prevention activities into sexual health promotion interventions for early-adolescent AI/AN youth may help to further delay sexual activity [31].

Previous studies with AI/AN youth have not examined associations between sexual intentions and sexual experience; however, from a theoretical perspective, behavioral intentions are often viewed as being the factor most proximally related to an individual's behavior [32]. Furthermore, intentions may be influenced by factors such as behavioral beliefs, perceived norms, and self-efficacy [32]. In our analysis, sexual beliefs, friends' perceived sexual beliefs, and sexual refusal self-efficacy were significant in the binary or discrete system–level models, but not in the final model. This may be because our analytical approach was structured to identify those factors most proximally related to sexual experience. Nevertheless, including activities in sexual health promotion interventions that encourage youth to reexamine their personal beliefs and perceived norms about sex (i.e., not everyone is having sex) and enhance their self-efficacy to refuse unwanted sexual advances and peer pressure [24,33,34] may influence intentions to delay sexual experience among AI/AN youth.

Integrating cultural values into health promotion interventions has been shown to enhance their appeal and effectiveness in diverse populations [35]. Although cultural identification with AI/AN traditions was not significantly associated with sexual experience in the current sample, sexual health promotion interventions that incorporate traditional AI/AN values and teaching methods, such as Circle of Life [31] and Native Students Together Against Negative Decisions [36], may strengthen or reinforce a sense of cultural identity and belonging among AI/AN youth and help to protect against early sexual initiation.

Intervention studies with Native [31] and non-Native youth [24,25,33] indicate that implementing sexual health promotion interventions in sixth or seventh grades is feasible, may be more effective than delivering interventions at an older age [31], and may have a sustained impact on delayed sexual initiation in ninth grade [24,25]. Partnering with tribal elders and community stakeholders to review, develop, or adapt age-appropriate interventions may develop trust and support in AI/AN communities to implement early-adolescent sexual health interventions and help to address potential barriers [18,31].

Although our findings may be useful in developing relevant interventions for early-adolescent AI/AN youth, several limitations should be noted. Although computer-based data collection systems provide more valid and reliable data for sensitive topics [37], these data are self-reported and may be subject to under- or over-reporting [38]. Although convenience sampling was an appropriate recruitment methodology for a pilot study, lack of a rigorous sampling design limits the generalizability of findings. However, these results are suggestive of risk and protective factors for early sexual experience among early-adolescent AI/AN youth who are willing to participate in an adolescent sexual health intervention. Because of the cross-sectional study design, conclusions about directionality may not be drawn. Despite these limitations, our findings may assist in the development of more effective sexual health promotion interventions for early-adolescent AI/AN youth.

Currently, few sexual health promotion interventions that address the needs of AI/AN youth exist [18,31,36]. There is a need to develop or adapt existing evidence-based programs for the specific needs of early-adolescent AI/AN youth. Middle school–aged interventions that include activities to influence sexual intentions and provide youth and parents with skills to avoid risky situations and early substance use may help to delay sexual initiation and contribute toward a reduction in health disparities among AI/AN youth.

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