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Empirical Article

Risk factors of sexual violence perpetration and victimization among adolescents: A study of Norwegian high school students

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Sexual violence among adolescents represents a significant problem in society. In this study, we aimed to examine risk factors for sexual violence perpetration in adolescent men and victimization in adolescent women among a community sample of Norwegian high school students. The participants (560 men and 751 women, aged between 16 and 21 years) responded to online questionnaires covering physical and non-physical forms of sexual harassment and possible risk factors identified in the literature. Last year's prevalence rate of physical sexual perpetration reported by adolescent men was 7%. Comparably, the prevalence of physical sexual victimization reported by adolescent women was 30%. Path analyses suggest that sociosexuality was associated with adolescent men's sexual perpetration indirectly through sexual risk taking, alcohol intoxication, porn exposure, and sexual underperception that in turn was positively associated with undesirable non-physical solicitation from and toward women. In addition, rape stereotypes were associated with perpetration behavior in adolescent men. For adolescent women, sociosexuality was associated with being sexually victimized primarily through sexual risk behavior, alcohol intoxication, and sexual overperception. These factors were again positively associated with sexual derogation from adolescent women and solicitation from adolescent men. Prior sexual abuse victimization was only indirectly associated with victimization. The factors associated with adolescent men's perpetration and adolescent women's victimization were highly similar. Future work aimed at reducing sexual violence in adolescence within the educational context might find it more effective to specifically target non-physical forms of sexual harassment.

Key words: Adolescence, Risk factors, Sexual harassment, Sexual violence.

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INTRODUCTION

Official statistics shows that the typical perpetrator of sexual violence is a young man and that there are strong gender differences in rapes committed and other forms of sexual violence (Morgan & Oudekerk, 2019). Despite national differences in sexual violence prevalence,[1] and level of gender equality (World Economic Forum, 2020), these sex differences hold up across cultures (Huppin & Malamuth, 2016). Further, young women seem to be disproportionally subject to sexual aggression[2] (Kruse, Strandmoen & Skjørten, 2013).

Sexual violence is part of the broader concept sexual harassment, which refers to any unwanted or unwelcome sexual attention or advances. Sexual harassment covers a wide range of behaviors with physical and non-physical sexual content. Non-physical forms of sexual harassment such as derogatory comments (body, private parts, sexual behavior, sexual orientation) and display of digital sexual content can be conceptually distinguished from the less common and more severe forms of sexual violence (e.g., forced sexual contact, rape, and attempted rape). For measures of more common types of sexual harassment, sex differences are small and sometimes absent in samples of adolescents and emerging adults (American Association of University Women, 2001; Bendixen, Kennair & Grøntvedt, 2016).

To the extent the more common forms of non-physical sexual harassment are associated with, or precede, sexual violence has not yet been subject to empirical study. In this paper, we examine this association, and look at how more common forms of non-physical sexual harassment in conjunction with several known risk factors may be associated with adolescent self-reported sexual violence in Scandinavia.

Several theoretical approaches have been put forward to understand sexual aggression and violence. One of the more comprehensive is the confluence model that embodies an organized framework for studying sexual aggression in non-criminal men (Malamuth & Hald, 2016). Given that men are the typical perpetrators of sexual violence and women are predominately the victims, the confluence model was developed primarily for identifying characteristics of men who commit sexual aggression (Malamuth, 1996). In its most basic form, the model incorporates two paths leading to sexual aggression, each with relatively independent sets of characteristics that may *mutually* influence each other. The first path, named "hostile masculinity," suggests that men with personalities characterized by a defensive, insecure, and distrustful orientation towards women, who appear antagonistic and get gratification from controlling and dominating women, will hold negative attitudes toward women, condone intimate violence, and consequently be more likely to sexually violate women. The other path denoted "impersonal sex," suggests that men raised in violent and

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neglectful homes, will be prone to antisocial behavior, be more promiscuous, and have emotionally "detached" sexual relations. The confluence model has been expanded in recent years, and the most recent form, the confluence mediational model of sexual aggression (Malamuth & Hald, 2016) underlines the combined effects of distal factors, specific risk factors, and proximate situational influences on sexually aggressive behavior. These include heavy alcohol use and extensive exposure to pornography, but also misperception of women's sexual signaling (Abbey, Jacques-Tiura & LeBreton, 2011). The latter involves sexual overperception of ambivalent signals of friendliness (i.e., such signals are misperceived as sexual interest).

RISK FACTORS FOR ADOLESCENT MEN'S SEXUAL VIOLENCE PERPETRATION

In general, the empirical support for the confluence model is good with regard to the two paths. In their meta-analytic review, Murnen, Wright, and Kaluzny (2002) report that sexual aggression is moderately associated with various forms of hostile masculinity, acceptance of interpersonal violence, beliefs in interpersonal relationships being fundamentally exploitative, dominance/power, hostility toward women, and rape myth acceptance. The relationship between rape myth acceptance and sexual violence is also reported in more recent reviews (Tharp, DeGue, Valle, Brookmeyer, Massetti & Matjasko, 2012; Yapp & Quayle, 2018). Further, in their review of 191 empirical papers Tharp *et al*. (2012) found that multiple sex partners, impersonal sex, and early initiation of sex increase the risk of perpetration in nearly every study examined. In addition to the effect on sexual violence, sexually unrestricted people, characterized by preference for short-term sexual relationships (referred to as sociosexuality in the literature) are consistently found to report higher levels of general sexual harassment perpetration that does not necessarily involve any physical contact (Abbey *et al*., 2011; Bendixen & Kennair, 2017a; Casey, Masters, Beadnell, Hoppe, Morrison & Wells, 2017; Christopher, Owens & Stecker, 1993; Dean & Malamuth, 1997; Kennair & Bendixen, 2012; Malamuth, Linz, Heavey, Barnes & Acker, 1995; Malamuth, Sockloskie, Koss & Tanaka, 1991).

Alcohol consumption, a proximate and situational factor in the confluence mediation model, is associated with higher levels of reported sexual violence in adults (Abbey *et al*., 2011; Casey *et al*., 2017; Davis, Kiekel, Schraufnagel, Norris, George & Kajumulo, 2012; Hoyt & Yeater, 2011; Krahé & Berger, 2013). However, in younger populations findings are more mixed, and correlations are often nonsignificant (Tharp *et al*., 2012). Furthermore, Tharp *et al*. (2012) identified a number of factors that increase the risk of sexual aggression. The most consistent risk factors include prior sexual violence or intentions to do so, being subject to child physical or sexual abuse, delinquency/conduct disorder/aggression, impulsivity, exposure to parental violence or family conflict, sexual risk taking, sexual misperception of signals, and exposure to sexually explicit media (i.e., pornography). The latter appear to influence sexual aggression propensity even when other factors are accounted for in the confluence model (Vega & Malamuth, 2007). Finally, exposure to pornography was also found to predict sexual harassment and violence in a study of high school students from a more gender-equal culture (Kennair & Bendixen, 2012), but this kind of exposure was linked to unrestricted sociosexuality rather than to rape stereotypes or to attitudes condoning forced sex. This suggests that porn exposure may primarily reflect a preference for uncommitted, casual sex in these age groups.

RISK FACTORS FOR ADOLESCENT WOMEN'S SEXUAL VIOLENCE VICTIMIZATION

Studies on sexual victimization among adolescents and emerging adults have identified several factors associated with an increased risk of being subject to sexual violence for both sexes. Studies consistently show that both men's and women's dating and sexual behaviors (such as dating frequency, number of lifetime sexual partners, having had sex on the first night, and number of one-night stands) are associated with being sexually harassed and victimized (Bendixen & Kennair, 2017a; Kennair & Bendixen, 2012; Maxwell, Robinson & Post, 2003; Skoog & Özdemir, 2015, 2016; Testa, Hoffman & Livingston, 2010; Tyler, Schmitz & Adams, 2017). Furthermore, higher levels of unrestricted sociosexuality are associated with a higher likelihood of being raped in the past (Perilloux, Duntley & Buss, 2011). This complements the findings of less restricted sociosexuality among sexually aggressive men. Hence, there is some evidence suggesting that women who have casual sex more frequently are at greater risk of being sexually victimized. In addition, early pubertal timing in both sexes has among adolescents been found to predict being sexually harassed and victimized through its effect on mature appearance and sexual behavior (Skoog & Özdemir, 2015, 2016). Sexual violence is also found to be associated with frequent and heavy substance use (Krahé & Berger, 2013; Mohler-Kuo, Dowdall, Koss & Wechsler, 2004; Raghavan, Bogart, Elliott, Vestal & Schuster, 2004; Tyler *et al*., 2017), and several studies suggest that prior sexual abuse increases the risk of sexual revictimization, primarily through its impact on behaviors involving sexual risk taking (Fergusson, Horwood & Lynskey, 1997; Messman-Moore & Long, 2003; Testa *et al*., 2010).

THE CURRENT STUDY

Informed by known risk factors from the confluence mediation model and the above summary of risk factors (Malamuth & Hald, 2016; Murnen *et al*., 2002; Tharp *et al*., 2012), this study aims to examine factors that may be associated with men's self-reported sexual violence perpetration in a Scandinavian context. As part of the hostile masculinity path of the model, we included hostile sexism toward women, rape stereotypes (myths), and distrustful adversarial beliefs about women. As part of the impersonal sex path of the model, we included sociosexuality, sexual risk taking, physical attractiveness, pornography exposure, alcohol intoxication, and being subject to sexual underperception. In a parallel model, we examine factors associated with women's sexual victimization, using adolescent women's reports from the same population. This enables identification of factors that may increase both the risk of sexual violence perpetration and victimization among adolescents from the same sample.

Relative to non-physical forms of sexual harassment, sexual violence appears to show greater signs of pathology (Tharp

et al., 2012). Despite this, research on sexual harassment has regularly failed to separate non-physical forms from those involving sexual violence (physical) or examine how these two phenomena may be related. From a developmental perspective, non-physical sexual harassment is more likely to precede sexual violence than the other way around; if one transgresses other's personal sexual boundaries verbally or through other non-physical means (e.g., sending pictures with sexual content), the probability of performing more serious, physical sexual transgressions might increase. Furthermore, in prior research, sexual harassment is found to comprise two relatively distinct sub-types of behavior; solicitation and derogation (Bendixen & Kennair, 2017a; Schnoll, Connolly, Josephson, Pepler & Simkins-Strong, 2015). Solicitation behavior involves attempts to communicate sexual attraction and romantic interest, but in ways that are perceived as upsetting and offensive by the receiver (target). In heterosexuals, these behaviors are more likely directed toward individuals of the opposite sex. On the other hand, derogatory behavior typically covers negative comments (slurs) directed toward same-sex peers who are considered competitors (Bendixen & Kennair, 2017a).

Among adolescent peers, being subject to undesired solicitation and derogation from peers can be either a result of or instigate own solicitation and derogation behavior. From a social norm perspective, being subject to solicitation and derogation may form perceptions of this being acceptable, which again increases the likelihood of using similar behaviors and sexual violence oneself. Hence, we aim to examine possible mechanisms linking non-physical harassment types of behavior such as same-sex derogation and opposite-sex undesired solicitation to sexual violence perpetration and victimization.

Our tested path models of predictors of sexual violence perpetration by men and victimization of women cover risk/sensation seeking and sociosexuality as background factors (including prior abuse for women victims), porn exposure, sexual misperception, sexual risk taking, and alcohol intoxication as intermediate factors, and finally non-physical forms of sexual harassment as immediate factors (including masculine hostility measures for men as perpetrators). Because non-physical forms of sexual harassment in previous research is shown to reflect two distinct components: (1) undesired opposite-sex sexual solicitation and (2) same-sex competitor derogation, these were separate predictors in the model (Bendixen & Kennair, 2017a).

METHODS

Participants and design

A cross-sectional study was carried out on a large community sample of students aged between 16 and 21 from 17 Norwegian high schools. The participants responded to a web-based questionnaire focusing on sexual harassment perpetration and victimization. Initial screening procedures resulted in the exclusion of subjects whose responses were inconsistent across questions on sexual abuse (n = 14), monotonous (75% of the responses on items within scale were identical, n = 57), or extreme (all responses were at the extremes, n = 36) across measurements. Due to the focus on opposite-sex sexual violence, only those who self-identified as heterosexuals were included for analyses (91.6% men and 88.5% women). Analyses were performed on 560 perpetrators (men) and 751 victims (women) with a mean age of 17.7 years for both sexes.

Procedure

Invitation to participate in the study was sent out to the principals of all 22 high schools in Sør-Trøndelag County. For those schools that wanted to be included, the students, their parents, and the school staff received written information about the study, stating the purpose and content of the project. The school administered the written information and informed consent form, and those students who gave their active consent received a school-based login code to a web-based survey in exchange for returning the consent form (the age of consent is 16 in Norway). Classroom arrangements were made for group administration at school to increase privacy and confidentiality. This included instructions from a teacher to increase the space between desks in their regular classrooms. For students who were absent from school, there was an option to respond to the questionnaire at home and unsupervised on their designated (school) computer. No personal identification was recorded on the questionnaire, and the students' responses remained anonymous. Throughout the weeks that the survey took place the schools' public health nurses had stand-by time to offer support to students in distress.

Measurements: perpetrators (men)

Outcome variable: sexual violence. The participants responded 0 (*No*) or 1 (*Yes*) to whether they had performed each of four following sexual acts toward an adolescent woman during the current school year: (1) forced kissing; (2) forced upper body touching; (3) forced touching of private parts; and (4) forced intercourse or oral sex (Kennair & Bendixen, 2012). Internal consistency (Kuder-Richardson, KR-20) was acceptable (KR = 0.66). Item scores were summed, and the scale was dichotomized with scores 0 (*No*) or 1 (*Yes*).

Background factors Sensation seeking. The need for intense stimulation was measured with three items from Arnett Inventory of Sensation Seeking (Arnett, 1994). The three items were: "It would be interesting to see a car accident happen," "I like the feeling of standing next to the edge on a high place and looking down," and "I can see how it must be exciting to be in a battle during a war." Four-point Likert scaling was used with anchors 1 (*describes me very well*) and 4 (*does not describe me at all*). Internal consistency (α = 0.56) was fair considering the low number of scale items. Item scores were averaged, with high scores reflecting more need for intensity.

Sociosexuality. Participants completed a translated version of the nine-item revised sociosexuality orientation inventory (SOI-R; Bendixen & Kennair, 2017a; Penke & Asendorpf, 2008), a three-component measure of preference for short-term or casual sexual relations. Sample items for the behavioral, attitudinal, and desires components were: "With how many different partners have you had sex within the past 12 months?" "Sex without love is OK," and "In everyday life, how often do you have spontaneous fantasies about having sex with someone you have just met?" Response alternatives, scaling and scoring were identical to Penke & Asendorpf (2008). Internal consistency was good (α = .85).

Intermediate factors Sexual risk taking. The participants responded 0 (*No*) or 1 (*Yes*) to whether they had performed each of the four following sexually risky behaviors during the current school year: (1) having had sex without a condom; (2) having had sex when intoxicated/drunk; (3), having had sex with multiple sex partners over a short period of time; and (4) having had sex with an unfamiliar person (a stranger). Internal consistency was good (KR = 0.78). Item scores were summed. High scores reflect more sexually risky behaviors.

Frequency of alcohol intoxication (alcohol. Participants were asked how frequently they had "drunk so much alcohol during the current school year that they clearly felt intoxicated." Response alternatives were: 0 (*never*), 1 (*occasionally*), 2 (*once a month*), 4 (*one a week*), and 4 (*once a day*).

Porn exposure. Participants responded to five questions regarding their use of erotica and pornographic media. They responded initially 0 (*No*) or

1 (*Yes*) being exposed to each of the following types during the current school year: (1) erotica; (2) X-rated/soft core porn; (3) XXX-rated/hard core porn; and (4) violent porn. Based on the responses we formed a Porn Type variable ranking the most explicit type: 0 (*no exposure*), 1 (*erotica only*), 2 (*soft core porn*), 3 (*hard core porn*), and 4 (*violent porn*). They also rated their frequency of porn use: 0 (*never*), 1 (*rarely*), 2 (*monthly*), 3 (*weekly*), or 4 (*daily*). Porn type and frequency correlated strongly (r = 0.43). To calculate overall exposure to porn, each participant's porn type score was multiplied by their frequency score (Bendixen & Kennair, 2017a; Kennair & Bendixen, 2012).

Being sexually underperceived. We applied two questions from prior studies on being subject to sexual underperception by members of the opposite sex (Bendixen, 2014; Haselton, 2003). Questions read: "Have you ever attempted to sexually *'come-on'* to someone of the opposite sex only to discover that she had misperceived your sexual interest as friendliness?" and "Have you ever been in a situation with a member of the opposite sex in which you were *sexually attracted* to her, but she assumed you were just trying to be nice?" Responses were: 0 (*No*) or 1 (*Yes*). The two items correlated strongly (ρ = 0.81). Item scores were summed.

Beliefs that women use token resistance. To measure distrustful or adversarial beliefs a single question was posed: "A woman may strongly desire sex even though she repeatedly says 'no,' and that she doesn't want to do it" (Muehlenhard & Hollabaugh, 1988). Response alternatives were identical to those used for Hostile sexism.

Physical attractiveness. Three questions regarding own physical attractiveness were posed: "Compared with other men you know who are about your age, how generally physically attractive do you consider yourself?" Additional questions were posed for body and face specifically (Bendixen, 2014). Participants rated their attractiveness on a seven-point response scale with anchors 1 (*Well below average*) and 7 (*Well above average*). Internal consistency for the three-item scale was excellent (α = 0.89). Item scores were averaged.

For hostile sexism, a short-form Norwegian translation of the ambivalent sexism scales toward women (ASI; Glick & Fiske, 1996) was applied (Bendixen & Kennair, 2017b). Sample items were "When women lose to men in a fair competition, they typically complain about being discriminated against," and "Most women interpret innocent remarks or acts as being sexist." Response alternatives were: 1 (*strongly disagree*), 2 (*disagree*), 3 (*neither disagree nor agree*), 4 (*agree*), and 5 (*strongly agree*). The internal consistency for the four items was good (α = .82). Items were averaged with high scores reflecting more sexism.

Immediate factors Rape stereotypes. For measuring stereotypical beliefs about rape we adopted an eight-item short form Norwegian translation of McMahon and Farmer's (2011) updated Illinois rape myth acceptance scale (Bendixen & Kennair, 2017b). Sample items were: "A rape probably doesn't happen if a girl doesn't have any bruises or marks," "A lot of times, girls who say they were raped agreed to have sex and then regret it," and "It shouldn't be considered rape if a guy is drunk and didn't realize what he was doing." Response alternatives were identical to those used for hostile sexism. Internal consistency was good (α = 0.83). Items were averaged, with high scores reflecting stronger stereotypical beliefs about rapes of women.

Sexual harassment (two components: undesired sexual solicitation and derogation behavior). The participants responded 0 (*No*) or 1 (*Yes*) to whether they had performed each of four following undesired solicitation behaviors toward an adolescent woman during the current school year: (1) showed sexually laden pictures or objects; (2) dirty/denigrating comments on body or looks; (3) sending sexual content through electronic media (mobile or internet); and (d) sexual requests (asking for or requiring sexual service). Internal consistency was acceptable (KR = 0.63). Items with the same content were used for measuring *being the target* of opposite-sex undesired solicitation (Bendixen & Kennair, 2017a). Internal consistency was acceptable (KR = 0.60). The participants responded 0 (*No*) or 1 (*Yes*) to whether they had performed each of four following derogatory behaviors toward adolescent men: (1) denigrating comments such as "whore," "manwhore," "slut," "manslut," "loose." etc.; (2) denigrating comments such as "gay," "lesbo," "fag," "dyke," etc.; (3) denigrating comments such "cunt," "prick," "asshole," "bitch," etc.; and (4) spreading of sexual rumors. Internal consistency was good (KR = 0.80). The same derogation items toward adolescent women constituted the variable opposite-sex derogation. Internal consistency was good (KR = 0.82). For the above solicitation and derogation measures, item scores were summed.

Measurements: victims (women)

Outcome variable –sexual violence. Item content was identical to those for men's perpetration (described above). Internal consistency was acceptable (KR = 0.66). The item scores were summed, and the scale was dichotomized with scores 0 (*No*) or 1 (*Yes*).

Background, intermediate, and immediate factors History of sexual abuse[3]. Having a history of forced intercourse or oral sex prior to the current school year was calculated using the responses from two separate items ("ever" prevalence minus "last year" prevalence). Response alternatives were 0 (*No*) or 1 (*Yes*). The perpetrator was specified as "adolescent man," "adolescent woman," and "adult" and all three could be checked.

For measuring history of being sexually misperceived by men, we posed two questions: "Have you ever been *friendly* to someone of the opposite sex only to discover that he had misperceived your friendliness as a sexual come-on?" and *"*Have you ever been in a situation with a member of the opposite sex in which you were *just trying to be nice*, but he assumed you were sexually attracted to him?" (Bendixen, 2014). Responses were 0 (*No*) or 1 (*Yes*). The two items correlated strongly (ρ = 0.78). Item scores were summed.

The content, scoring, and scaling of the following variables were identical to that of men as perpetrators. Sensation seeking (α = 0.59), sociosexuality (α = 0.82), physical attractiveness (α = 0.86), porn exposure, alcohol intoxication, sexual risk taking (KR = 0.72), being target of same-sex derogation (KR = 0.60), being target of opposite-sex derogation (KR = 0.66), being target of opposite-sex solicitation (KR = 0.66), and opposite-sex solicitation *perpetration* (KR = 0.44).

Analyses

All statistical test were performed using Stata/MP 18 for Mac (StataCorp., 2023). Path analyses were performed using Stata's partial least squares structural equation modeling that accepts binary outcomes akin logit models (PLS-SEM; Venturini & Mehmetoglu, 2017). We retained the maximum number of observations by imputing missing values using the k*th* nearest neighbor method (the knn default option in PLS-SEM was applied. This is the alternative to mean substitution). Post-estimation procedures included direct and indirect effects, and McFadden R^2.

RESULTS

Predictors of adolescent men's sexual violence perpetration

Associations among constructs. As seen from Table 1, and despite the low prevalence of adolescent men's sexual violence perpetration (7%), all four *non-physical* sexual harassment measures were moderately associated with the outcome. For instance, the association between perpetration and soliciting adolescent women (opposite sex) was r = 0.36. For *being* solicited by adolescent women this association was r = 0.32. For the other variables, these associations were considerably smaller. Adolescent men who reported being sexually underperceived,

Table 1. *Zero-order (Pearson's r) correlations for adolescent men (n = 560, missing values imputed)*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Sensation seeking	–														
2. SOI-R	0.25	–													
3. Phys. attractiveness	0.14	0.24	–												
4. Sexual risk taking	0.15	0.42	0.24	–											
5. Alcohol	0.11	0.39	0.13	0.50	–										
6. Porn Exp	0.22	0.34	0.02	0.08	0.16	–									
7. SUP	0.12	0.29	0.05	0.13	0.15	0.25	–								
8. Sexism	0.26	0.18	0.05	0.11	0.07	0.20	0.21	–							
9. RST	0.22	0.10	−0.03	0.10	0.03	0.05	0.01	0.32							
10. TR beliefs	0.21	0.16	0.12	0.13	0.07	0.03	0.17	0.26	0.14	–					
11. Dero_OS	0.14	0.20	−0.01	0.18	0.22	0.15	0.18	0.17	0.14	0.07	–				
12. Dero_SS	0.17	0.25	0.06	0.15	0.26	0.16	0.11	0.15	0.12	0.15	0.61	–			
13. Soli_OS	0.15	0.25	0.04	0.20	0.21	0.21	0.28	0.17	0.15	0.10	0.63	0.46	–		
14. Soli_OSV	0.12	0.29	0.08	0.28	0.28	0.12	0.23	0.13	0.12	0.11	0.47	0.41	0.51	–	
15. Perpetration[a]	0.12	0.11	0.06	0.14	0.17	0.14	0.10	0.09	0.17	0.09	0.28	0.27	0.36	0.3	–
Mean	2.25	4.29	4.36	1.06	1.36	5.39	0.59	2.88	2.26	3.25	0.36	0.90	0.28	0.47	0.07
SD	0.70	1.62	1.39	1.31	0.99	3.38	0.79	0.90	0.65	1.21	0.91	1.27	0.70	0.84	0.25
Min–Max	1–4	1–9	1–7	0–4	0–4	0–12	0–2	1–5	1–5	1–5	0–4	0–4	0–4	0–4	0–1

Notes: Correlations are significant at $r = 0.083$ ($p < 0.05$), $r = 0.109$ ($p < 0.01$), and $r = 0.139$ ($p < 0.001$). SOI-R = sociosexual orientation inventory-revised, Porn Exp = porn exposure, SUP = sexual underperception, RST = rape stereotypes, TR = token resistance, Dero = derogating, Soli = soliciting, OS = opposite-sex, SS = same-sex, OSV = opposite-sex victimization.
[a]Dichotomously coded (0.1).

who held token resistance beliefs or hostile attitudes toward women, or who were more sensation seeking or more oriented toward short-term sex reported only slightly more sexual violent perpetration.

Of note is that porn exposure showed no association with rape stereotypes or token resistance beliefs ($r = 0.05$ and $r = 0.03$ respectively). On the other hand, porn exposure was significantly associated with hostile sexism toward women ($r = 0.20$). Sociosexuality correlated moderately with sensation seeking, but the correlational patterns for these two predictors differed markedly: sociosexuality correlated more strongly with own physical attractiveness, sexual risk taking, alcohol intoxication, porn exposure, sexual underperception, and all four non-physical harassment scales. In contrast, sensation seeking correlated more strongly with hostile sexism, rape stereotypes, and token resistance beliefs. The four non-physical sexual harassment scales all showed strong intercorrelations, and the overlap between being subject to undesired solicitation from adolescent women and own solicitation behavior toward adolescent women was considerable ($r = 0.51$).

Path analysis. In predicting men's sexual violence perpetration, we included only those predictors that showed significant zero-order associations with the outcome, and we removed step by step those variables that did not contribute significantly to the prediction of perpetration. In the final path model (Fig. 1), we distinguished background factors (sensation seeking and sociosexuality) from intermediate factors (porn exposure, being sexually underperceived, sexual risk taking, and alcohol intoxication), and immediate factors (rape stereotypes, solicitation, and being solicited). The latter three factors constitute the "core" model. As shown in Fig. 1, own undesired solicitation behavior and being solicited by women were the primary predictors with rape stereotypes adding some effect to the prediction of sexual violence perpetration. These three factors accounted for 16.1% of the variance in men's sexual violence perpetration.

Of the two background factors only sociosexuality was significantly associated with perpetration, and this association was merely indirect (see Appendix Table A1 for details on direct, indirect, and total effects). Still, sensation seeking evinced some association with rape stereotypes and porn exposure. Sociosexuality was positively associated with almost all intermediate and immediate factors (porn exposure, sexual underperception, sexual risk taking), alcohol intoxication and being solicited. Furthermore, porn exposure, being sexually underperceived, sexual risk taking, and alcohol intoxication were all significantly associated (directly or indirectly) with undesired solicitation behavior and being solicited, but neither executed any effect on perpetration. The factors in the model accounted for fully 29.8% of the variance in undesired solicitation, and for sizeable proportions of the variance in solicitation victimization ($R^2 = 0.143$), sexual risk taking ($R^2 = 0.183$), alcohol intoxication ($R^2 = 0.156$), and porn exposure ($R^2 = 0.144$). However, only a fraction of the variance in rape stereotypes was accounted for by the model ($R^2 = 0.059$).

Looking more closely at the "core" model revealed that adolescent men who reported being *subject* to undesired solicitation from adolescent women affected perpetration ($\beta = 0.177$) as well as indirectly ($\beta = 0.187$) producing the total effect of $\beta = 0.364$. The total effect of own undesired solicitation of adolescent women on sexual violence was particularly strong (β =0 .429) and primarily a direct one ($\beta = 0.252$). Because of the strong association between being solicited and own solicitation behavior we wanted to examine this association more closely in a separate no recursive model (Nagase & Kano, 2017). When we applied PLS-SEM bootstrapping procedures, the analyses suggest a reciprocal effect, but that the direction of the effect went from

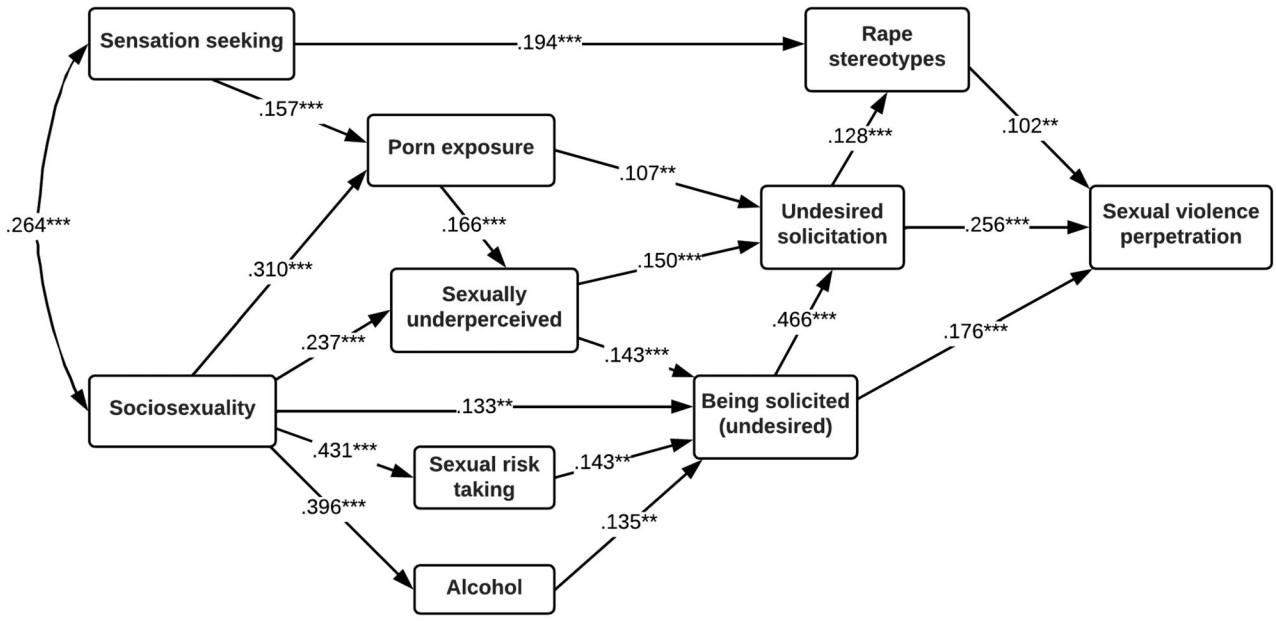

Fig. 1. Predictors of men's sexual violence perpetration (n = 560), R^2 = 0.161.

being solicited (z = 2.80, P = 0.005) to own solicitation more than the other way around (z = 2.22, P = 0.026).

In summary, adolescent men's sexual violence perpetrators also reported higher levels of non-physical solicitation of, and higher levels of being solicited by, adolescent women. To some extent, they also held more stereotypical beliefs about rape. The latter factor was primarily affected by sensation seeking. None of the other factors had any direct effect on the use of sexual violence. Solicitation behavior (and being solicited) were both predicted by porn exposure, sexual underperception, sexual risk taking, and by alcohol intoxication in the model. Sociosexuality had a marked effect on several of the intermediate factors (porn exposure, sexual underperception, sexual risk taking, and alcohol intoxication), and affected both being solicited and own undesired solicitation, but it had no direct effect on the outcome.

Predictors of women's sexual violence victimization

Associations among constructs. Thirty percent of women students reported sexual victimization by an adolescent man during the current school year. Being sexually victimized was particularly strongly associated with being subject to undesirable non-physical solicitation (r = 0.54), and strongly with being derogated by same- and opposite-sex peers (r = 0.40 and r = 0.38 respectively). Also, women students who subjected their opposite-sex peers to undesired solicitation were more likely to report being sexually victimized (r = 0.27). Those reporting sexual abuse prior to the current school year reported sexual victimization more often, as well as being subject to derogation and solicitation. As shown in Table 2, the only variable that showed no association with being sexually victimized was physical attractiveness.

Sociosexuality correlated significantly with all the other predictors except physical attractiveness, particularly strong with alcohol intoxication and sexual risk taking, and moderately with porn exposure and being subject to sexual overperception. Unrestricted sociosexuality was also significantly associated with higher levels of being derogated, solicited, solicitation perpetration (r = 0.16), and sexual victimization (r = 0.18).

Path analysis. The most parsimonious model for predicting women's sexual victimization covered eight relevant variables (Fig. 2). The principal factor associated with being sexually victimized was being subject to undesired solicitation by opposite-sex peers (men). In addition, being derogated by same-sex peers, and being subject to sexual overperception were directly associated with the likelihood of reporting being sexually victimized. These factors accounted for a substantial amount of variance in sexual victimization (R^2 = 0.334). All direct, indirect, and total effects for all factors are presented in Appendix Table A2. When we applied a small effect (minimum β = 0.100) as a minimum criterion for considering a variable to have an effect (Cohen, 1988), sociosexuality was the only background factor that was associated with being sexually victimized (β = 0.153). As can be seen from Fig. 2, the association was merely indirect. However, sociosexuality was directly and strongly associated with alcohol intoxication and sexual risk taking, and moderately associated with being subject to sexual overperception in the model. Sociosexuality was also associated with being solicited by adolescent men (total effect: β = 0.207). Furthermore, sexual risk taking and being sexually overperceived were associated with being derogated by same-sex peers and being solicited by opposite-sex peers, while alcohol intoxication showed some association with being derogated but not with being solicited. The model accounted for 20.7% of the variance in alcohol intoxication, 21.5% of the variance in sexual risk taking, and 15.1% of the variance in undesired solicitation. In addition, the model accounted for some variance in same-sex derogation (R^2 = 0.107) and being subject to sexual overperception (R^2 = 0.105).

In summary, being solicited by adolescent men was the primary predictor of adolescent women's sexual victimization in the

Table 2. *Zero-order (Pearson's r) correlations for adolescent women (n = 751, missing values imputed)*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Prior abuse[a]	–												
2. Sensation seeking	0.06	–											
3. SOI-R	0.09	0.23	–										
4. Phys attractiveness	−0.07	0.03	0.03	–									
5. Sexual risk taking	0.21	0.08	0.43	0.11	–								
60. Alcohol	0.11	0.17	0.45	0.05	0.44	–							
7. Porn Exp.	0.13	0.15	0.32	0.01	0.13	0.11	–						
8. SOP	0.15	0.20	0.29	0.12	0.18	0.26	0.18	–					
9. Dero_OS	0.26	0.16	0.15	−0.01	0.21	0.22	0.18	0.26	–				
10. Dero_SS	0.32	0.14	0.19	−0.01	0.27	0.23	0.26	0.20	0.63	–			
11. Soli_OS	0.25	0.14	0.23	0.02	0.22	0.22	0.21	0.28	0.50	0.45	–		
12. Soli_OSP	0.06	0.08	0.16	0.08	0.11	0.13	0.23	0.14	0.28	0.25	0.41	–	
13. Victimization[a]	0.19	0.15	0.17	0.03	0.19	0.21	0.19	0.29	0.38	0.40	0.54	0.27	–
Mean	0.08	1.75	2.98	3.66	1.14	1.28	0.73	0.76	0.58	0.61	0.85	0.19	0.30
SD	0.27	0.65	1.37	1.26	1.20	0.86	1.57	0.85	0.97	0.95	1.19	0.51	0.46
Min–Max	0–1	1–4	1–9	1–7	0–4	0–4	0–12	0–2	0–4	0–4	0–4	0–4	0–1

Note: Correlations are significant at $r = 0.072$ ($p < 0.05$), $r = 0.094$ ($p < 0.01$), and $r = 0.120$ ($p < 0.001$). SOI-R = sociosexual orientation inventory-revised, Porn Exp = porn exposure, SOP = sexual overperception, Dero = derogated, Soli = solicited, OS = opposite-sex, SS = same-sex, OSP = opposite-sex perpetration.
[a]Dichotomously coded (0.1).

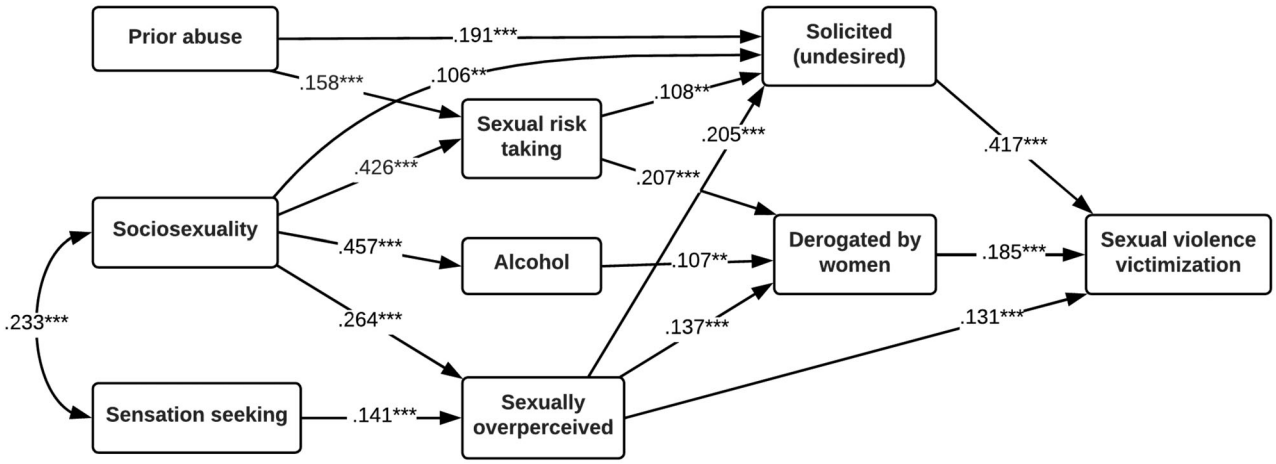

Fig. 2. Predictors of women's sexual violence victimization ($n = 751$), $R^2 = 0.334$.

model. Additional direct associations were also evident for being subject to sexual overperception and being derogated by adolescent women. Unrestricted sociosexual orientation was moderately associated with the intermediate factors that increased the risk of being sexually victimized. Neither sexual risk taking, more alcohol intoxication, nor having a history of sexual abuse prior to the current study year showed any association with sexual victimization in adolescent women.

DISCUSSION

The first aim of this study was to examine factors that may be associated with self-reported adolescent men's sexual violence perpetration and women's sexual victimization using reports from men and women from the same population. The second aim was to examine possible mechanisms linking non-physical harassment types of behavior such as same-sex derogation and opposite-sex undesired solicitation to sexual violence. The path analysis revealed three direct predictors of adolescent men's sexual violence perpetration. Sexual violence perpetration was associated with undesirable sexual solicitation *of* adolescent women, and by being the target of undesirable sexual solicitation *from* adolescent women. In addition to the direct effect of being solicited, this effect also ran through own solicitation behavior *toward* adolescent women. Young men who are subject to undesirable solicitation from women may form an impression that this form of behavior is acceptable, increasing the likelihood of using both undesirable solicitation behavior and sexual violence toward women. This behavior seems, however, not to be motivated by hostile beliefs or linked to opposite-sex derogation. This latter finding contrasts the majority of prior studies that have reported moderate effects of hostile masculinity on men's sexual violence perpetration (Murnen *et al*., 2002), and the role of this path in the confluence mediation model may be less essential for understanding use of sexual violence in adolescent populations. Sociosexuality, a preference for short-term sexual relations,

showed an indirect association with sexual violence perpetration through its correlations with porn exposure, being sexually underperceived, sexual risk taking and alcohol, and through its correlations with solicitation perpetration and victimization (i.e., undesired solicitation from adolescent women). This adds to the previous literature on mechanisms linking short-term sexual orientation to the use of sexual violence among adolescents (Casey *et al*., 2017; Krahé & Berger, 2013; Malamuth & Hald, 2016).

For adolescent women, being sexually victimized by adolescent men was primarily associated with being subject to non-physical undesired sexual solicitation from adolescent men. We also found that sexual *derogation* by adolescent women and being subject to sexual overperception was directly associated with sexual victimization. Same-sex derogation is a form of sexual competition that is used to regrade the target's social status within a group, and this increased vulnerability may have contributed to more sexual violence from adolescent men. Increased vulnerability may also account for the finding that women who reported sexual abuse prior to the current school year were more likely to report sexual victimization during the current school year. This is in line with previous studies on revictimization (Fergusson *et al*., 1997; Messman-Moore & Long, 2003; Testa *et al*., 2010). However, the association was weak, and fully accounted for by being subject to undesired sexual solicitation and not by sexual risk taking as suggested in the previous literature.

The association between sociosexuality and being sexually victimized was distinct but indirect and ran through the intermediate factors sexual risk taking, alcohol intoxication, and sexual overperception. This suggests that preference for short-term sexual relations is a relevant risk factor also for being sexually victimized (Perilloux *et al*., 2011). The likelihood of being sexually victimized was higher for women who reported various forms of sexual risk taking (multiple partners over short periods of time, sleeping with strangers, not using condoms, and being intoxicated while having sex) and for women who reported prior abuse, suggesting increased vulnerability in these adolescent women. On the other hand, the frequency of alcohol intoxication and being subject to verbal derogation from adolescent *men* did not increase the risk of sexual victimization. We wish to make a note that this is not about blaming the victim; the aim is to establish empirical risk factors. This is relevant for identifying interventions to reduce both sexual violence perpetration and victimization. Reducing sexual harassment behavior in adolescent peer groups would be a general protective intervention, given these results. Targeted interventions will probably be more beneficial than general preventive interventions. Future intervention studies might consider the current risk factors.

Taken together, the above findings suggest that adolescent men and women in interaction with each other and over time whose sociosexual personalities are more short-term oriented are more sexually risk prone as part of their sexual exploration and mating efforts. This involves undesired sexual solicitation behavior from adolescent men toward women (and also undesired solicitation *from* women) that appears to increase the risk of sexual violence perpetration.

LIMITATIONS AND STRENGTHS

The current study measured sexual harassment and sexual violence during a specified period with anchor points. We believe this may have improved memory for relevant events. Still, the major limitation of our findings is that the retrospective cross-sectional design does not permit any analysis of causality. Similar to all non-experimental designs, where systematic manipulation of independent factors is not possible, this represents a threat to the internal validity of the findings. While non-physical sexual harassment is much more frequent than sexual violence, we cannot conclude with certainty that sexual violence is a continuation of non-physical sexual harassment (solicitation and derogation). Still, this is the model we propose for further studies of causality. There is greater normalcy to harassment, and therefore we also suggest that despite the use of sexual violence being on a continuum of harassment for perpetrators, many adolescent men step over these boundaries. The directionality of the effect may also be reversed. Although we consider this less likely, this issue remains open until longitudinal data are available. Another limitation to the generalizability of our findings is due to the inclusion of heterosexuals only. A limitation of Malamuth's confluence model and its more recent developments is its primary focus on men as perpetrators of sexual violence toward women (Turchik, Hebenstreit & Judson, 2016). Clearly, victims of sexual harassment and the more serious forms of sexual violence also include men and people of various sexual orientations, and women as perpetrators (Walters, Breiding & Chen, 2013). The mechanisms associated with sexual violence for sexual minority people may or may not be different from those of heterosexuals, but the number of minority people in this sample of adolescents was too low for performing an analysis of sufficient power. Finally, some unmeasured common underlying trait or factor that predicts both harassment and sexual violence may be operative. This may be a personality trait or some form of social influence from peers or family.

CONCLUSIONS AND FUTURE DIRECTIONS

The current work underscores the importance of same-sex derogation and opposite-sex undesirable solicitation in identifying risk factors and possible precursors of sexual violence (Bendixen & Kennair, 2017a; Kennair & Bendixen, 2012). The findings that many of the same factors predicting men's sexual violence perpetration also are risk factors of women victimization mirrors earlier findings of similar processes underlying sexual harassment and being harassed (Kennair & Bendixen, 2012), even when one considers same-sex and opposite-sex gender constellations of victims and perpetrators (Bendixen & Kennair, 2017a). Future renditions of the confluence model would benefit from the inclusion of more common forms of sexual harassment (undesired sexual solicitation and competitor derogation). In addition, we recommend that future research attempts to consider the long-term interplay between the significant predictors found in the current cross-sectional community sample of high school students.

Finally, for intervention policy, we believe there is a need to consider the mechanisms uncovered in this paper in order to

effectively reduce and prevent future patterns of sexual violence among adolescents. Although interventions have succeeded in altering attitudes toward sexual harassment and violence, and increased the awareness of this problem, there are very few interventions that yet have documented a significant reduction of sexual harassment behavior among adolescents and young adults or that have succeeded in preventing future sexual violation (Coker, Bush, Cook-Craig *et al*., 2017; Connolly *et al*., 2015; de Lijster, Felten, Kok & Kocken, 2016; Espelage, Low, Polanin & Brown, 2015; Pina, Gannon & Saunders, 2009; Taylor, Stein, Mumford & Woods, 2013). However, one large scale bystander intervention program with randomized control and treatment schools reported lower levels of both sexual violence perpetration and victimization in trials schools compared to controls over a period of 4 years (Coker *et al*., 2017). Furthermore, a large scale school-based programs that focused on empathy and problem-solving reported lower levels of being exposed to homophobic name calling and sexual violence perpetration in the intervention schools after 2 years compared to control schools (Espelage *et al*., 2015). Although the above results have not yet been subject to replication, these are promising intervention strategies for future prevention.

Future work aimed at reducing sexual violence among adolescents within the educational context might find it more effective to target non-physical forms of sexual harassment and work with unwanted, aggressive opposite-sex solicitation on the one hand and same-sex derogation on the other. If one can reduce the negative sexual interactions consisting of sexual harassment within peer groups, including slut shaming of young women, homophobic comments, and undesirable sexual solicitation among both men and women, this could result in a reduction of sexual victimization among these individuals. Reduction of negative sexual interactions may be achieved through various practical exercises that include role playing under the guidance of skilled personnel using scripts akin to those applied for effective bully prevention programs (e.g., Olweus & Limber, 1999).

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ENDNOTES

[1] https://worldpopulationreview.com/country-rankings/rape-statistics-by-country.

[2] https://www.rainn.org/statistics/victims-sexual-violence.

[3] Very few men reported sexual abuse prior to the current school year (1.9%, n = 10), and prior abuse was not associated with the outcome variable. Hence, prior abuse was omitted from the analysis of adolescent men.

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APPENDIX 1

Table A1. Direct, indirect, and total effects (standardized betas) from the path analysis of men's sexual perpetration (N = 560)

	Direct	Indirect	Total
Sens seeking > Perpetration		0.027	0.027
Sens seeking > SUP		0.026	0.026
Sens seeking > RST	0.194	0.003	0.197
Sens seeking > Porn	0.157		0.157
Sens seeking > Soliciting		0.022	0.022
Sens seeking > Solicited		0.004	0.004
SOI-R > Perpetration		0.108	0.108
SOI-R > SUP	0.237	0.052	0.288
SOI-R > Sexual Risk	0.431		0.431
SOI-R > RST		0.027	0.027
SOI-R > Porn	0.310		0.310
SOI-R > Soliciting		0.211	0.211
SOI-R > Solicited	0.133	0.156	0.289
SOI-R > Alco	0.396		0.396
SUP > Perpetration		0.083	0.083
SUP > RST		0.028	0.028
SUP > Soliciting	0.150	0.066	0.216
SUP > Solicited	0.143		0.143
Sexual risk > Perpetration		0.043	0.043
Sexual risk > RST		0.009	0.009
Sexual risk > Soliciting		0.067	0.067
Sexual risk > Solicited	0.143		0.143
RST > Perpetration	0.102		0.102
Porn > Perpetration		0.043	0.043
Porn > SUP	0.166		0.166
Porn > RST		0.018	0.018
Porn > Soliciting	0.107	0.036	0.143
Porn > Solicited		0.024	0.024
Soliciting > Perpetration	0.256	0.013	0.269
Soliciting > RST	0.128		0.128
Solicited > Perpetration	0.176	0.125	0.301
Solicited > RST		0.060	0.060
Solicited > Soliciting	0.466		0.466
Alco > Perpetration		0.041	0.041
Alco > Soliciting		0.063	0.063
Alco > Solicited	0.135		0.135

Note: SUP = sexually underperceived, SOI-R = sociosexual orientation inventory, RST = rape stereotypes, Sexual risk = sexual risk taking.

APPENDIX 2

Table A2. Direct, indirect, and total effects (standardized betas) from the path analysis of women being victimized (n = 751)

	Direct	Indirect	Total
Derogated > Victimized	0.186		0.186
Solicited > Victimized	0.417		0.417
SOP > Victimized	0.132	0.112	0.244
SOP > Derogated	0.138		0.138
SOP > Solicited	0.207		0.207
Sens seeking > Victimized		0.035	0.035
Sens seeking > Derogated		0.020	0.020
Sens seeking > Solicited		0.029	0.029
Sens seeking > SOP	0.142		0.142
SOI-R > Victimized		0.155	0.155
SOI-R > Derogated		0.176	0.176
SOI-R > Solicited	0.107	0.102	0.209
SOI-R > SOP	0.266		0.266
SOI-R > Alco	0.458		0.458
SOI-R > Sexual risk	0.438		0.438
Prior > Victimized		0.079	0.079
Prior > Solicited	0.190		0.190
Prior > Sexual risk	0.158		0.158
Alco > Victimized		0.020	0.020
Alco > Derogated	0.106		0.106
Sexual risk > Victimized		0.083	0.083
Sexual risk > Derogated	0.207		0.207
Sexual risk > Solicited	0.108		0.109

Note: SOP = sexually overperceived, SOI-R = sociosexual orientation inventory, Sexual risk = sexual risk taking.