

Running head: SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND
ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

Sexual Victimization Among Adolescents of Different Sexual Orientations and the
Association with Sex Under Influence of Substance.

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SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

Abstract

Sexual victimization is a widespread problem and seems to be especially prevalent among non-heterosexuals. This study examined the prevalence of sexual victimization among adolescents with a heterosexual and non-heterosexual orientation and the role of sex under influence of substance. This was studied among 7841 adolescent men (50.1%) and women (49.9%) in the Netherlands, between the ages of 12 and 25 years old ($M = 18.41$, $SD = 3.5$), in the *Sex under 25 II* study. Non-heterosexual respondents were more likely to have experienced sexual victimization than heterosexual respondents, and sex under influence of substance played a role as a partial mediator. Non-heterosexual adolescents are more than two times as likely to have experienced sexual victimization and almost two times as likely to have experienced sex under influence of substance compared to heterosexual adolescents. Having had sex under influence of substance increases the risk of having experienced sexual victimization. These findings confirmed earlier studies that found an increased risk for non-heterosexual adolescents to be sexually victimized. More research is needed on the direction of the relation and the reasons behind the vulnerability of non-heterosexual adolescents.

KEY WORDS: sexual orientation; sexual victimization; substance use; adolescents

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

Samenvatting

Seksueel misbruik is een groot probleem dat vooral onder seksuele minderheden aanwezig lijkt te zijn. De huidige studie onderzoekt de prevalentie van seksueel misbruik onder adolescenten met een heteroseksuele en niet-heteroseksuele oriëntatie en de rol van seks onder invloed van middelen. Dit is onderzocht onder 7841 adolescente mannen (50.1%) en vrouwen (49.9%) in Nederland, tussen de 12 en 25 jaar oud ($M = 18.41$, $SD = 3.5$), in de *Seks onder je 25^e II* studie. Niet-heteroseksuele participanten hadden vaker seksueel misbruik meegemaakt dan heteroseksuele participanten, en seks onder invloed van middelen speelde een rol als partiele mediator. Niet-heteroseksuele adolescenten hebben meer dan twee keer zoveel kans om seksueel misbruik mee te hebben gemaakt en bijna twee keer zoveel kans om seks onder invloed van middelen te hebben gehad in vergelijking met heteroseksuele adolescenten. Seks onder invloed van middelen vergroot het risico op het ervaren van seksueel misbruik. Deze bevindingen bevestigen eerdere bevindingen dat niet-heteroseksuele adolescenten een vergroot risico hebben om seksueel misbruikt te worden. Meer onderzoek is nodig om de richting van deze relatie en de redenen achter de kwetsbaarheid van niet-heteroseksuele adolescenten te onderzoeken.

SLEUTELWOORDEN: seksuele oriëntatie; seksueel misbruik; middelengebruik; adolescenten

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

Introduction

Sexual victimization has been frequently studied over the last few decades. The upcoming of movements like #metoo show the relevance and importance of the subject and factors associated with sexual victimization. When it comes to the prevalence of sexual victimization, estimates vary greatly. Research found that up to 80% of women and 64% of men report having experienced sexual aggression/perpetration since the age of 14 (Davis, Danube, Stappenbeck, Norris & George, 2015). In survey research among Dutch adolescents, 21% of men and 41% of women reported facing unwanted sexual experiences (De Graaf, Kruijer, Van Acker & Meijer, 2012). One reason for the variation in estimates is the definition used when investigating sexual victimization. Studies range from focussing on forced rape to a focus on broader terms like sexual victimization (Testa & Livingston, 2009). In the current study, the definition of Testa & Livingston (2009) will be used; sexual victimization includes rape, attempted rape, unwanted sexual contacts, verbally coerced intercourse and assault. Thus, all unwanted sexual experiences can be seen as sexual victimization.

Women are at increased risk for sexual victimization, and the same can be said for non-heterosexuals. Non-heterosexuals are individuals that are attracted to people of the same sex, have a homosexual or bisexual identity and/or show sexual behaviour with someone of the same sex (Herrick, Marshal, Smith, Sucato & Stall, 2011). Duncan (1990) conducted one of the first studies comparing sexual victimization rates among non-heterosexuals and heterosexuals. This study found that sexual victimization was significantly more prevalent among gay and lesbian students compared to heterosexual students. Less than 2% of heterosexual males report a history of sexual victimization, compared to more than 10% of non-heterosexual men (Balsam, Rothblum & Beauchaine, 2005). Non-heterosexual women are twice as likely to report sexual victimization than heterosexual women (Balsam et al., 2005). In general, non-heterosexual participants are more likely to report unwanted sexual experiences than heterosexual participants (Balsam et al., 2005; Tait, 2015).

Another factor that is associated with an increased risk of sexual victimization is substance use, i.e. alcohol and drug use (Corbin, Bernat, Calhoun, McNair & Seals, 2001). Around half of all sexual victimizations involve victims who consumed alcohol before the victimization took place (Lorenz & Ullman, 2016) and alcohol-related sexual assault has been the most common form of sexual victimization on college grounds (Pugh, Ningard, Ven & Butler, 2016). In general, non-heterosexuals are more often dependent on alcohol or drugs (De Graaf, Sandfort & ten Have, 2006). As for sexual victimization, non-heterosexuals could

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

thus be more at risk for experiencing substance-related sexual assault. Non-heterosexuals are at increased risk for sexual victimization (Johnson, Matthews & Napper, 2016) and it is known that being under the influence of substances increases the risk of getting sexually victimized (Corbin et al., 2001). Therefore, being under the influence of substance and having a non-heterosexual orientation interacting together, could possibly increase the risk of victimization among non-heterosexual adolescents even more. It yet remains unclear how substance use and sexual orientation interact. Most studies tend to report an additive effect; both variables are a risk factor for sexual victimization (Hequembourg, Parks & Hughes, 2015; Oshri, Handley, Sutton, Wortel & Burnette, 2014). Non-heterosexuals are more likely to be present in a context where sex under influence is more prevalent (Hughes et al., 2010; Johnson et al., 2016; Testa & Parks, 1996). This exposure to situations that encourage substance use might in turn increase the risk of becoming a victim. In this case, a (partial) mediating role of sex under influence can be expected.

In the Netherlands, studies on sexual victimization have been underrepresented in research (De Haas, 2012) and the association with sex under influence of substance has not yet been studied. Since research in various countries has found that non-heterosexuals are more likely to get sexually victimized (Balsam et al., 2005) and that there is an association with sex under influence (Davis et al., 2015), this is a relevant study to do in the Netherlands as well. In general, Dutch society can be seen as accepting and tolerant towards non-heterosexuals (De Graaf et al., 2016). Therefore, possible different outcomes can be found for the Dutch situation, which will be relevant to create a better insight in sexual victimization among non-heterosexuals within the Dutch context. Sexual victimization can have numerous negative effects, ranging from physical trauma, anxiety and depression to alcohol use (De Vries et al., 2014), all of which are especially prevalent among non-heterosexuals (Johnson et al., 2016). This provides a troubling view on the significant health risks non-heterosexuals face. (Oshri et al., 2014) which can highly affect quality of life (Meyer, 2003). These consequences are known to increase the risk of revictimization (Gidycz et al., 2007; Scaglione et al., 2014). Thus, finding ways to understand and prevent sexual victimization should be seen as important. Research will be useful to shed light on what factors are associated with sexual victimization and what can be done. In the long run, this could lead to more awareness and less sexual victimization among Dutch adolescents. The aim of this study is to look at sexual victimization among non-heterosexual adolescents and the association with sex under the influence of substance.

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

Sexual orientation and sexual victimization.

An association between sexual orientation and sexual victimization has been found in various studies. Sexual orientation and/or sexual identity have been identified as risk factors for becoming a victim of violence (Tait, 2015). Non-heterosexuals experience more sexual violence than the general population as a whole, especially young non-heterosexuals. The current literature still shows mixed results concerning sexual victimization among different non-heterosexual groups. There are studies that found non-heterosexual women are more at risk (Balsam et al., 2005; Rhew, Stappenbeck, Bedard-Gilligan, Hughes & Kaysen, 2017) and studies that found this to be the case for non-heterosexual men (Hequembourg et al., 2015; Johnson et al., 2016). All in all, it is clear that non-heterosexuals are more at risk for sexual victimization (Duncan, 1990; Murchison, Boyd & Pachankis, 2017) than their heterosexual peers. A possible explanation for this relation could be found in internalized homophobia, which holds the negative judgements that non-heterosexuals make of themselves when they get stigmatized by their cultural context (Meyer, 2003). Internalized homophobia is associated with a higher risk of unwanted sexual experiences, through an increase of shame and low self-esteem (Murchison et al., 2017). Non-heterosexuals that experience internalized homophobia, are thus more at risk for sexual victimization. Therefore, it is important to identify factors that can explain the relation between sexual orientation and sexual victimization that has been found. The *self-medication hypothesis* suggests that people consume alcohol and/or other drugs to alleviate the stress or discomfort they experience (Oshri et al., 2014). Since internalized homophobia increases stress among non-heterosexuals, the effect of sex under influence of substance on the relation between sexual orientation and sexual victimization will be studied.

Sex under influence of substance: interaction effect

Like sexual orientation, substance use has also been found to play a role in sexual victimization. Sexual victimization can lead to more alcohol use (Corbin et al., 2001), but it has also been found that more alcohol or substance use increases the risk of sexual victimization, especially among non-heterosexuals (Goldbach, Tanner-Smith, Bagwell & Dunlap, 2013; De Vries et al., 2014). Because most research tends to be cross-sectional, the direction of this association often remains unclear. The fact that there is a relationship does not indicate the direction of the relation. Two longitudinal studies (Gidycz et al., 2007; Testa & Livingston, 2000) did not find that sexual victimization predicted alcohol use. However,

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

the study by Testa and Livingston (2000) did find that more alcohol consumption was associated with more vulnerability to sexual aggression. Both sexual orientation and sex under influence of substance seem to play a role in sexual victimization, but it is unclear how these factors influence each other.

One possibility is an interaction effect; this would suggest that both factors separately have an effect on sexual victimization, which has been described previously, as well as the factors interacting with each other. A meta-analysis by Herrick et al. (2011) indicated that non-heterosexual youth were almost twice as likely to report sex while intoxicated, compared to their heterosexual counterparts. According to this study, the co-occurrence of substance use and sexual behaviour could possibly help to explain risk, like sexual victimization, that non-heterosexuals face (Herrick et al., 2011). Since it is unclear whether sexual orientation and sex under influence of substance strengthen each other or are just additive risk factors, this will be researched in the current study.

Sex under influence of substance: mediation effect.

Besides interaction, the relation between sexual orientation and sexual victimization could possibly be explained by sex under influence of substance as a mediator. In this case, a non-heterosexual orientation makes sex under influence of substance more likely, which then increases the risk of sexual victimization. It has been found that non-heterosexual adolescents report higher rates of substance use than their heterosexual counterparts (Goldbach et al., 2014). A meta-analysis by Marshal et al. (2008) concluded that for all the drugs they tested in relation to sexual orientation, ranging from alcohol and cigarettes to injection drugs, a Cohen's d greater than 0.80 was found, which is a large effect. For all substances together, non-heterosexuals were 190% more likely to report substance use (Marshal et al., 2008) compared to heterosexuals. To explain this phenomenon, the *minority stress theory* is often used. This theory holds that people with higher levels of internalized homophobia, or people who face greater actual or perceived resistance in regard to their gender or sexual orientation, will experience more stress. Non-heterosexuals are more likely to experience chronic stress due to their orientation, and substance use is one of the approaches taken to cope with this stress (Goldbach et al., 2014; Johnson et al., 2016). This in turn can lead to an increased risk for sexual victimization.

For the second part of the mediation, it is expected that sex under influence of substance increases the likelihood of experiencing sexual victimization. A study by Krahe et

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

al. (2015) among young people in 10 European countries, found that respondents who reported drinking alcohol in sexual interactions, were also more likely to have experienced sexual victimization. Numerous studies have found that substance use is associated with an increased risk of sexual victimization (Corbin et al., 2001; Hequembourg et al., 2015; Scaglione et al., 2014). When substances are used, sexual assault is up to five times more prevalent than when neither alcohol nor drugs is used. Most often, alcohol was consumed prior to the victimization (Lawyer, Resnick, Bakanic, Burkett & Kilpatrick, 2010). This can be explained using the *Routines Activity Theory* (Gidycz et al., 2017). This theory suggests that certain lifestyles and/or routines put people more at risk, because they get more exposed to potential offenders. The relationship between substance use and sexual victimization may partly depend on the setting in which drinking occurs (Gidycz et al., 2007). Since non-heterosexuals report more drinking behaviour than heterosexuals (Hughes et al., 2010), this increases their risk to get into circumstances where potential victims and offenders are together (Johnson et al., 2016). Abbey, Clinton-Sherrod, McAuslan, Zawacki & Buck (2015) found that heavy drinking among heterosexual women reduces their ability to defend themselves. It can be expected that in general, alcohol consumption will reduce someone's assertiveness in stating their boundaries. Thus, since studies have shown that having a non-heterosexual orientation leads to more alcohol use (Goldbach et al., 2014), which could lead to an increased risk of victimization (Hequembourg et al., 2015; Herrick et al., 2011), (partial) mediation can be expected. Previous studies have often studied just one part of this possible mediation, the current research will study the mediation in one part.

Present study

This study focusses on sexual victimization among non-heterosexual and heterosexual adolescents and the association with sex under influence of substance. Gender will be taken into account as a potential confounder. Gender is a predictor of sexual assault, most forms of sexually unwanted behaviour are significantly more often experienced by women than by men (De Haas, 2012; Testa & Livingston, 2009), which is the case for women of all sexual orientations (Balsam et al., 2005).

This literature study has resulted in the research question: *Are non-heterosexual adolescents more likely to experience sexual victimization in general, and is this association moderated and/or mediated by sex under the influence of substance?*

Five hypotheses are derived from this question:

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

H1: There is a direct association between sexual orientation and sexual victimization; non-heterosexuals have a higher risk of getting sexually victimized (path a).

H2: Non-heterosexuals have more sex under influence of substance than heterosexuals (path b).

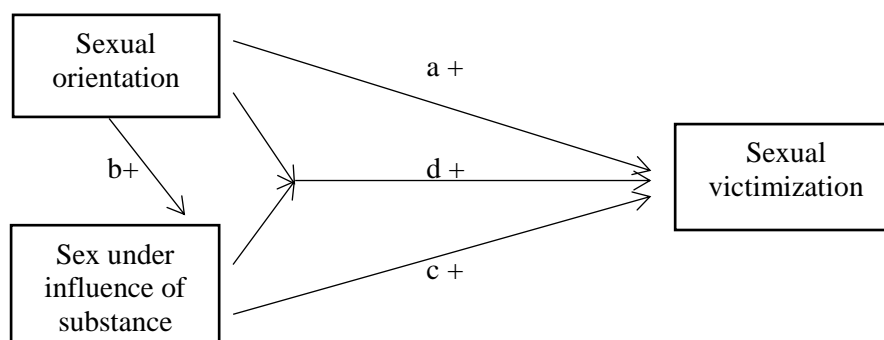
H3: Sex under influence of substance increases the risk of sexual victimization (path c).

H4: Sex under influence of substance (partly) explains the association between sexual orientation and sexual victimization (path b and c).

H5: Sex under influence of substance has an interaction effect with sexual orientation on sexual victimization. In other words: it is expected that there is an added effect of sex under influence of substance on these two factors (path d).

Theoretical model

Figure 1



Method

Participants and recruitment

The *Sex under 25 II* survey was used for this study, of which the data was collected in 2012 (De Graaf et al., 2012). This cross-sectional study focusses on sexual health and development of youth in the Netherlands between the ages of 12 and 25 years old, with an average of 18.41 (SD = 3.5). A total of 7841 participants filled in the digital questionnaire correctly and were used for the analyses. The survey was conducted among both male (N = 3926, 50.1%) and female (N = 3915, 49.9%) participants. Respondents were recruited through secondary education schools and municipalities. The respondents either filled in the questionnaire at

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

school or received a letter at home with information on how to fill in the questionnaire online. In every Dutch province, a random sample of schools was drawn, in order to match the distribution of adolescents within the Dutch population. When selected schools did not want to participate, similar schools in the area were searched for. A total of 43 schools participated. To reach youth beyond school going age, 55 municipalities were approached, again, making sure the distribution matched the Dutch population. The precise procedure that was used to reach this distribution, is not mentioned in the *Sex under 25 II* report. A total of 5290 (16.4%) adolescents responded to the request sent out by the municipalities. It was found that the non-response group did not significantly differ from the response group, which meant that the sample was generalisable (De Graaf et al., 2012).

Measurements

Sexual orientation For the current study, sexual attraction was used as a measure for sexual orientation. Respondents answered the question: 'are you attracted to men, women, or both?' with answer options: 'only attracted to men', 'mainly attracted to men', 'attracted to both men and women', 'mainly attracted to women', 'only attracted to women' and 'I do not know yet'. This question was converted to contain sexual orientation labels, to make sure the options mean the same for both men and women. 'Only attracted to men' became 'homosexual' for men and 'heterosexual' for women, 'mainly attracted to men' became 'mainly homosexual' for men and 'mainly heterosexual' for women, 'attracted to both men and women' became 'bisexual' for both men and women, 'mainly attracted to women' became 'mainly heterosexual' for men and 'mainly homosexual' for women, 'only attracted to women' became 'heterosexual' for men and 'homosexual' for women. This variable was dichotomized to Heterosexual (0) = 'heterosexual' and 'mainly heterosexual' and Non-heterosexual (1) = 'bisexual', 'mainly homosexual' and 'homosexual'.

Sex under influence of substance use To measure sex under influence of substance use, respondents could report for various substances whether they had had sex under influence of this substance. They were asked: 'have you ever performed sexual acts under influence of the following substances?' when the respondents had not had intercourse yet, or 'have you ever had intercourse under influence of the following substances?' when the respondents had had

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

intercourse. This was asked for alcohol and various drugs, i.e.: hash/weed, XTC, cocaine, GHB, speed, poppers and Viagra.

These items were converted to dichotomous items. Respondents either scored 0 = 'I have not used this substance during sexual acts/intercourse' or 1 = 'I have used this substance during sexual acts/intercourse' on every item. For every substance, the answers of people who had performed sexual acts and who had had intercourse were combined into one variable. Since these questions were only answered by respondents that reported they had had intercourse or had performed sexual acts, a lot of missings remained. However, these missings can be seen as 'I have not used this substance during sexual acts/intercourse' and thus, these respondents were also categorized as scoring 0. The dichotomous variable 'substance use' was created by combining all substances, 0 = never had sex under influence of substance and 1 = had sex under influence of 1 or more substances.

The reliability analysis was conducted after making the items dichotomous. The 8 items together gave a Cronbach's alpha of .64, which is low. The Item-Total Statistics Table showed Cronbach's alpha would be .74 if item 'alcohol' would be removed. Therefore, separate analyses for alcohol and drugs were conducted, to see whether different results would be found. This was not the case. Alcohol and drugs were found to show a similar pattern, and thus they were taken into account as one variable.

Sexual victimization In order to measure sexual victimization, respondents were asked the question: 'have you ever been forced to do sexual things you did not want to do?' With answer options 1 = no, 2 = yes, once and 3 = yes, more than once. For the current study, this item was converted into a dichotomous variable; 0 = no and 1 = yes, once or more than once.

Demographic covariates Age, gender and ethnicity were measured as demographic covariates. To measure age, respondents filled in their date of birth, which was used to calculate their age as a continuous variable. Gender was measured by asking the question 'are you a boy or a girl?' for adolescents born after 1991 and 'are you a man or a woman?' for adolescents born before 1991. Ethnicity was measured by asking 'where were you born?'

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

With answer options The Netherlands, Turkey, Morocco, Suriname, The Netherlands Antilles, Indonesia or other. This item was converted into a dichotomous variable; 0 = Dutch, 1 = All other countries, non-Dutch.

Data analysis

To analyze the data, the program IBM SPSS Statistics 24 was used. The research model (Figure 1) was tested by analyzing the different paths, which correspond with the hypotheses. Since all variables in the current study are dichotomous, logistic regression was used. Age, gender and ethnicity were controlled for in every analysis. The assumption of multicollinearity was met. Since the dependent variable was binary, binary logistic regression was used.

To analyze path a, path b and path c separately (Figure 1), a logistic regression was run. To analyze the interaction, sexual orientation*sex under influence of substance on sexual victimization was studied using logistic regression. Lastly, mediation was studied by taking sexual orientation and sex under influence into account at the same time using logistic regression. Every analysis was run both with and without control variables. A result was judged as being significant when $p < .05$.

Results

Descriptive findings

Table 1 shows the descriptive statistics for the variables sexual orientation, sex under influence of substance, gender, ethnicity and age in crosstabs with sexual victimization. Of all the respondents that filled in the question, 10.6% ($n = 767$) of this sample experienced sexual victimization. Significantly more non-heterosexual respondents (24.3%) than heterosexual respondents (9.6%) experienced sexual victimization. Respondents that had had sex under influence of substance were significantly more likely to have experienced sexual victimization (14.7%) than respondents that had not had sex under influence of substance (7.0%). Women (16.6%) were significantly more likely to have experienced sexual victimization than men (4.4%) and non-Dutch (17.4%) participants had experienced sexual victimization significantly

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

more often than Dutch (10.1) participants. Concerning age, 8.2% of participants under 18, and 12.8% of the participants over 18 had experienced sexual victimization.

Table 1

Descriptive statistics with total N for every variable and cross-tabs for every variable x sexual victimization.

	N (%)	Sexual victimization N (%)	No sexual victimization N (%)
Total	Total = 7841	767 (10.6)	6499 (89.4)
Sexual orientation			
Heterosexual	7282 (92.9)	646 (9.6)*	6086 (90.4)*
Non-heterosexual ¹	469 (6.0)	109 (24.3)*	339 (75.7)*
Sex under influence of substance			
Yes	3523 (44.9)	492 (14.7)*	2860 (85.3)*
No	4318 (55.1)	276 (7.0)*	3939 (93.0)*
Gender			
Men	3926 (50.1)	160 (4.4) *	3443 (95.6)*
Women	3915 (49.9)	607 (16.6)*	3056 (83.4)*
Ethnicity			
Dutch	7272 (92.7)	680 (10.1)*	6085 (89.9)*
Other	568 (7.2)	87 (17.4)*	413 (82.6)*
Age			
< 18	3820 (48.7)	287 (8.2)*	3222 (91.8)*
>18	4021 (51.3)	480 (12.8)*	3277 (87.2)*

Note. Since there are missings, the total N for every variable is not the same. Because there are missings and crosstabs was used, the total N for every variable does not always coincide with the sum of ‘sexual victimization’ and ‘no sexual victimization’. Only respondents that answered both questions used in the crosstabs are taken into account. ¹Non-heterosexual = homosexual, mainly homosexual and bisexual. % = the percentage of people within this subgroup that has/has not experienced sexual victimization. * $p < .001$

Table 2 shows the descriptive statistics for heterosexual and non-heterosexual participants. For the total sample, it was found that most people (54.8%) had not experienced sex under influence of substance. Significantly more non-heterosexual respondents (65.3%) compared to heterosexual respondents (43.9%) have experienced sex under influence of substance. When

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

only looking at the respondents that have experienced sexual victimization, most people (64.5%) have also had sex under influence of substance. Non-heterosexual victims (82.6%) were significantly more likely to have experienced both sexual victimization and sex under influence of substance, compared to heterosexual victims (61.5%).

Table 2

Descriptive statistics of total sample and sexual victimization sample for heterosexual and non-heterosexual orientation.

		Heterosexual N (%)	Non- heterosexual N (%)
1. Total sample			
Sex under influence of substance	No (n=4245)	4082 (56.1%)*	163 (34.7%)*
	Yes (n=3506)	3199 (43.9%)*	307 (65.3%)*
Total (n =7751)			
2. SV sample ²			
Sex under influence of substance	No (n=268)	249 (38.5%)*	19 (17.4%)*
	Yes (n=487)	397 (61.5%)*	90 (82.6%)*
Total (n=755)			

Note. SV sample² = statistics for the sample that experienced sexual victimization. * $p < .001$

Path a: sexual orientation and sexual victimization

The unadjusted odds of being sexually victimized were three times higher for non-heterosexuals compared to heterosexuals, OR = 3.04, CI = [2.41, 3.82], $p < .001$. When demographic variables were controlled for, the relation between sexual orientation and sexual victimization remained significant, OR = 2.45, CI = [1.93, 3.12], $p < .001$. The demographic variables sex, age and ethnicity play a role in the relation between sexual orientation and sexual victimization. Women were four times as likely to experience sexual victimization compared to men (OR = 4.19, CI = [3.49, 5.03], $p < .001$). As can be seen in Table 3 (model 1), sex and ethnicity, also predicted sexual victimization.

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

Table 3

Logistic regression analyses with outcome sexual victimization and outcome sex under influence of substance and predictors sexual orientation and demographics.

	OR	95% CI		<i>p</i>
		Lower	Upper	
1. Sexual victimization				
Sexual orientation (1 = non-heterosexual)	2.45	1.93	3.12	< .001
Sex (1 = female)	4.19	3.49	5.03	< .001
Age ²	1.08	1.05	1.10	< .001
Ethnicity (1 = non-Dutch)	1.69	1.30	2.19	< .001
2. Sex under influence of substance				
Sexual orientation (1 = non-heterosexual)	1.78	1.44	2.20	< .001
Sex (1 = female)	.90	0.82	1.00	.042
Age ¹	1.32	1.30	1.34	< .001
Ethnicity (1 = non-Dutch)	0.52	0.43	0.63	< .001

Note. ¹Age is a continuous variable.

Path b: sexual orientation and sex under influence of substance

Participants with a non-heterosexual orientation had significantly higher unadjusted odds for having experienced sex under influence of substance than heterosexual participants, OR = 2.41, CI = [1.98, 2.93], $p < .001$. When controlling for demographic variables, it was found that sex, age and ethnicity all played a role in the relation, as can be seen in Table 3 (model 2). The odds to experience sex under influence of substance remained significantly higher for the non-heterosexual participants compared to heterosexual participants, OR = 1.78, CI = [1.44, 2.20], $p < .001$ when controlling for the demographic variables. Especially age played a role in this relation, the odds for having had sex under influence of substance increased with OR = 1.32, CI = [1.30, 1.34], $p < .001$ when age increased with one year. For sex and ethnicity it was found that female and non-Dutch participants were less likely to experience sex under influence of substance.

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

Path c: sex under influence of substance and sexual victimization

The unadjusted odds to experience sexual victimization were significantly higher for participants that experienced sex under influence of substance compared to participants who did not, OR = 2.27, CI = [1.94, 2.65], $p < .001$. When controlling for sex, age and ethnicity, the odds ratio only changed slightly, OR = 2.22, CI = [1.85, 2.64], $p < .001$. As can be seen in Table 4, all three demographic variables, i.e., sex, age and ethnicity, show to have a significant effect.

Since the reliability analysis showed a low reliability of alcohol and drugs, they were analysed separately as well. When looking at sex under influence of alcohol (OR = 2.12, CI = [1.82, 2.47], $p < .001$) and sex under influence of drugs (OR = 2.71, CI [2.27, 3.23], $p < .001$) separately, both showed to have a significant effect on sexual victimization. Since both variables show a similar pattern, it was not necessary to take them into account separately.

Table 4

Logistic regression analysis with outcome sexual victimization, and predictors sex under influence of substance (in general and for alcohol and drugs separately) and demographics.

	OR	95% CI		<i>p</i>
		Lower	Upper	
Sex under influence of substance (1 = yes)	2.22	1.85	2.64	< .001
Alcohol use (1 = yes)	2.12	1.82	2.47	< .001
Drugs use (1 = yes)	2.71	2.27	3.23	< .001
Sex (1 = female)	4.47	3.73	5.37	< .001
Age ¹	1.04	1.01	1.06	.003
Ethnicity (1 = non-Dutch)	2.03	1.57	2.62	< .001

Note. ¹Age is a continuous variable.

Path d: Moderation

When sexual orientation and sex under influence of substance are taken into account simultaneously, the odds to experience sexual victimization are around two times higher. All

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

demographic variables showed a significant effect (Table 5, model 1). When looking at the interaction effect of sexual orientation and sex under influence of substance, the odds to experience sexual victimization are three times higher (OR = 3.06, CI = [2.32, 4.02], $p < .001$). However, when looking at both the main effects and the interaction, the interaction effect is no longer significant (OR = 1.20, CI = [.67, 2.15], $p = .53$) while the main effects of sexual orientation (OR = 1.95, CI = [1.17, 3.24], $p = .01$) and sex under influence of substance (OR = 2.09 CI = [1.74, 2.52], $p < .001$) remain significant.

Table 5

Logistic regression analysis for main effects + demographics (model 1), moderation + demographics (model 2) and main effects + moderation + demographics (model 3) on sexual victimization.

	OR	95% CI		p
		Lower	Upper	
Model 1				
Sexual orientation (1 = non-heterosexual)	2.24	1.75	2.86	< .001
Sex under influence of substance (1 = yes)	2.13	1.78	2.55	< .001
Sex (1 = female)	4.31	3.59	5.18	< .001
Age ²	1.03	1.00	1.06	.03
Ethnicity (1 = non-Dutch)	1.89	1.45	2.46	< .001
Model 2				
Sexual orientation*Sex under influence of substance	3.06	2.32	4.02	< .001
Sex (1 = female)	4.17	3.47	5.01	< .001
Age ²	1.07	1.05	1.10	< .001
Ethnicity (1 = non-Dutch)	1.67	1.28	2.17	< .001
Model 3				
Sexual orientation (1 = non-heterosexual)	1.95	1.17	3.24	.01

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

Sex under influence of substance (1 = yes)	2.09	1.74	2.52	< .001
Sexual orientation * Sex under influence of substance	1.20	.67	2.15	.53
Sex (1 = female)	4.30	3.58	5.17	< .001
Age ¹	1.03	1.00	1.06	.023
Ethnicity (1 = non-Dutch)	1.88	1.44	2.45	< .001

Note. ¹Age is a continuous variable.

Path e: mediation

To test for mediation of sex under influence of substance on the relation between sexual orientation and sexual victimization, sexual orientation and sex under influence of substance were taken into account at the same time. Compared to taking the variables into account separately, this decreased the odds slightly. When sexual orientation on sexual victimization was analyzed, odds of OR = 2.45, CI = [1.93, 3.12], $p < .001$ were found (Table 3, model 1). When both sexual orientation (OR = 2.24, CI = [1.75, 2.86], $p < .001$) and sex under influence of substance (OR = 2.13, CI = [1.78, 2.55], $p < .001$) are taken into account, with demographic variables (Table 5, model 1), the odds of sexual orientation on sexual victimization decreased slightly. However, both variables are significant.

Table 6

Logistic regression analysis for men and women separately for every pathway.

	OR	95% CI		<i>p</i>
		Lower	Upper	
Path a¹ Sexual orientation (1 = non-heterosexual)				
Men	3.88	2.39	6.29	< .001
Women	2.13	1.61	2.81	< .001
Path b² Sexual orientation (1 = non-heterosexual)				

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

Men	1.27	.92	1.76	.14
Women	2.29	1.72	3.05	< .001

Path c³ Sex under influence of substance (1 = yes)

Men	1.59	1.11	2.27	.01
Women	2.45	2.01	3.00	< .001

Note. ¹path a, effect of sexual orientation on sexual victimization. ²path b, effect of sexual orientation on sex under influence of substance. ³path c, effect of sex under influence of substance on sexual victimization.

Additional analyses

Because it was found that sex continuously showed high odds for every path, analyses were also done for men and women separately, to see the possible differences. A non-heterosexual orientation gave significantly higher odds for experiencing sexual victimization for both men and women. Non-heterosexual men were almost four times as likely to experience sexual victimization (OR = 3.88, CI = [2.39, 6.29], $p < .001$) and non-heterosexual women were twice as likely to experience sexual victimization (OR = 2.13, CI = [1.61, 2.81], $p < .001$). A non-heterosexual orientation increased the odds to experience sex under influence of substance. However, this was found to be significant for women (OR = 2.29, CI = [1.72, 3.05], $p < .001$) but not for men (OR = 1.27, CI = [.92, 1.76], $p = .14$). Lastly, having sex under influence of substance significantly increased the odds on having experienced sexual victimization for both men (OR = 1.59, CI = [1.11, 2.27], $p = .01$) and women (OR = 2.45, CI = [2.01, 3.00], $p < .001$).

Discussion

The current study was conducted to create an insight in sexual victimization among adolescents of different sexual orientations and the relation with sex under influence of substance as a moderator and/or mediator. A direct association between sexual orientation and sexual victimization was found; bisexual and homosexual participants were significantly more likely to get sexually victimized compared to heterosexual individuals. An interaction effect

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

of sexual orientation and sex under influence of substance was not found, and only a partial mediation effect via sex under influence of substance was found. With these findings, hypotheses 1 to 3 were supported. Hypothesis 4 was not supported, and hypothesis 5 was partly supported.

In the current study, adolescents with a non-heterosexual orientation were more than two times as likely to have experienced sexual victimization. This finding is largely supported by previous studies, as it is generally found that homosexual and bisexual youth are at increased risk of experiencing sexual victimization (Balsam et al., 2005; Hequembourg et al., 2015; Johnson et al., 2015; Murchison et al., 2017; Tait, 2015; Rhew et al., 2017). In this study, 24,3% of non-heterosexual participants have experienced sexual victimization. This is low compared to the findings of Hequembourg et al., (2015) in the US, where 67.2% of non-heterosexual participants reported sexual victimization and the findings of Tait (2015) in Australia where 50% of non-heterosexual participants reported sexual victimization. A possible explanation for these differences could be the high social acceptance of homosexuality in Dutch society (De Graaf et al., 2006). 74% of Dutch citizens have a positive attitude towards homosexuality (Kuyper, 2018). Since most people who experience sexual victimization know the perpetrator (Krahé et al., 2015), a more tolerant society could have the effect that less non-heterosexual people are victimized because of their sexual orientation.

Adolescents with a non-heterosexual orientation were significantly more likely to report that they had had sex under influence of substance than their heterosexual peers. This finding agrees with other studies on sexual orientation and substance use. It has been found that non-heterosexuals who report more sex under influence of substance, also report more sexual victimization (Krahé et al., 2015). Tait (2015) suggested that non-heterosexual individuals might be subject to more discrimination, which could lead to problems like alcohol or drug use. This is in accordance with the minority stress theory and the self-medication hypothesis. People that experience stress concerning their sexual orientation, often struggle with internalized homophobia. Since non-heterosexual individuals are more likely to experience this stress, substance use is often one of the approaches that is used to cope with this stress (Goldbach et al., 2014; Johnson et al., 2016).

Adolescents that had had sex under influence of substance, were significantly more likely to have experienced sexual victimization than adolescents who did not have sex under influence of substance. This finding is supported by several studies. In general, alcohol and

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

drugs consumption is a risk factor for sexual victimization (Corbin et al., 2001; Lawyer et al., 2010). The study of Davis et al., (2015) found that the victim had consumed alcohol in 73.3% of sexual victimization events, and Hequembourg et al., (2015) found this to be the case for 67% of incidents. A possible reason for these findings is the fact that substance use makes potential victims of sexual victimization more vulnerable (Gidycz et al., 2007). Especially in places where heavy drinking occurs, sex under influence of substance can make people vulnerable to becoming sexually victimized, in accordance with the Routines Activity Theory. This is an important finding, since most research on substance use and sexual victimization tend to look at sex under influence of substance as a consequence of sexual victimization (Goldbach et al., 2013; Hughes et al., 2010; Krahe et al., 2015; Rhew et al., 2017) instead of the other way around. Especially in the Netherlands, this is an understudied subject.

No interaction effect was found for sexual orientation and sex under influence of substance. Besides that, only a partial mediation effect of sex under influence of substance was found. Previous studies have found that both sexual orientation (Tait, 2015) and substance use (Testa & Livingston, 2000), play a role in sexual victimization. This was supported by the current findings, since both main effects were found to be significant. However, as an interaction term they were not. It can therefore be concluded that both a non-heterosexual orientation and having sex under influence of substance are risk factors that increase the likelihood of experiencing sexual victimization, but they do not strengthen each other. Thus, an additive effect has been found, as suggested by previous research (Hequembourg et al., 2015; Oshri et al., 2014).

Lastly, men and women were analysed separately since the effect of sex appeared to be very high on every relation that was analysed. It was found that overall, women were around four times more likely to have experienced sexual victimization or sex under influence of substance. When distinguishing between men and women for the different analyses, new insights were created. Non-heterosexual men were almost four times more likely to experience sexual victimization than heterosexual men, and non-heterosexual women were twice as likely to experience sexual victimization compared to heterosexual women. Men seem to be more at risk in this case. However, 4.0% of heterosexual men compared to 13.2% of non-heterosexual men experienced sexual victimization. For women, 15.3% of heterosexual and 31.4% of non-heterosexual women have experienced sexual victimization. This shows that in the current study, women are more at risk than men, but for men the nons-

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

heterosexual orientation has a more profound effect on their risk of getting sexually victimized than for women. Research shows mixed findings on the risks for non-heterosexual men and women. Some research found non-heterosexual women to be more at risk (Balsam et al., 2005; Rhew et al., 2017) while other research found non-heterosexual men to be more at risk (Hequembourg et al., 2015; Johnson et al., 2016). These mixed findings could be explained by the difference found in the current study.

Strengths and limitations

The current study had a large and representative sample of 7841 Dutch adolescents, which means that the findings are generalizable and conclusions can be drawn based on these findings. Besides that, the current study is most likely the first Dutch study that looked into the effect of sex under influence of substance on the relation between sexual orientation and sex under influence of substance. However, the study has several limitations that are important to consider.

First of all, cross-sectional data was used. Therefore, causal interpretations cannot be made. Thus, conclusions about moderation and mediation should be looked at with this limitation in mind. For future research, it would be valuable to look at this with longitudinal data; this can most likely strengthen the current findings. Longitudinal research could create more insight in the direction of the relation between sex under influence of substance and sexual victimization. Even though it is unlikely that sexual orientation changes because of sex under influence of substance or sexual victimization, it is important to rule out this possibility.

Secondly, the predictor variables sexual orientation and sex under influence of substance were dichotomized and analyzed in that way. This was necessary to create a distinction between heterosexual and non-heterosexual participants, and participants that did and did not have sex under influence of substance. However, a slightly less precise and nuanced view on the data is presented here, which means the current findings should be looked at with this limitation in mind.

Lastly, this study is based on self-reported data from adolescents. This is a problem to the validity of the study. When self-reported data is used, it is possible that socially desirable answers were given, some respondents might not have understood the questions correctly or

SEXUAL VICTIMIZATION, SEXUAL ORIENTATION AND ASSOCIATION WITH SEX UNDER INFLUENCE OF SUBSTANCE.

answers may be exaggerated or more negative than the truth. This is especially likely since the current study focused on the sensitive topics of sexual orientation and sexual victimization. However, since the questionnaire was completed anonymously, this will have diminished the disadvantages of self-reported data as much as possible.

Future research and implications

Most likely, this is the first Dutch study that shows the influence of sex under influence of substance on the relation between sexual orientation and sexual victimization for a large and representative sample of adolescents. Therefore, future research can use the current findings to study this subject more at length. More research into sexual victimization among non-heterosexual adolescents is definitely necessary. The current research shows the increased risk these adolescents face, and qualitative research could help to study the role of sex under influence of substance more in depth, since this has not been studied yet. Longitudinal research would be valuable, to better research the path from sexual orientation to sexual victimization and to be able to draw causal inferences from this.

From the current study, some implications can be drawn. The significantly higher risks Dutch non-heterosexual adolescents face concerning sex under influence of substance and sexual victimization is an important finding. Knowledge is power, so in order to prevent non-heterosexual adolescents from experiencing sex under influence of substance or sexual victimization, interventions should focus on awareness. Since sex under influence of substance increased the likelihood of sexual victimization as well, more safety can be created by teaching non-heterosexual adolescents on possible risks they face and about making well thought-out decisions concerning substance use. Since this topic has been underrepresented in Dutch research so far, it is likely that more awareness can have an effect on the current risks.

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