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## Sexual Communication and Sexual Consent Self-Efficacy Among College Students: Implications for Sexually Transmitted Infection Prevention

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### Abstract

**Purpose:** Obtaining affirmative consent, a hallmark of sexual violence prevention education on college campuses, may influence sexual communication and behaviors such as condom use. This study examined the relationship between self-efficacy to obtain sexual consent with sexual health communication and behaviors among a sample of U.S. college students.

**Methods:** Data were from 2,291 students enrolled in a cluster-randomized controlled trial conducted on 28 college campuses from 2015-2017. Students reported their self-efficacy to obtain sexual consent, communication about sexual health, and sexual health behaviors. Multivariable logistic regression, adjusted for school clustering, history of violence victimization, and STI history, estimated odds ratios (OR) and 95% confidence intervals (CI) for sexual consent self-efficacy and sexual health communication.

**Results:** Females (n=1150) reported higher self-efficacy to obtain consent than males ( $b_1=0.32$ , CI 95% 0.23, 0.41), but lower odds of communication about condom use (AOR 0.75, CI 95% 0.60, 0.96) and HIV prevention (AOR 0.63, CI 95% 0.48, 0.81). Black and other race students reported higher odds of HIV/STI prevention communication compared to White students. Odds of consistent condom use were highest among students reporting condom use communication and high self-efficacy to obtain sexual consent (AOR 1.99, CI 95% 1.58, 2.51).

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**Conclusion:** Campus sexual assault prevention education that focuses narrowly on obtaining sexual consent may be missing an opportunity to enhance sexual health communication broadly, including condom and contraceptive use discussion to promote overall sexual health.

## Introduction

Sexual violence and unwanted sexual contact are prevalent on college campuses for men and women. Approximately one in three women experience interpersonal violence in their lifetime, with sexual violence being the most common form of violence encountered (1). Rates of unwanted sexual contact reported by college women have ranged from 34% to 43% while 28% of college men report similar experiences (2-4). The short- and long-term health consequences associated with sexual violence are myriad, including post-traumatic stress disorder, eating disorders, depression, anxiety, and overall poorer quality of life (4). Additionally, these experiences may increase risk of alcohol and substance use, unintended pregnancies, and sexually transmitted infections (STIs) (5).

Adolescents and young adults ages 15 to 24 account for approximately half of all new STIs nationally despite only making up 25% of the sexually active population (6). Although contributors to STI risk are vast, the most notable behavioral risk factor is inconsistent condom use. Only 50% of college students indicate always or almost always using a condom (7, 8). In accordance with the Theory of Planned Behavior (TPB) (9), self-efficacy (10), clear intentions, and holding positive beliefs toward the benefits of condom use encourage condom use. However, these socio-cognitive models suggest a more complex notion behind decision-making when it comes to the use of condoms. This includes introducing the interconnection between psychological, behavioral, environmental impact of a behavior. Furthermore, these social theories are reliable in predicting likelihood of sexual behaviors such as condom use rather than guaranteeing said behaviors (11). Furthermore, these social theories are reliable in predicting sexual behaviors such as condom use rather than facilitating or guaranteeing said behaviors. Widman and colleagues have suggested that moderating factors, such as sexual health communication, enhance the transition from intention to action (12). Several studies have provided evidence that sexual communication is a strong predictor of healthier sex practices (12-15). The persistently elevated rates of STIs and sexual violence among young adults suggest poor sexual health communication, which in turn, is associated with inconsistent condom use (8). Strategies to promote sexual health communication and condom use among young adults are needed.

The growing attention to sexual violence prevention on college campuses represent an opportunity for promoting communication about sex including pregnancy, HIV, and STI prevention. Policies such as the Clery Act (16), Title IX (17), and the Violence Against Women Act (18) were developed to mitigate sexual violence and broad forms of discrimination. These policies ensure that colleges and universities address sexual violence by offering sexual misconduct education, identifying resources for victims to encourage reporting, and implementing prevention strategies. Sexual violence prevention efforts have generally focused on changing attitudes or beliefs regarding unwanted sexual experiences, encouraging bystander intervention, and underscoring the need for affirmative consent (e.g., consent cannot be obtained while under the influence of alcohol or other drugs) (19). While

this emphasis on educating sexual consent appears to be an important component in sexual violence prevention, little is known about the extent to which this emphasis on obtaining affirmative consent might also influence sexual health communication and behaviors more broadly in real life circumstances amongst college students (20).

Previous studies have reviewed the effectiveness of sexual violence prevention programming on college campuses by observing rates of reported sexual assault and evaluating how conceptualizing consent and sexual interactions change post-intervention (21, 22). However, little is known about students' self-perceived ability to incorporate healthy practices in their own experiences to prevent unwanted sexual encounters in relation to their lived sexual experiences. Therefore, the purpose of this study is to examine the relationship between self-efficacy to obtain sexual consent and sexual health communication among college students and evaluate if confidence in obtaining sexual consent is related to sexual health communication and condom use. We hypothesize that higher self-efficacy to obtain sexual consent will be associated with the presence of sexual health communication between sexual partners and more consistent condom use among college students.

## Methods

Data were from baseline surveys collected in a cluster randomized controlled trial of a campus health center-based intervention designed to increase knowledge of sexual violence resources and harm reduction strategies (23). Students (n=2,291) attending a campus health or counseling center were recruited from 28 colleges and universities in Pennsylvania and West Virginia. A 20-minute survey, including various sexual violence-related questionnaires, were administered to students before their walk-in or scheduled appointment (baseline), as well as 4 months and 12 months post-intervention. The intervention involved training for campus health center staff on providing sexual health education to students seeking care. Participants were included in our study if they had complete data for age, sex, and race/ethnicity (n=2,273) at baseline. Only students indicating sexual activity in the past 4 months were included. In this sample, 0.6% (n=7) of female respondents indicated having sex with only women (n=4) or mostly women (n=3). These participants were removed from the data analysis. Individuals identifying as trans female (n=2), trans male (n=3), nonbinary (n=12) or other (n=3) were excluded in the present study due to the small sample. The final analytic sample included 1,547 participants. Full protocol details and variables collected are published elsewhere (24). This study was reviewed and approved by the University of Pittsburgh Institutional Review Board.

## Measures

**Demographics**—Participants were asked their age, level in school (1<sup>st</sup>-5<sup>th</sup> year undergraduate students, graduate, or other), and race/ethnicity (e.g. White, Black, Hispanic/Latinx, Other).

**Sexual History**—Students were asked about their sexual history, including ever having penetrative sex (vaginal or anal), if they were ever diagnosed with an STI, and their age at first sex. Responses were reported as “yes” or “no” to each sexual behavior question and age at first sex was a free response. Sexual orientation was determined by matching

self-identified gender with reported gender of sexual partners. Responses were dichotomized into heterosexual and not heterosexual.

*Self-efficacy to obtain sexual consent* was assessed using a standardized 10-item scale (e.g., “I feel confident that I could ask for sexual consent from a new partner” and “I would have difficulty asking for consent because it would spoil the mood”) (25). Response options used a 5-point Likert scale from “strongly disagree” to “strongly agree.” Items were reverse-coded such that higher scores indicated higher levels of self-efficacy to obtain consent (Chronbach’s alpha: 0.92). Average scores were reported across all answered items by each participant.

*Sexual communication* questions focused on participants’ recalled conversations with sexual partners about STI/HIV risk reduction during the past 4 months. Questions included “How many times have you and the people you are having sex with talked about how to prevent pregnancy?”; “How many times have you and the people you are having sex with talked about how to use condoms?”; “How many times have you and the people you are having sex with talked about how to prevent getting HIV?”; and “How many times have you and the people you are having sex with talked about how to prevent getting STDs?” (26) Participants were also asked to report the number of times [never, 1-3 times, 4-6 times, and 7 or more] they talked about each risk reduction topic (Chronbach’s alpha: 0.81). Responses were dichotomized to 0 (never) and 1 (any communication reported) for each sexual health topic.

*Condom use* was assessed through one question about condom use frequency. Participants were asked “When you had vaginal or anal sex in the past 4 months, how often did you or your partner use a condom?” Response options used a 5-point Likert scale from “never” to “every time”.

*Violence victimization* was assessed through reported intimate partner violence using a modified version of the Sexual Experiences Survey (27-29) and the Revised Conflict Tactics scale (30). Students were asked “Has someone you were dating or going out with ever physically hurt you on purpose? (Include such things as being hit, slammed into something, or injured with an object or weapon.)” and participants responded yes or no. Unwanted sexual encounters were evaluated by asking if participants ever experienced the following by someone: overwhelm you with arguments about sex or continually pressure you for sex, threaten to physically harm you or someone close to you, use physical force (such as holding you down), take advantage of you when you were incapacitated (e.g., by drugs or alcohol) and unable to object or consent, or the person did something else that is not listed here (Chronbach’s alpha: 0.84). Lifetime sexual and physical violence victimization was based on ‘yes’ response to any physical partner violence or unwanted sexual violence items.

## Statistical Analysis

Descriptive statistics were performed to examine the distribution and frequency of sample characteristics and sexual behaviors. In relation to each demographic and sexual characteristic group, self-efficacy to obtain sexual consent was examined using linear regression, and logistic regression was performed for any sexual health communication for each topic (e.g., pregnancy prevention, condom use, and STI and HIV prevention) and

condom use. Beta coefficients and unadjusted odds ratios were reported. To further evaluate these relationships, multivariable linear and logistic regression models were constructed, adjusting for lifetime prevalence of STIs, lifetime exposure to sexual or physical violence, and school clustering.

To explore the mediating effect of sexual health communication on consistent condom use with high self-efficacy to obtain consent as the primary exposure, multi-model analysis was performed (Table 4). Using the Karlson-Holm-Breen (KHB) method (31), the direct effect of high self-efficacy to obtain sexual consent on consistent condom use is displayed in the base model. Models 1-4 demonstrate the adjusted odds ratios of consistent condom use with the indirect effect of each sexual health communication topic, while model 5 exhibits the effect of significant mediating sexual health topics combined. The variance of adjusted odds as explained by the addition of mediating variables are reported as percentages. Confidence intervals were reported at the 95% level and significant values are bolded ( $p$ -value<0.05). Analyses were performed in Stata SE 15.1 (College Station, TX).

## Results

Of the total sample ( $n=1547$ ), 68% were Non-Hispanic (NH) White and 75% identified as the female sex. The mean age of this student sample was 20 ( $SD = 1.5$ ) years. Students reported on average 6 ( $SD = 6.8$ ) sexual partners in their lifetime. Almost 9% of students self-reported ever being told by a health care professional that they had an STI. Self-efficacy to obtain sexual consent was endorsed by roughly 65% of students (score = 4). Almost 65% of students indicated having experienced sexual or physical violence in their lifetime. Less than half the sample communicated with sexual partners about HIV (24%) and STD (33%) prevention in the past 4 months and 30% of students reported consistent condom use in the past 4 months (Table 1).

When examining the relationship between demographic characteristics and sexual health communication, female students demonstrated lower odds of communication about condom use (OR 0.75, 95% CI 0.60, 0.96) and HIV prevention (OR 0.63, 95% CI 0.48, 0.81) compared to males (Table 2). NH Black and other race participants reported higher odds of communication about HIV and STD prevention than NH White students, while Asian students had significantly lower scores for self-efficacy to obtain sexual consent compared to White participants ( $b_1=-0.30$ , 95% CI  $-0.52$ , 0.09). Ever being diagnosed with an STI significantly increased the odds of STD prevention communication (OR 2.58, 95% CI 1.80, 3.70), but significantly reduced odds of consistent condom use in the past 4 months (OR 0.26, 95% CI 0.15, 0.45).

A multivariable logistic regression was used to examine the odds of sexual consent self-efficacy by sexual health communication (Table 3). Models were adjusted for ever being diagnosed with an STI, ever experiencing sexual or physical violence, and school clustering. Female students reported higher self-efficacy to obtain sexual consent ( $b_1=0.32$ , 95% CI 0.23, 0.41) and increased odds of communication about pregnancy prevention with partners (OR 1.36, 95% CI 1.06, 1.77) than males. NH Black students had increased odds of communication related to condom use (AOR 2.23, 95% CI 1.55, 3.19), HIV prevention

(AOR 3.05, 95% CI 2.12, 4.40), and STD prevention (AOR 2.67, 95% CI 1.87, 3.81) in adjusted models. Age was associated with reduced odds of communication related to condom use (AOR 0.88, 95% CI 0.82, 0.94) and HIV prevention (AOR 0.90, 95% CI 0.83, 0.98) for every one-year increase in age. High self-efficacy to obtain sexual consent was associated with significantly increased odds of each sexual health communication topic.

To further explore the relationship between consistent condom use and self-efficacy to obtain sexual consent, we employed a multi-model approach to examine mediating effects of sexual health communication (Table 4). All models were adjusted for lifetime STI diagnosis, lifetime sexual and physical violence, school clustering, and use of birth control during last vaginal sex. Other race students with high self-efficacy to obtain sexual consent exhibited lower odds of consistent condom use across all models, regardless of communication about any sexual health topic. Similarly, the direct effect of students with high self-efficacy to obtain sexual consent was associated with increased odds of consistent condom use regardless of the mediating effect of sexual communication (Base model, model 1-4). In model 1, the indirect effect of communication about pregnancy prevention reduced odds of consistent condom use (AOR 0.79, 95% CI 0.62, 1.01), but results were not significant. Students reporting high self-efficacy to obtain sexual consent and communication about condom use in model 2 displayed increased odds of consistent condom use compared to the direct effect of high self-efficacy to obtain sexual consent on consistent condom use (AOR 1.99, 95% CI 1.58, 2.51). Condom use communication explained 12.48% of the variance in the model and was statistically significant.

## Discussion

We evaluated the relationship between self-efficacy to obtain sexual consent and sexual health communication to determine their association with condom use among sexually active college students. We hypothesized that consent self-efficacy and sexual communication would be associated with consistent condom use, which was partially supported by our findings. Most students indicated confidence in obtaining sexual consent, and those with high self-efficacy were also more likely to communicate about sexual health topics. While only 30% of students reported consistent condom use, our results demonstrated that odds of regular condom use were greater with consent self-efficacy and communication about condom use, exhibiting the healthy behavioral endorsement of sexual consent self-efficacy.

Guan and colleagues studied condom use intention, communication, and behavior among young Black women ages 18-24 and determined that condom negotiation self-efficacy, or one's ability to discuss using a condom with sexual partners, was the biggest predictor of consistent condom use (15). The authors also suggested that STI/HIV prevention interventions should include communication strategies to build self-esteem and self-efficacy for both men and women given that intention alone does not always result in greater condom use (15). Though we did not measure condom negotiation self-efficacy specifically, we examined the frequency of condom use communication along with self-efficacy to obtain sexual consent, which were both related to condom use. In a meta-analysis including 53 articles examining the relationship between condom use and healthy sexual communication, results support the strengthening link of intention, communication, and self-efficacy to

translate into condom use (13). Consistent communication about sexual health behaviors is increased when participants indicated having high self-efficacy to obtain sexual consent. As nonverbal consent may be more common among college students (32-34), the practice of obtaining verbal affirmative consent for sex may promote continued sexual communication beyond exclusively obtaining consent.

Notably, communication about condom use was the only sexual health topic that mediated the relationship between consent self-efficacy and condom use. This is consistent with previous studies finding that condom use communication is a link between intention and condom use during sex (12-14). However, in the present study communication about HIV/STD prevention did not have this same relationship and pregnancy prevention communication had a negative association with condom use. Pregnancy, HIV, and STD prevention are all examples of healthy sexual behaviors that can be achieved with condom use but discussing each specific topic does not necessarily translate into condom use. Additionally, the quality of participants' communication skills were not measured in this study which may impact how effective sexual health dialogue is between partners. Further research is needed on why communication about certain sexual health topics do not directly impact condom use.

Sexual communication frequency and self-efficacy to obtain sexual consent differed by both sex and race/ethnicity. Age and sex were two factors that influenced communication with sexual partners and condom use self-efficacy in one study of international university students (35). In another study assessing condom communication among African American college students, the authors found gender differences in perception of partner's beliefs about condom use, but not in self-efficacy to communicate about condom use (36). The authors found that among women, more positive perceptions of partner condom use beliefs increased condom use behavior (36). Our findings, however, indicate that women communicate more than men about pregnancy prevention. Women also demonstrated higher self-efficacy to obtain sexual consent, perhaps because in the typical power dynamic and traditional gender roles of heterosexual relationships, females offer consent while males must obtain it. In keeping with this notion of multi-dimensionality of sexual and reproductive autonomy, women may not communicate about topics over which they do not perceive having control or mutual willingness, including condom use and HIV prevention (37). This suggests an opportunity to further explore factors that promote communication and condom use in the context of autonomy, perceptions of negative partner beliefs, and risk of consequences such as violence.

Sexual violence and adverse sexual health outcomes occur across all racial and ethnic groups, and research demonstrates that racial and ethnic minorities are exposed to higher rates of violence and associated negative sexual consequences, such as HIV/AIDS (38). For example, some findings report up to 30% of Black women experiencing sexual violence or coercion, 18% for White women, and 14% for Hispanic women (39). Our study revealed additional racial/ethnic differences seen across sexual health communication and behaviors that further highlight the sexual health inequities experienced by minorities. Minority youth typically report lower sexual self-efficacy and knowledge compared to NH White youth (40). The results from our study are consistent with previous research in that Asian students

exhibited lower self-efficacy to obtain sexual consent, in addition to reduced odds of consistent condom use. Counter to previous research, however, the NH Black students in our study indicated more than twice the odds of sexual health communication than any other race. Furthermore, there was no significant difference in condom use frequency compared to NH White students. There may be intersectional cultural and racial determinants of sexual health behaviors that merit further research on understanding racial differences in sexual health decision making.

Our results highlight several opportunities to improve college campus sexual misconduct and sexual health promotion programming. A systematic review of sexual violence prevention studies uncovered that although there has been a surge of campuses implementing interventions, most use strategies geared at changing individual attitudes and knowledge that overlook more comprehensive approaches to addressing sociocultural factors such as sex, race, and gender norms (21). Providing strategies on effective communication about condom use and verbally obtaining sexual consent may promote healthier sexual behaviors as well as empower students to feel confident and comfortable creating a sexual health dialogue with partners (41). Further research on demographic differences in young adult sexual decision-making and how such characteristics may influence behaviors is needed to tailor culturally responsive interventions.

Despite the large sample across multiple college campuses, this study has several limitations. First, our sample consisted of majority NH-White female students and lacked a larger sexual and gender minority participant pool. In this sample, 0.6% of female respondents indicated having sex with only women or mostly women. These participants were removed from the data analysis, however including condom use as an outcome for women with same sex partners may not be the most appropriate STI prevention method to examine. The study was geographically limited to western Pennsylvania and West Virginia, and participants were a care-seeking sample recruited from campus health centers, thus sampling bias limits generalizability. Though we had information on participant STI history, collecting biological specimens for STI data would be ideal for more accurate STI/HIV prevalence estimates. Though frequency of sexual communication was examined, quality of communication was not analyzed nor information regarding the nature of sexual relationships (casual versus serious), which could influence both frequency and quality of communication. Finally, with these cross-sectional data, sexual health communication and condom use frequency were only assessed in the previous four months and changes in behavior over time were not examined. Additional analyses, using longitudinal data from this trial as well as related studies, may provide greater insights regarding the potential for promoting sexual health behaviors in the context of sexual assault prevention education.

Though students generally display self-efficacy to obtain sexual consent, many are not engaging in sexual health conversations and protective behaviors. Sexual health promoting behaviors, such as consistent condom use, are impacted by several factors, including the individual's gender, race/ethnicity, STI history and communication frequency. College campus sexual misconduct prevention programming could more intentionally integrate comprehensive sexual health education that addresses elements of sexual behavior more



explicitly and emphasizes the significance of sexual communication in addition to the vital importance of affirmative sexual consent.

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### Abbreviations:

<b>KHB</b>	Karlson-Holm-Breen
<b>NH</b>	Non-Hispanic
<b>STD</b>	Sexually transmitted disease
<b>STI</b>	Sexually transmitted infection
<b>TPB</b>	Theory of Planned Behavior

### References

- [1]. Smith SG, Basile KC, Gilbert LK, et al. National intimate partner and sexual violence survey (NISVS): 2010-2012 state report. 2017.
- [2]. Fedina L, Holmes JL, Backes BL. Campus sexual assault: A systematic review of prevalence research from 2000 to 2015. *Trauma, violence, & abuse* 2018;19:76–93.
- [3]. Sutherland JL, Amar AF, Sutherland MA. Victimization and perpetration of sexual violence in college-aged men and women. *Journal of forensic nursing* 2014;10:153–159. [PubMed: 25144586]
- [4]. Fantasia HC, Sutherland MA, Hutchinson MK. Lifetime and recent experiences of violence among college women. *Journal of forensic nursing* 2018;14:190. [PubMed: 30080710]
- [5]. Jina R, Thomas LS. Health consequences of sexual violence against women. *Best Practice & Research Clinical Obstetrics & Gynaecology* 2013;27:15–26. [PubMed: 22975432]
- [6]. Bowen VB, Braxton J, Davis DW, et al. Sexually transmitted disease surveillance 2018. 2019.
- [7]. Whiting W, Pharr JR, Buttner MP, et al. Behavioral Interventions to Increase Condom Use Among College Students in the United States: A Systematic Review. *Health education & behavior* : the official publication of the Society for Public Health Education 2019;46:877–888. [PubMed: 31165629]
- [8]. Association ACH. American College Health Association–National College Health Assessment II: Undergraduate Student Health Assessment II: Undergraduate Student Reference Group Data Report Fall 2016. Hanover, MD: American College Health Association. Available at: <http://www...>, 2017.
- [9]. Ajzen I From intentions to actions: A theory of planned behavior. *Action control*: Springer, 1985:11–39.
- [10]. Bandura A Self- efficacy. *The Corsini encyclopedia of psychology* 2010:1–3.
- [11]. Espada JP, Morales A, Guillén-Riquelme A, et al. Predicting condom use in adolescents: a test of three socio-cognitive models using a structural equation modeling approach. *BMC Public Health* 2015;16:1–10.
- [12]. Widman L, Golin CE, Noar SM. When do condom use intentions lead to actions? Examining the role of sexual communication on safer sexual behavior among people living with HIV. *Journal of health psychology* 2013;18:507–517. [PubMed: 22689591]

- [13]. Noar SM, Carlyle K, Cole C. Why communication is crucial: meta-analysis of the relationship between safer sexual communication and condom use. *Journal of health communication* 2006;11:365–390. [PubMed: 16720536]
- [14]. Sheeran P, Abraham C, Orbell S. Psychosocial correlates of heterosexual condom use: a meta-analysis. *Psychol Bull* 1999;125:90–132. [PubMed: 9990846]
- [15]. Guan M, Coles VB, Samp JA, et al. Incorporating Communication into the Theory of Planned Behavior to Predict Condom Use Among African American Women. *Journal of health communication* 2016;21:1046–1054. [PubMed: 27565192]
- [16]. Dunn LL. Addressing sexual violence in higher education: Ensuring compliance with the Clery Act, Title IX and VAWA. *Geo J Gender & L* 2013;15:563.
- [17]. Richards TN. No evidence of "weaponized Title IX" here: An empirical assessment of sexual misconduct reporting, case processing, and outcomes. *Law Hum Behav* 2019;43:180–192. [PubMed: 30556703]
- [18]. Koss MP, Wilgus JK, Williamsen KM. Campus Sexual Misconduct: Restorative Justice Approaches to Enhance Compliance With Title IX Guidance. *Trauma Violence Abuse* 2014;15:242–257. [PubMed: 24776460]
- [19]. Vladutiu CJ, Martin SL, Macy RJ. College-or university-based sexual assault prevention programs: A review of program outcomes, characteristics, and recommendations. *Trauma, Violence, & Abuse* 2011;12:67–86.
- [20]. Borges AM, Banyard VL, Moynihan MM. Clarifying consent: Primary prevention of sexual assault on a college campus. *Journal of prevention & intervention in the community* 2008;36:75–88. [PubMed: 19042464]
- [21]. DeGue S, Valle LA, Holt MK, et al. A systematic review of primary prevention strategies for sexual violence perpetration. *Aggression and violent behavior* 2014;19:346–362. [PubMed: 29606897]
- [22]. Coker AL, Fisher BS, Bush HM, et al. Evaluation of the Green Dot bystander intervention to reduce interpersonal violence among college students across three campuses. *Violence against women* 2015;21:1507–1527. [PubMed: 25125493]
- [23]. Miller E, Jones KA, McCauley HL, et al. Cluster Randomized Trial of a College Health Center Sexual Violence Intervention. *American journal of preventive medicine* 2020;59:98–108. [PubMed: 32362510]
- [24]. Abebe KZ, Jones KA, Rofey D, et al. A cluster-randomized trial of a college health center-based alcohol and sexual violence intervention (GIFTSS): Design, rationale, and baseline sample. *Contemporary clinical trials* 2018;65:130–143. [PubMed: 29287667]
- [25]. Humphreys TP, Brousseau MM. The sexual consent scale–revised: development, reliability, and preliminary validity. *Journal of Sex Research* 2010;47:420–428. [PubMed: 19685367]
- [26]. Milhausen RR, Sales JM, Wingood GM, et al. Validation of a partner sexual communication scale for use in HIV/AIDS prevention interventions. *Journal of HIV/AIDS prevention in children & youth* 2007;8:11–33.
- [27]. Testa M, Hoffman JH, Livingston JA, et al. Preventing college women’s sexual victimization through parent based intervention: A randomized controlled trial. *Prevention Science* 2010;11:308–318. [PubMed: 20169410]
- [28]. Carey KB, Durney SE, Shepardson RL, et al. Incapacitated and forcible rape of college women: Prevalence across the first year. *Journal of Adolescent Health* 2015;56:678–680.
- [29]. Heo M, Leon AC. Sample size requirements to detect an intervention by time interaction in longitudinal cluster randomized clinical trials. *Statistics in medicine* 2009;28:1017–1027. [PubMed: 19153969]
- [30]. Newton RR, Connelly CD, Landsverk JA. An examination of measurement characteristics and factorial validity of the Revised Conflict Tactics Scale. *Educational and Psychological Measurement* 2001;61:317–335.
- [31]. Breen R, Karlson KB, Holm A. A Note on a Reformulation of the KHB Method. *Sociological Methods & Research* 2018:0049124118789717.

- [32]. Pugh B, Becker P. Exploring Definitions and Prevalence of Verbal Sexual Coercion and Its Relationship to Consent to Unwanted Sex: Implications for Affirmative Consent Standards on College Campuses. *Behavioral sciences (Basel, Switzerland)* 2018;8.
- [33]. Hickman SE, Muehlenhard CL. "By the semi- mystical appearance of a condom": How young women and men communicate sexual consent in heterosexual situations. *Journal of Sex Research* 1999;36:258–272.
- [34]. Hall DS. Consent for sexual behavior in a college student population. *Electronic Journal of Human Sexuality* 1998;1:1–16.
- [35]. Ajayi AI, Olamijuwon EO. What predicts self-efficacy? Understanding the role of sociodemographic, behavioural and parental factors on condom use self-efficacy among university students in Nigeria. *PloS one* 2019;14:e0221804. [PubMed: 31461479]
- [36]. Carmack C, Roncancio AM, Gerecht L, et al. Perceived partner beliefs about condoms and self-efficacy communication within the context of the theory of gender and power. *Journal of Community Psychology* 2020.
- [37]. Upadhyay UD, Dworkin SL, Weitz TA, et al. Development and validation of a reproductive autonomy scale. *Studies in family planning* 2014;45:19–41. [PubMed: 24615573]
- [38]. Basile KC, Smith SG, Fowler DN, et al. Sexual Violence Victimization and Associations with Health in a Community Sample of African American Women. *Journal of aggression, maltreatment & trauma* 2016;25:231–253.
- [39]. Gutzmer K, Ludwig-Barron NT, Wyatt GE, et al. "Come on Baby. You Know I Love You": African American Women's Experiences of Communication with Male Partners and Disclosure in the Context of Unwanted Sex. *Archives of sexual behavior* 2016;45:807–819. [PubMed: 26892099]
- [40]. Thorsen ML. A latent class analysis of behavioral and psychosocial dimensions of adolescent sexuality: Exploring race differences. *The Journal of Sex Research* 2018;55:45–59. [PubMed: 27982710]
- [41]. Hirsch JS, Khan S. *Sexual citizens: A landmark study of sex, power, and assault on campus*: WW Norton & Company, 2020.

### Implications and Contribution

Sexual violence prevention on college campuses emphasizes communicating consent, but the relationship between obtaining consent for sex and communicating about healthy sexual behaviors is unclear. In this study, confidence in obtaining consent for sex was related to greater frequency of sexual health communication. Consistent condom use was associated with both consent self-efficacy and communication about condoms. Colleges should enhance sexual assault prevention education beyond obtaining consent to include more explicit sexual health communication related to condom and contraception use.

**Table 1.**

Sexually active student sample demographic characteristics, n=1,547

Study Variables	Total sample N (%)
<i>Self-Identified Gender</i>	
Male	393 (25.5)
Female	1,150 (74.5)
<i>Race or Ethnicity</i>	
Non-Hispanic White	1,059 (68.5)
Non-Hispanic Black/African American	164 (10.6)
Hispanic or Latino/a	209 (13.5)
Non-Hispanic Asian or Other	115 (7.4)
<i>School type</i>	
Public	1,667 (72.8)
Private	624 (27.2)
<i>Age (Mean (SD))</i>	20.14 (1.5)
<i>Sexual orientation</i>	
Heterosexual	1422 (93.1)
Not heterosexual	105 (6.9)
<i>Number of sexual partners</i> <sup>1</sup>	
Mean (SD)	5.97 (6.8)
Range (Min, max)	1, 65
<i>Anal Sex</i>	
Yes	450 (29.1)
<i>Age of sexual debut</i>	
Mean (SD)	16.81 (1.9)
Range (Min, max)	1, 24
<i>STI diagnosis</i> <sup>1</sup>	
Yes	138 (8.9)
<i>Sexual &amp; Physical violence</i> <sup>1</sup>	
Yes	1004 (64.8)
<i>Self-Efficacy to Obtain Consent</i> <sup>2</sup>	
1-1.9	15 (1.0)
2-2.9	132 (8.6)
3-3.9	397 (25.8)
4-5	998 (64.7)
<i>Communication about Pregnancy Prevention</i> <sup>3</sup>	
Yes	1,053 (68.2)
<i>Communication about Condom Use</i> <sup>3</sup>	
Yes	800 (51.9)

Study Variables	Total sample N (%)
<i>Communication about HIV Prevention</i> <sup>3</sup> Yes	368 (23.9)
<i>Communication about STD Prevention</i> <sup>3</sup> Yes	508 (32.9)
<i>Consistent Condom Use</i> <sup>4</sup> Yes	466 (30.2)

Transgender male and female, nonbinary, none of the above gender n(%) = 7 (0.5)

<sup>1</sup>Lifetime prevalence of any sexual & physical violence

<sup>2</sup>Responses were the mean average of 5-point Likert scale responses to 10 statements measuring self-efficacy to obtain sexual consent, with 5 being highest

<sup>3</sup>Communication was measured in past 4 months and responses were dichotomized into never communicated and at least one instance of communication

<sup>4</sup>Condom use was measured in students who reported intercourse in past 4 months and responses were dichotomized into inconsistent and consistent (every time) condom use

Table 2.

Unadjusted odds ratios of students reporting consent self-efficacy and communication of sexual health topics in the past 4 months by demographic characteristics, sexual behaviors and violence exposure

Sample Characteristics	High Self-Efficacy to Obtain Sexual Consent $b_1$ (95% CI)	Communication about Pregnancy Prevention OR (95% CI)	Communication about Condom Use OR (95% CI)	Communication about HIV Prevention OR (95% CI)	Communication about STD prevention OR (95% CI)	Consistent Condom Use OR (95% CI)
<i>Self-Identified Gender</i>						
Male	ref	1.00	1.00	1.00	1.00	1.00
Female	<b>0.32 (0.23, 0.41)</b>	<b>1.35 (1.06, 1.73)</b>	<b>0.75 (0.60, 0.96)</b>	<b>0.63 (0.48, 0.81)</b>	0.91 (0.71, 1.16)	0.80 (0.62, 1.03)
<i>Race or Ethnicity</i>						
NH White	ref	1.00	1.00	1.00	1.00	1.00
NH Black/African American	-0.13 (-0.26, 0.01)	1.25 (0.86, 1.82)	<b>2.20 (1.54, 3.14)</b>	<b>3.05 (2.13, 4.8)</b>	<b>2.88 (2.03, 4.08)</b>	0.99 (0.69, 1.44)
Hispanic or Latino/a	0.00 (-0.12, 0.12)	0.97 (0.71, 1.34)	1.30 (0.96, 1.75)	1.19 (0.84, 1.70)	1.29 (0.94, 1.78)	0.87 (0.63, 1.21)
NH Asian	<b>-0.30 (-0.52, -0.09)</b>	1.88 (0.98, 3.61)	1.20 (0.69, 2.07)	1.02 (0.53, 1.98)	1.19 (0.66, 2.16)	0.76 (0.42, 1.41)
Other	-0.06 (-0.15, 0.27)	1.15 (0.64, 2.07)	1.43 (0.83, 2.47)	<b>1.93 (1.09, 3.43)</b>	<b>2.01 (1.16, 3.46)</b>	0.60 (0.31, 1.15)
Age	0.01 (-0.02, 0.03)	0.97 (0.90, 1.04)	<b>0.88 (0.82, 0.94)</b>	<b>0.91 (0.84, 0.99)</b>	0.97 (0.90, 1.04)	<b>0.91 (0.85, 0.98)</b>
<i>Sexual orientation</i>						
Heterosexual	ref	1.00	1.00	1.00	1.00	1.00
Not heterosexual	-0.04 (-0.20, 0.12)	0.94 (0.61, 1.44)	1.24 (0.83, 1.86)	1.46 (0.95, 2.26)	<b>1.73 (1.15, 2.59)</b>	0.67 (0.42, 1.07)
<i>Number of sexual partners<sup>1</sup></i>						
Anal sex <sup>1</sup>						
No	ref	1.00	1.00	1.00	1.00	1.00
Yes	0.01 (-0.07, 0.10)	0.99 (0.78, 1.26)	<b>0.79 (0.63, 0.98)</b>	0.94 (0.72, 1.22)	1.00 (0.79, 1.27)	<b>0.48 (0.37, 0.62)</b>
<i>Age of sexual debut</i>						
STI diagnosis <sup>1</sup>						
No	ref	1.00	1.00	1.00	1.00	1.00
Yes	-0.06 (-0.20, 0.08)	0.86 (0.60, 1.25)	1.09 (0.76, 1.55)	1.21 (0.81, 1.81)	<b>2.58 (1.80, 3.70)</b>	<b>0.26 (0.15, 0.45)</b>
<i>Sexual &amp; Physical violence<sup>1</sup></i>						
No	ref	1.00	1.00	1.00	1.00	1.00
Yes	0.02 (-0.06, 0.11)	1.08 (0.86, 1.35)	1.02 (0.83, 1.26)	0.85 (0.67, 1.09)	1.08 (0.86, 1.36)	<b>0.65 (0.52, 0.82)</b>

Bolded values denote significance ( $p < 0.05$ ). NH: Non-Hispanic.

Table 3.

Multivariable linear and logistic regression for adjusted beta coefficients and odds ratios of students reporting consent self-efficacy and sexual health communication in past 4 months

Sample Characteristics	High Self-Efficacy to Obtain Sexual Consent (95% CI)	Communication about Pregnancy Prevention <sup>1</sup> AOR (95% CI)	Communication about Condom Use <sup>1</sup> AOR (95% CI)	Communication about HIV Prevention <sup>1</sup> AOR (95% CI)	Communication about STD prevention <sup>1</sup> AOR (95% CI)
<i>Self-Identified Gender</i>					
Male	1.00	1.00	1.00	1.00	1.00
Female	<b>0.34 (0.24, 0.43)</b>	<b>1.36 (1.06, 1.77)</b>	<b>0.73 (0.57, 0.94)</b>	<i>0.63 (0.48, 0.83)</i>	0.85 (0.65, 1.10)
<i>Race or Ethnicity</i>					
NH White	ref	1.00	1.00	1.00	1.00
NH Black/African American	-0.12 (-0.26, 0.15)	1.29 (0.99, 1.88)	<b>2.23 (1.55, 3.19)</b>	<b>3.05 (2.12, 4.40)</b>	<b>2.67 (1.87, 3.81)</b>
Hispanic or Latino/a	0.00 (-0.11, 0.12)	0.98 (0.72, 1.35)	1.31 (0.97, 1.76)	1.21 (0.85, 1.72)	1.27 (0.92, 1.74)
NH Asian	<b>-0.30 (-0.52, -0.09)</b>	1.87 (0.98, 3.60)	1.20 (0.70, 2.08)	1.03 (0.53, 2.01)	1.24 (0.68, 2.26)
Other	0.07 (-0.14, 0.28)	1.19 (0.66, 2.14)	1.45 (0.84, 2.50)	<b>1.96 (1.10, 3.49)</b>	<b>1.79 (1.03, 3.11)</b>
<i>Age</i>	0.01 (-0.02, 0.03)	0.97 (0.90, 1.04)	<b>0.88 (0.82, 0.94)</b>	<b>0.90 (0.83, 0.98)</b>	0.94 (0.88, 1.02)
<i>Sexual orientation</i>					
Heterosexual	ref	1.00	1.00	1.00	1.00
Not heterosexual	-0.04 (-0.20, 0.12)	0.94 (0.61, 1.45)	1.23 (0.82, 1.85)	1.50 (0.96, 2.33)	<b>1.57 (1.04, 2.39)</b>
<i>Self-Efficacy to Obtain Sexual Consent</i>					
		<b>1.30 (1.14, 1.48)</b>	<b>1.24 (1.09, 1.41)</b>	<b>1.39 (1.19, 1.64)</b>	<b>1.36 (1.17, 1.57)</b>

Models were adjusted for lifetime prevalence of STI diagnosis, lifetime prevalence of any sexual and physical violence victimization, and school clustering. Bolded values denote significance ( $p < 0.05$ ).



**Table 4.** Multi-model probability of consistent condom use and the mediating effect of sexual health communication in the past 4 months

Demographic Characteristics	Base Model	Model 1	Proportion of outcome explained by mediator % (p)	Model 2	Proportion of outcome explained by mediator % (p)	Model 3	Proportion of outcome explained by mediator % (p)	Model 4	Proportion of outcome explained by mediator % (p)
<i>Self-Identified Gender</i>									
Male	1.00	1.00		1.00		1.00		1.00	
Female	0.94 (0.74, 1.19)	0.95 (0.75, 1.20)		0.99 (0.78, 1.25)		0.96 (0.76, 1.22)		0.95 (0.75, 1.20)	
<i>Race or Ethnicity</i>									
NH White	1.00	1.00		1.00		1.00		1.00	
NH Black/African American	0.85 (0.50, 1.44)	0.86 (0.51, 1.45)		0.76 (0.43, 1.34)		0.81 (0.46, 1.41)		0.83 (0.49, 1.41)	
Hispanic or Latino/a	0.90 (0.62, 1.31)	0.90 (0.62, 1.31)		0.85 (0.59, 1.24)		0.89 (0.61, 1.30)		0.90 (0.62, 1.29)	
NH Asian	<b>0.62 (0.41, 0.95)</b>	<b>0.65 (0.43, 0.99)</b>		<b>0.58 (0.36, 0.92)</b>		<b>0.62 (0.41, 0.93)</b>		<b>0.62 (0.41, 0.94)</b>	
Other	<b>0.55 (0.34, 0.89)</b>	<b>0.55 (0.34, 0.89)</b>		<b>0.53 (0.32, 0.86)</b>		<b>0.54 (0.33, 0.88)</b>		<b>0.54 (0.33, 0.89)</b>	
Age	0.94 (0.87, 1.02)	0.94 (0.87, 1.01)		0.96 (0.88, 1.04)		0.94 (0.87, 1.02)		0.94 (0.87, 1.02)	
<i>Sexual orientation</i>									
Heterosexual	1.00	1.00		1.00		1.00		1.00	
Not heterosexual	0.79 (0.42, 1.50)	0.79 (0.41, 1.51)		0.78 (0.40, 1.53)		0.77 (0.40, 1.47)		0.78 (0.41, 1.48)	
<i>Self-Efficacy to Obtain Sexual Consent</i>	<b>1.37 (1.19, 1.58)</b>	<b>1.39 (1.21, 1.60)</b>		<b>1.33 (1.15, 1.53)</b>		<b>1.35 (1.17, 1.56)</b>		<b>1.36 (1.18, 1.57)</b>	
<i>Communication about Pregnancy Prevention</i> <sup>1</sup>									
No		1.00	-3.89 (0.093)						
Yes		0.79 (0.62, 1.01)							
<i>Communication about Condom Use</i> <sup>1</sup>				1.00					
No									<b>12.48 (0.005)</b>

Demographic Characteristics	Base Model	Model 1	Proportion of outcome explained by mediator % (p)	Model 2	Proportion of outcome explained by mediator % (p)	Model 3	Proportion of outcome explained by mediator % (p)	Model 4	Proportion of outcome explained by mediator % (p)
Yes				<b>1.99 (1.58, 2.51)</b>					
<i>Communication about HIV Prevention</i>									
No						1.00	4.43 (0.147)		
Yes						1.24 (0.94, 1.64)			
<i>Communication about STD Prevention</i>									
No								1.00	2.01 (0.264)
Yes								1.11 (0.93, 1.31)	

The base model represents the adjusted odds of consistent condom use with self-efficacy to obtain sexual consent as the primary exposure; models 1-4 were analyzed by each independent communication topic as a mediator between self-efficacy to obtain sexual consent and consistent condom use. Models were adjusted for lifetime prevalence of STI diagnosis, lifetime sexual and physical violence victimization, school clustering, and use of birth control at last vaginal sex. Bolded values denote significance ( $p < 0.05$ ).