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Differences in Risky Sexual Behaviour According to Sexual Orientation and Minority Stress in Dutch Male Adolescents

A Cross-sectional Study of the Mediating Role of Early Sexual Debut and Sexual Self-esteem

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Abstract

Homosexual boys are known to be at risk of contracting sexually transmitted diseases through sexual risk behaviour (SRB) (e.g. condomless sex, casual sex). However, little is known about the specifics of this relationship. This cross-sectional study advances the understanding of SRB by examining whether sexual self-esteem (SSE) and early sexual debut (ESD) mediate the effect of sexual orientation on male adolescent SRB. Additionally, this study tests whether minority stress predicts SRB among male homosexuals. Data from 2,107 male adolescents (16 to 25 years old) who were enrolled in the study 'Sex under 25' (2012) were used. The results revealed that homosexuals used condoms more often, but at the same time reported more casual sex than heterosexuals. However, homosexuals and heterosexuals did not differ in their age of sexual initiation, and this was therefore not an explanation for this difference. Homosexuals' lower SSE was in turn associated with somewhat higher condom use, but not with casual sex. Homosexuals' level of minority stress was low ($M = 2.2$) and did not predict SRB. These results demonstrate that homosexuals do not always engage in more SRB. Researchers should invest in more reliable concepts of SRB that fit all sexual orientations and sexes.

Keywords: male adolescents, sexual orientation, minority stress, sexual self-esteem, early sexual debut, sexual risk behaviour

Samenvatting

Het is bekend dat homoseksuele jongens meer risico lopen op seksueel overdraagbare aandoeningen door seksueel risicogedrag (SRG) (bv. onveilige seks en casual seks). Tegelijkertijd is er weinig bekend in hoeverre deze relatie verklaard kan worden. De huidige cross-sectionele studie draagt bij aan onze kennis over SRG door te onderzoeken of het seksuele zelfvertrouwen en een vroege seksuele start de relatie medieert tussen seksuele oriëntatie en SRG van jongens. Daarnaast is er getoetst in hoeverre minderheidsstress SRG voorspelt onder homoseksuele jongens. Er is van 2107 jongens (16-25 jaar oud) data gebruikt uit de studie ‘Seks onder je 25^e’ (2012). De resultaten vertonen dat homoseksuelen vaker een condoom gebruiken, maar meer casual seks rapporteren in vergelijking tot heteroseksuelen. Homoseksuelen en heteroseksuelen verschillen niet in timing van de eerste keer geslachtsgemeenschap, hierdoor is dit geen verklaring voor het verschil in SRG. Het lage seksuele zelfvertrouwen van homoseksuelen is gerelateerd aan iets meer condoomgebruik, maar niet met casual seks. Het niveau van minderheidsstress onder homoseksuelen is laag ($M = 2.2$) en voorspelt geen SRG. Deze resultaten laten zien dat homoseksuelen niet altijd meer SRG vertonen. Onderzoekers moeten meer investeren in betrouwbare begrippen van SRG die toepasbaar zijn voor alle seksuele oriëntaties en geslachten.

Kernwoorden: mannelijke adolescenten, seksuele oriëntatie, minderheidsstress, seksueel zelfvertrouwen, vroege seksuele start, seksueel risicogedrag

Introduction

Adolescents are more likely to engage in coping strategies that involve risk-taking behaviour, such as sexual risk behaviour (SRB), to reduce or eliminate a stressor compared to adults and children (Rosario & Schrimshaw, 2012). Particularly, homosexual youth (gay/bisexual) engage in more SRB (e.g., condomless sex and casual sex) compared to heterosexuals (Kim, Kim, & Kwak, 2017). For instance, Dutch homosexual boys often do not use a condom (29%) and have more STIs (17%) compared to heterosexual boys (23% and 2% respectively) (De Graaf, Van Den Borne, Nikkelen, Twisk, & Meijer, 2017). It has been suggested that the influence of a negative self-concept because of their homosexuality (i.e., minority stress) explains this disparity in rates of SRB and subsequent HIV/STI incidence rates (Hatzenbuehler, Nolen-Hoeksema, & Erickson, 2008). Sexual risk behaviour may be a suboptimal effort to cope with the psychological distress and decreased self-worth resulting from perceived discrimination/stigma (Rood, Kochaver, McConnell, Ott, & Pantalone, 2018).

Furthermore, previous research states that homosexuals tend to experience an earlier sexual debut and in general have lower sexual self-esteem (SSE) compared to heterosexuals (Bridge, Smith, & Rimes, 2019; Van Griensven et al., 2004). Although previous studies have described associations between early sexual debut (ESD) and lower SSE with other SRBs, very little is known about how these associations differ between homosexuals and their heterosexual counterparts. No study, however, has yet investigated whether homosexuals have a higher prevalence of SRB due to an ESD or lower SSE compared to heterosexuals or to what extent a high prevalence of minority stress among homosexuals is a determinant for this risk behaviour. Since SRB was measured with questions about vaginal/anal penetration, this study focuses on boys because this measurement of SRB was not applicable to homosexual girls.

Since research has shown that homosexuals are more likely than heterosexuals to report SRB (Valencia et al., 2018; Van Griensven et al., 2004; Tornello, Riskind, & Patterson, 2014), it might be that homosexuals have more difficulty in coping with their sexual orientation development. As such, they are more likely to engage in coping strategies that involve risk-taking behaviour. Minority stress could explain this phenomenon. According to the minority stress model, homosexuals have a higher prevalence of stress because they belong to a sexual minority group (Meyer, 2003; Rosario & Schrimshaw, 2012). This minority stress is additional to the daily stress people in general experience and is related to an array of health problems (e.g., STIs/HIV), which, in turn, are caused by sexual risk-taking

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behaviour (Meyer, 1995). For instance, research has demonstrated a relationship between a negative self-concept because of one's homosexuality (i.e., internalised homophobia) and poor coping strategies in the face of HIV-risk-taking behaviours such as unsafe sex with casual sex partners (Tan, 2018). The fact that homosexuals experience more minority stress may result in escape behaviours, such as engaging in casual sex, to cope with these negative feelings and to relieve the stress (Hatzenbuehler et al., 2008). Another consequence could be that homosexuals engage in self-harm (e.g., multiple sex partners, unsafe sex) due to a negative self-concept and less acceptance from others because of their sexual orientation (Hatzenbuehler et al., 2008). Thus, this research hypothesises that homosexuals experience minority stress and therefore engage in SRB.

However, the question remains why minority stress specifically contributes to certain risk behaviours. For instance, previous research has shown that homosexuals tend to experience an earlier sexual debut than heterosexuals (Tornello et al., 2014). This suggests that early sexual activity may be a coping mechanism for increased minority stress (Kuyper & Bos, 2016; Meyer, 2003). For instance, homosexuals who are rejected by their parents or peers because of their sexual orientation are more vulnerable to possibly compensate for emotional stressors by seeking alternative access to intimacy by engaging in early sex, and therefore are at greater risk for unsafe sex as a consequence of a lack of knowledge about safe sex or less power to negotiate safe sexual situations (Kaplan, Jones, Olson, & Yunzal-Butler, 2013; Lowry, Dunville, Robin, & Kann, 2017; Ryan, Huebner, Diaz, & Sanchez, 2009). Thus, it is expected that in comparison with heterosexuals, homosexuals tend to experience an earlier sexual debut due to their experience of minority stress, and having sex early is associated with more SRB.

Furthermore, minority stress can also reduce one's SSE. Many homosexuals experience a negative self-concept because of their sexual orientation (i.e., internalised homophobia) (Kuyper & Bos, 2016; Rosario, Schrimshaw, & Hunter, 2011). This minority stress makes it more difficult for homosexuals to value their sexuality and be able to embrace sexual experiences in general (i.e., SSE) (Gaynor & Underwood, 1995). Moreover, homosexuals with a lower SSE could be more vulnerable to engaging in SRB, as due to their insecurity, they could experience more problems with setting safe boundaries before and during sexual intercourse (Mruk, 2013; Sterk, Klein, & Elifson, 2005), for instance, indicating to others to use a condom during sex. However, engaging in SRB, such as having sex with multiple partners, could also contribute to lower SSE. The more problems adolescents

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experience due to their SRB, such as STIs/HIV, the lower their SSE tends to be (Sterk et al., 2005). Thus, this research expects that homosexuals, compared to heterosexuals, experience a lower SSE due to the minority stress that homosexuals suffer, and lower SSE is associated with SRB.

Previous research suggests that bisexuals may face more minority stress than their gay counterparts because they experience less acceptance from other sexual-minorities as well as from heterosexuals (Schuler, Rice, Evans-Polce, & Collins, 2018; Smalley, Warren, & Barefoot, 2016). Furthermore, bisexuals have been found to have increased risks for internalised biphobia or heterosexism and social isolation (Bostwick, 2012). This research therefore aimed to investigate the possible difference between gay- and bisexual boys on ESD, SSE, and SRB, but unfortunately the sample size of bisexuals ($n = 6$) was too small to provide sufficient data.

Current study

This study investigates whether homosexual- and heterosexual boys differ in SRB, and whether sexual self-esteem or an early sexual debut explains this difference. Furthermore, this study investigates whether minority stress among homosexuals is related to SRB, and if sexual self-esteem and/or an early sexual debut mediate this relationship. Thus, the results of this research could contribute to explaining why boys with a certain sexual orientation engage in SRB to a greater or lesser degree. To this end, the following research questions have been formulated: 1) Are homosexual boys more at risk for SRB compared to heterosexuals? 2) Is homosexual minority stress related to SRB? 3) Are these two relationships (1&2) mediated by an early sexual debut 4) and/or by lower sexual self-esteem? (see Figures 1 and 2).

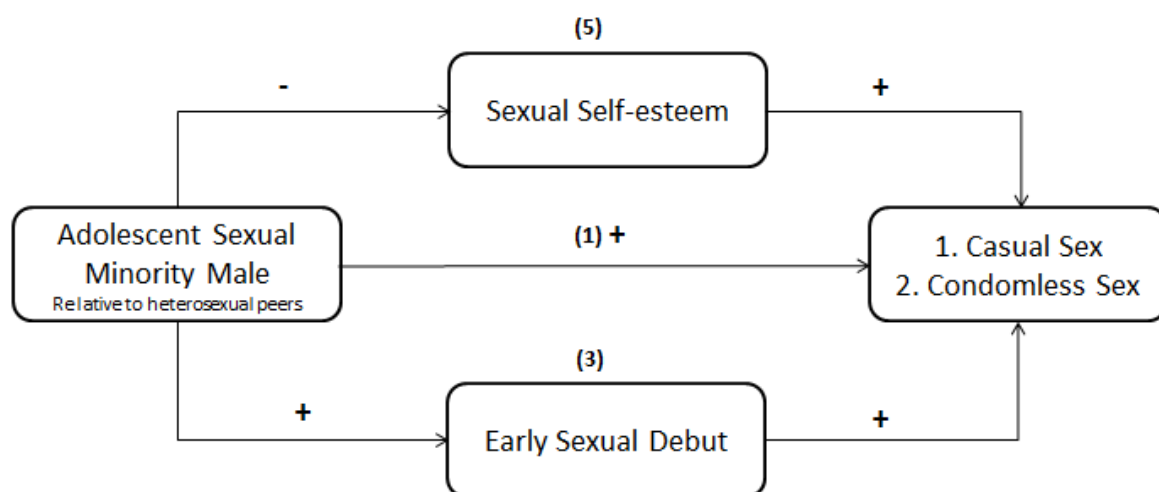


Figure 1: Conceptual model first research model

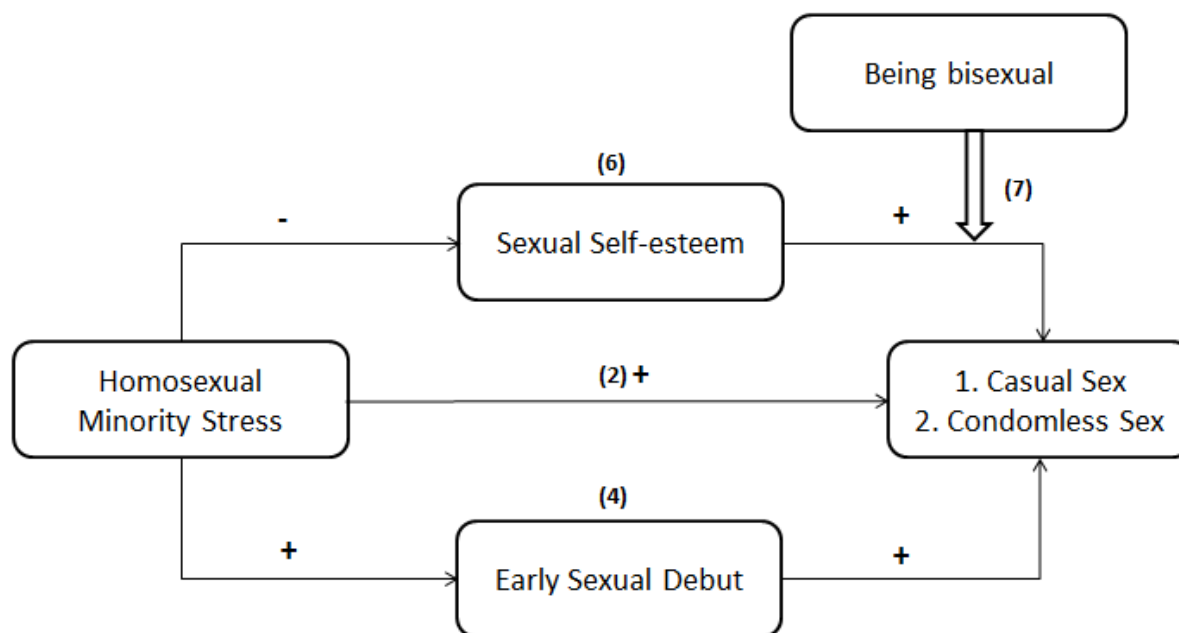


Figure 2: Conceptual model second research model; Homosexual = gay and bisexual boys.

Method

Procedure

In 2012, the ‘Sex under 25’ survey collected cross-sectional data on sexual health among Dutch youth from 12-25 years old. Of the schools that were randomly selected from a list of all Dutch public secondary schools, 43 were willing to participate. Additionally, youth beyond secondary school were approached via a random sample of municipalities, with a response rate of 16.4%. Participation was voluntary, and anonymity and confidentiality were guaranteed. This study was approved by the Ethical Commission of the University of Utrecht (16-272/C). For more information about the procedure of the research, please see the research file ‘Sex under 25’.

Sample

The original sample included 7,841 youth (41.3% male, 58.7% female). For this analysis, only boys were included, in the age range of 16-25 years old. Younger boys were excluded because the average age of coming out for boys is 16-17 (De Graaf et al., 2017). Furthermore, respondents who did not answer the questions about educational level ($n = 17$), SSE ($n = 251$), and casual sex ($n = 1$) were excluded. With this information, a final sample of 2,107 boys was used for the analyses. Compared to the general population in Holland, the total sample contained comparable ethnic proportions (non-Dutch: 22%) and educational level (CBS¹, 2018).

Measures

Casual sex. To determine whether respondents had had casual sex, first, they were asked if they had ever had sexual intercourse (vaginal/anal) (Q49), and they were asked how many sex partners they had had (Q79). For respondents who answered that they had had only one sex partner, casual sex was measured with the following question: ‘With whom was your first time having sexual intercourse?’ (Q70). The answer options were ‘With my boyfriend/girlfriend’, ‘With someone with whom I did not have a committed relationship’, - and ‘With a summer romance’. The last two options were considered casual sex. For respondents who answered that they had had multiple sex partners, casual sex was measured with the following question: ‘With whom have you have sexual intercourse (vaginal/anal) so far?’ (Q80). The questionnaire provided four answers: ‘Always with people with whom I had a committed relationship’, ‘Most of the time with people with whom I had a committed relationship’, ‘Most of the time with people with whom I did not have a committed relationship’, and ‘Always with people with whom I did not have a committed relationship’. The last two options were considered casual sex. To construct the variable for casual sex, two groups were composed: 0 = *(almost) never has had sex with a casual partner*, and 1 = *most of the time has had sex with a casual partner*. The reference group consisted of respondents who had not had sex yet.

Condom use (with last sex partner) was measured with the question: ‘Did you use a condom during sexual intercourse (vagina/anal)?’ (Q94). The four answer options were: ‘Yes, always’, ‘Sometimes yes, sometimes no’, ‘At the start of our relationship we did, but after a while we stopped’, and ‘No, never’. For these analyses, the answers were dichotomised as 0 = *always uses protection*, or 1 = *never/sometimes uses protection*. The reference group consisted of respondents who had not had sex yet.

Sexual orientation was measured with the following question: ‘Do you like boys, girls, or both?’ (Q21). The questionnaire provided six answers: ‘Only boys’, ‘Mainly boys, but also girls’, ‘Both boys and girls’, ‘Mainly girls, but also boys’, ‘Only girls’, and ‘I do not know yet’. The first three options were considered homosexual. Respondents who answered the last option ($n = 7$) were excluded in the analyses. These responses were dichotomised as 0 = *heterosexual*, 1 = *homosexual*. For the analyses in Figure 2. It would have been interesting to investigate whether gays differ from bisexuals (moderation). However, this was not feasible because there were too few bisexuals in the sample ($n = 6$).

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Minority stress. Participants completed seven sub-questions on a five-point scale (1 = *totally agree*; 5 = *totally disagree*) about internalised homophobia. For instance, ‘I would rather not be attracted to boys/girls’ or ‘I answer honestly if someone asks me if I am attracted to boys/girls’ (Q28). Two negative items were scored in reverse, and mean scores were calculated, with higher mean scores indicating more minority stress about same-sex attractions (Cronbach’s alpha = .86).

Early sexual debut. Respondents were asked if they had ever had vaginal/anal sexual intercourse (Q49/Q58) and for their age ‘the very first time’ for each behaviour (Q50/59). Early sexual debut was dichotomised as 0 = *no ESD*, 1 = *ESD*. Respondents were considered as having had an ESD if they had their first experience of sexual intercourse (vaginal/anal) at ≤ 15 years old. Also, the reference group consisted of respondents who had not had sex yet.

Sexual self-esteem. The main question was ‘What do you feel and how do you react when you have sexual contact with each other (with your last sex partner)?’ (Q108). This question consisted of eight sub-questions, for instance, ‘I have little to say about what happens’. Respondents answered on a five-point scale (1 = *never*, 5 = *always*). Five negative items were scored in reverse, and mean scores were calculated, with higher mean scores indicating higher SSE (Cronbach’s alpha = .65).

Ethnicity and educational level were included as control variables because these factors are related to SRB (Goldenberg, Stephenson, & Bauermeister, 2019). Ethnicity was measured with ‘Where were you born?’ (Q3), and ‘Where were your mother and father born?’ (Q4/5). Answers were dichotomised as 0 = Dutch, 1 = ethnic minority. Respondents were considered an ethnic minority if they or at least one of their parents were born in a foreign country (CBS², 2018).

For respondents who were still in school, educational level was measured with the question ‘Which school/educational level are you in?’ (Q10), and for those respondents who had left school, ‘What is the highest level of education you have completed so far?’ (Q11). The answer options were divided into 1 = *high level* (VWO/university), 2 = *middle level* (HAVO/HBO), 3 = *low level* (VMBO/MBO). For the analyses, two different dummies were made, with the highest level as the reference category.

Data analysis

The analyses were obtained using SPSS 24. First, the model with sexual orientation as the predictor among heterosexual and homosexual boys was tested (Figure 1). Second, the model with minority stress as the predictor among homosexuals was tested (Figure 2). Since each model had two outcomes (condom use and casual sex) and two mediators (SSE and ESD), eight models were tested in total. To evaluate these models, Baron and Kenny's (1986) four-step method was used. In order to test the association between the predictor and the outcome, logistic regression was used, in which the control variables ethnicity and educational level were included (Field, 2013). Second, the relationship between the predictor and the mediator was assessed. In the case of SSE, this was checked by means of a linear regression. The relationship with ESD was checked with a logistic regression (Field, 2013). A significant result at this step was necessary to allow mediation. The final step consisted of the logistic regression from the first step, in which the mediator was added as a predictor to test the effect of this variable on the outcome. Moreover, it was examined whether the effect of the predictor disappeared or decreased after the mediator was added.

Results

Descriptive results

Inspecting the data revealed that all the assumptions were met. As Table 1 presents, about one twentieth (4.4%) of the boys considered themselves homosexual, in contrast to 96.6% who were heterosexual. The educational level was higher for homosexual boys compared to heterosexuals. Only 16.1% of the homosexuals were of non-Dutch origin. Conversely, the heterosexuals contained a normal distribution of non-Dutch origin (23%) (CBS¹, 2018). Bivariate sexual orientation differences were found for SSE, casual sex, and condom use. Homosexuals ($M = 3.9$, $SD = 0.60$) reported lower scores on SSE compared to heterosexuals ($M = 4.1$, $SD = 0.54$). Additionally, homosexuals ($M = 0.4$, $SD = 0.50$) reported higher scores on casual sex compared to heterosexuals ($M = 0.3$, $SD = 0.46$). In contrast, homosexuals ($M = 0.4$, $SD = 0.50$) reported lower scores on unsafe sex compared to heterosexuals ($M = 0.6$, $SD = 0.50$). Because of the small sample size of bisexuals ($n = 6$), analyses were not performed/reported for members of this group. An alpha of .05 was used in this study.

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Table 1

Descriptive Statistics of Research Variables

Research variables	Heterosexual	Homosexual	Total Sample	Range
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	
N	2014	93	2107	-
%	95.6	4.4	100	-
Age	20.6 (2.46)	20.8 (2.40)	20.6 (2.45)	16-25
% Low education	48.2	35.5	47.6	-
% Middle education	34.1	43	34.5	-
% High education	17.8	21.5	17.9	-
% Dutch	77	83.9	77.3	-
% Non-Dutch origin	23	16.1	22.7	-
Minority stress	-	2.2 (0.86)	-	1-5
% ESD (\leq 15 years.)	26	21.5	25.8	0-1
Sexual self-esteem	4.1 (0.54)	3.9 (0.60)	4.1 (0.54)	1-5
% Casual sex (yes)	30.7	41.9	31.2	-
% Condom use ¹ (never/sometimes)	57.1	44.1	56.6	-

Note. *n* = number of participants; *M* = mean; *SD* = standard deviation; ESD = early sexual debut; Homosexual = gay and bisexual.

¹ Condom use with last sexual partner

The analyses are divided into two different samples. The first analyses show the results of the total sample ($n = 2,107$), namely heterosexuals and homosexuals. The second analyses reflect the results of a part of the sample ($n = 93$). These results only apply to homosexuals. In all the analyses, ethnicity and educational level were included as control variables.

Adolescent Male Sexual Orientation and Casual Sex ($n = 2,107$)

The direct effect of sexual orientation on casual sex

The results indicate that homosexuals reported significantly more instances of casual sex in a lifetime than heterosexuals (see Tables 2 and 3).

The indirect effect of sexual orientation on casual sex via ESD

The results reveal no significant differences between heterosexuals- and homosexuals in having sexual intercourse early. Although mediation was not possible, the results indicate that those who start having sex early have a higher risk of engaging in casual sex than those

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who do not begin early. In short, sexual orientation is related to casual sex, but this association is not mediated by an ESD (see Table 2).

The indirect effect of sexual orientation on casual sex via SSE

The results show that homosexuality significantly predicted lower levels of SSE than heterosexuality. Next, the mediation model was tested. In this step, the effect of sexual orientation on casual sex remained the same. Thus, mediation was not possible (see Table 3).

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Table 2

Coefficients of Sexual Orientation and Early Sexual Debut on Adolescent Male Casual Sex (n = 2,107)

Variable	Step 1 (X on Y) ¹ : Casual sex (vs. nearly always in a relationship)			Step 2 (X on M) ² : Early sexual debut (vs. no early debut)			Step 3 (X on Y via M) ³ : Casual sex (vs. nearly always in a relationship)		
	<i>b</i>	Odds	95% <i>CI</i>	<i>b</i>	Odds	95% <i>CI</i>	<i>b</i>	Odds	95% <i>CI</i>
Constant	-1.35***	-	-	-1.83***	-	-	-1.49***	-	-
Educational level (ref = VWO/university)									
HAVO/HBO	.299*	1.35*	1.01, 1.80	.430*	1.54*	1.10, 2.15	.244	1.28	0.95, 1.71
VMBO/MBO	.538***	1.71***	1.31, 2.25	1.014***	2.76***	2.76, 2.02	.384**	1.47**	1.11, 1.94
Ethnicity (ref = Dutch)	.666***	1.95***	1.57, 2.41	.419***	1.52***	1.21, 1.91	.613***	1.85***	1.49, 2.29
Sexual orientation (ref = hetero)	.590**	1.80***	1.18, 2.77	-.132	.88	0.53, 1.46	.631**	1.88**	1.22, 2.91
Early sexual debut (ref = no early)	-	-	-	-	-	-	.873***	1.95***	1.95, 2.95

Note. Odds significant if $p < 0.05$ or 95% *CI* does not include 0; * $p < .05$. ** $p < .01$. *** $p < .001$; Sexual orientation = hetero versus homosexual.

¹ $R^2 = 8.82$ (Hosmer & Lemeshow) .03 (Cox & Snell) .04 (Nagelkerke). Model $\chi^2(4) = 60.53$, $p < .001$

² $R^2 = 1.32$ (Hosmer & Lemeshow) .03 (Cox & Snell) .05 (Nagelkerke). Model $\chi^2(4) = 73.47$, $p < .001$

³ $R^2 = 8.48$ (Hosmer & Lemeshow) .06 (Cox & Snell) .08 (Nagelkerke). Model $\chi^2(5) = 127.40$, $p < .001$

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Table 3

Coefficients of Sexual Orientation and Sexual Self-esteem on Adolescent Male Casual Sex (n = 2,107)

Variable	Step 1 (X on Y) ¹ : Casual sex (vs. nearly always in a relationship)			Step 2 (X on M): Sexual self-esteem			Step 3 (X on Y via M) ² : Casual sex (vs. nearly always in a relationship)		
	<i>b</i>	Odds	95% <i>CI</i>	<i>b</i>	<i>SE</i>	β	<i>b</i>	Odds	95% <i>CI</i>
Constant	-1.35***	-	-	4.053	.029	-	-1.07	-	-
Educational level (ref = VWO/university)									
HAVO/HBO	.299*	1.35*	1.01, 1.80	.053	.034	.046	.302*	1.35*	1.01, 1.80
VMBO/MBO	.538***	1.71***	1.31, 2.25	-.012	.033	-.011	.538***	1.71***	1.30, 2.25
Ethnicity (ref = Dutch)	.666***	1.95***	1.57, 2.41	-.059*	.028	-.046*	.662***	1.94***	1.57, 2.40
Sexual orientation (ref = hetero)	.590**	1.80***	1.18, 2.77	-.150**	.057	-.057**	.580**	1.79**	1.16, 2.75
Sexual self-esteem	-	-	-	-	-	-	-.069	.93	.79, 1.11

Note. B = standardised coefficient; *SE* = standard error; Odds significant if $p = < 0.05$ or 95% *CI* does not include 0; * $p = < .05$. ** $p = < .01$. *** $p = < .001$;

Sexual orientation = hetero versus homosexual.

¹ $R^2 = 8.82$ (Hosmer & Lemeshow) .03 (Cox & Snell) .04 (Nagelkerke). Model $\chi^2(4) = 60.53$, $p = < .001$

² $R^2 = 8.02$ (Hosmer & Lemeshow) .03 (Cox & Snell) .04 (Nagelkerke). Model $\chi^2(5) = 61.15$, $p = < .001$

Adolescent Male Sexual Orientation and Condom Use ($n = 2,107$)**The direct effect of sexual orientation on condom use**

The results indicate that homosexuals use condoms significantly more often during sexual intercourse than heterosexuals (see Tables 4 and 5).

The indirect effect of sexual orientation on condom use via ESD

Sexual orientation was not a significant predictor of ESD. Although mediation was not possible, the results showed that those who begin having sexual intercourse early have a higher risk for unsafe sex than those who do not start early. In short, sexual orientation is related to condom use, but this association is not mediated by an ESD (see Table 4).

The indirect effect of sexual orientation on condom use via SSE

Sexual orientation was a significant predictor of SSE. Next, the mediation model was tested. In this step, the effect of sexual orientation on boys' condom use significantly decreased. Thus, partial mediation exists whereby homosexuals experience lower SSE, and this is associated with somewhat higher condom use than among heterosexuals (see Table 5).

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Table 4

Coefficients of Sexual Orientation and Early Sexual Debut on Adolescent Males' Condom Use (n = 2,107)

Variable	Step 1 (X on Y) ¹ : Never/sometimes use protection (vs. always/virgin)			Step 2 (X on M) ² : Early sexual debut (vs. no early debut)			Step 3 (X on Y via M) ³ : Never/sometimes use protection (vs. always/virgin)		
	<i>b</i>	Odds	95% <i>CI</i>	<i>b</i>	Odds	95% <i>CI</i>	<i>b</i>	Odds	95% <i>CI</i>
Constant	.133	-	-	-1.83***	-	-	.034	-	-
Educational level (ref = VWO/university)									
HAVO/HBO	.480***	1.62***	1.26, 2.08	.430*	1.54*	1.10, 2.15	.442***	1.56***	1.21, 2.01
VMBO/MBO	.184	1.20	0.95, 1.53	1.014***	2.76***	2.76, 2.02	.051	1.05	0.82, 1.34
Ethnicity (ref = Dutch)									
Sexual orientation (ref = hetero)	-.422***	.66***	0.53, 0.81	.419***	1.52***	1.21, 1.91	-.499***	.61***	0.49, 0.75
Early sexual debut (ref = no early)	-	-	-	-	-	-	.788***	2.20***	1.78, 2.72

Note. Odds significant if $p < 0.05$ or 95% *CI* does not include 0; * $p < .05$. ** $p < .01$. *** $p < .001$; Sexual orientation = hetero versus homosexual; Condom use with last sexual partner.

¹ $R^2 = 3.93$ (Hosmer & Lemeshow) .02 (Cox & Snell) .03 (Nagelkerke). Model $\chi^2(4) = 39.31$, $p < .001$

² $R^2 = 1.32$ (Hosmer & Lemeshow) .03 (Cox & Snell) .05 (Nagelkerke). Model $\chi^2(4) = 73.47$, $p < .001$

³ $R^2 = 3.93$ (Hosmer & Lemeshow) .03 (Cox & Snell) .03 (Nagelkerke). Model $\chi^2(4) = 39.31$, $p < .001$

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Table 5

Coefficients of Sexual Orientation and Sexual Self-esteem on Adolescent Males' Condom Use (n = 2,107)

Variable	Step 1 (X on Y) ¹ : Never/sometimes use protection (vs. always/virgin)			Step 2 (X on M): Sexual Self-esteem			Step 3 (X on Y via M) ² : Never/sometimes use protection (vs. always/virgin)		
	<i>b</i>	Odds	95% <i>CI</i>	<i>b</i>	<i>SE</i>	β	<i>b</i>	Odds	95% <i>CI</i>
Constant	.133	-	-	4.053	.029	-	-3.886***	-	-
Educational level (ref = VWO/university)									
HAVO/HBO	.480***	1.62***	1.26, 2.08	.053	.034	.046	.457***	1.58***	1.22, 2.05
VMBO/MBO	.184	1.20	0.95, 1.53	-.012	.033	-.011	.208	1.23	0.96, 1.57
Ethnicity (ref = Dutch)	-.422***	.66***	0.53, 0.81	-.059	.028	-.046*	-.390***	.68***	0.55, 0.84
Sexual orientation (ref = hetero)	-.578**	.56**	0.37, 0.86	-.150	.057	-.057**	-.471*	.62*	0.40, 0.97
Sexual self-esteem	-	-	-	-	-	-	.992***	2.70***	2.27, 3.21

Note. β = standardised coefficient; *SE* = standard error; Odds significant if $p = < 0.05$ or 95% *CI* does not include 0; * $p = < .05$. ** $p = < .01$. *** $p = < .001$;

Sexual orientation = hetero versus homosexual; Condom use with last sexual partner.

¹ $R^2 = 8.82$ (Hosmer & Lemeshow) .03 (Cox & Snell) .04 (Nagelkerke). Model $\chi^2(4) = 60.53$, $p = < .001$

² $R^2 = 8.43$ (Hosmer & Lemeshow) .08 (Cox & Snell) .11 (Nagelkerke). Model $\chi^2(5) = 174.26$, $p < .001$

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Homosexual Minority stress and Sexual Risk Behaviour (*n* = 93)

The results reveal that minority stress did not significantly predict homosexual boys' rates of casual sex or condom use (see Tables 6 and 7). Although mediation was not possible, the results indicate that homosexual boys who begin having sex early have a significantly higher risk for casual sex and unsafe sex than those who do not start early (see Tables 6 and 7). The same procedures were carried out for SSE, but these differences were not significant.

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Table 6

Coefficients of Minority Stress and Early Sexual Debut on Adolescent Homosexual Males' Casual Sex (n = 93)

Variable	Step 1 (X on Y) ¹ : Casual sex (vs. nearly always in a relationship)			Step 2 (X on M) ² : Early sexual debut (vs. no early debut)			Step 3 (X on Y via M) ³ : Casual sex (vs. nearly always in a relationship)		
	<i>b</i>	Odds	95% <i>CI</i>	<i>b</i>	Odds	95% <i>CI</i>	<i>b</i>	Odds	95% <i>CI</i>
Constant	-.83	-	-	-2.07*	-	-	-1.06	-	-
Educational level (ref = VWO/university)									
HAVO/HBO	-.154	.86	0.29, 2.58	.341	1.41	0.33, 6.03	-.299	.79	0.26, 2.47
VMBO/MBO	-.104	.90	0.29, 2.80	.742	2.10	0.49, 8.95	-.322	.74	0.23, 2.43
Ethnicity (ref = Dutch)	.541	1.72	0.56, 5.25	.323	1.38	0.38, 4.97	.510	1.67	0.51, 5.40
Minority stress	.274	1.32	0.81, 2.15	-.048	.95	0.53, 1.71	.314	1.37	0.82, 2.29
Early sexual debut (ref = no early)	-	-	-	-	-	-	1.559**	1.58**	1.58, 14.27

Note. Odds significant if $p < 0.05$ or 95% *CI* does not include 0; * $p < .05$. ** $p < .01$. *** $p < .001$; Homosexual = gay and bisexual.

¹ $R^2 = 11.50$ (Hosmer & Lemeshow) .02 (Cox & Snell) .03 (Nagelkerke). Model $\chi^2(4) = 1.82$, $p = > .05$

² $R^2 = 12.31$ (Hosmer & Lemeshow) .02 (Cox & Snell) .03 (Nagelkerke). Model $\chi^2(4) = 1.89$, $p = > .05$

³ $R^2 = 4.85$ (Hosmer & Lemeshow) .11 (Cox & Snell) .15 (Nagelkerke). Model $\chi^2(5) = 10.77$, $p < .001$

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Table 7

Coefficients of Minority Stress and Early Sexual Debut on Adolescent Homosexual Males' Condom Use (n = 93)

Variable	Step 1 (X on Y) ¹ : Never/sometimes use protection (vs. always/virgin)			Step 2 (X on M) ² : Early sexual debut (vs. no early debut)			Step 3 (X on Y via M) ³ : Never/sometimes use protection (vs. always/virgin)		
	<i>b</i>	Odds	95% <i>CI</i>	<i>b</i>	Odds	95% <i>CI</i>	<i>b</i>	Odds	95% <i>CI</i>
Constant	-.72	-	-	-2.07*	-	-	-.91	-	-
Educational level (ref = VWO/university)									
HAVO/HBO	.546	1.73	0.57, 5.27	.341	1.41	0.33, 6.03	.515	1.67	0.53, 5.31
VMBO/MBO	.455	1.58	0.50, 4.98	.742	2.10	0.49, 8.95	.314	1.37	0.41, 4.54
Ethnicity (ref = Dutch)									
Minority stress	.117	1.23	0.70, 1.82	-.048	.95	0.53, 1.71	.140	1.15	0.70, 1.90
Early sexual debut (ref = no early)	-	-	-	-	-	-	1.403**	4.07*	1.37, 12.04

Note. Odds significant if $p = < 0.05$ or 95% *CI* does not include 0; * $p = < .05$. ** $p = < .01$. *** $p = < .001$; Homosexual = gay and bisexual; Condom use with last sexual partner.

¹ $R^2 = 6.65$ (Hosmer & Lemeshow) .01 (Cox & Snell) .02 (Nagelkerke). Model $\chi^2(4) = 1.25$, $p = > .05$

² $R^2 = 12.30$ (Hosmer & Lemeshow) .02 (Cox & Snell) .03 (Nagelkerke). Model $\chi^2(4) = 1.89$, $p = > .05$

³ $R^2 = 1.66$ (Hosmer & Lemeshow) .10 (Cox & Snell) .13 (Nagelkerke). Model $\chi^2(4) = 9.74$, $p > .05$

Discussion

The current study aimed to examine whether homosexuals had a higher prevalence of SRB in comparison to heterosexuals, and whether an ESD and lower SSE among homosexuals account for this difference. In contrast to what is often assumed, homosexual boys used condoms more often than heterosexuals. This result could somewhat be partially explained by lower SSE among homosexuals. At the same time, however, homosexuals reported more casual sex. These results could also not be explained by having sex at an earlier age, as homosexuals and heterosexuals reported sexual debuts at similar ages. Furthermore, the results show that minority stress could not account for the different rates of homosexual condom use and casual sex.

Educational level

The current study illustrates a striking difference in the lowest level of education. Namely, 48.2% of the heterosexual boys had a lower educational level, in comparison with 35.5% of the homosexuals. There is no legitimate reason why there should be fewer homosexual boys at the lowest level of education. However, students at the lowest level of education tend to be less willing to come out at school compared to the middle- and higher educational level due to the culture of prejudices about homosexuality that is more prevalent in the environments of boys in the lowest level of education (HBSC, 2017).

Adolescent Males' Sexual Orientation and Sexual Risk Behaviour

Consistent with previous research (Valencia et al., 2018; Van Griensven et al., 2004; Tornello et al., 2014) and in line with the expectations outlined above, being a homosexual boy seemed to be a risk factor for engaging in more casual sex compared to heterosexual boys. In contrast, homosexual boys reported more condom use than heterosexual boys. A likely explanation is that homosexuals had used condoms more often with their last sex partner because they have more casual sex in general (e.g. outside the context of a relationship) and therefore are at greater risk for STIs/HIV compared to heterosexuals.

In contrast with these results (2012), the results from De Graaf and colleagues (2017) showed that homosexual boys used condoms less often compared to their heterosexual peers. These different results may be explained by the fact that in recent years (2012-2017) condom use with the most recent sexual partner has declined in general. Furthermore, according to the boys surveyed by De Graaf and colleagues (2017), the main reason for this decline was that

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sex with a condom is less enjoyable for the boys themselves. This could explain the reduction in condom use in the case of sexual relationships between boys because penis sensation is usually a priority for both parties in homosexual relationships between boys (whereas this tends to be the case for only one party in heterosexual relationships and for neither party in female homosexual relationships).

Furthermore, in line with the hypothesis, homosexual boys experience lower SSE compared to heterosexuals (Kuyper & Bos, 2016; Rosario et al., 2011). However, contrary to expectation, lower SSE among homosexuals was somewhat related to more condom use rather than less condom use. Conversely, heterosexuals experience higher SSE, which in turn is somewhat associated with less condom use rather than more condom use. A possible explanation for this is that heterosexuals have sex within a relationship more often and therefore do not use condoms (anymore) in favour of using other contraceptives to prevent pregnancy. If this is true, it may mean that less condom use among heterosexuals can no longer be considered a risk behaviour in this context. Future research should investigate the role of being in a relationship on condom use. Furthermore, another explanation for these results might be that homosexual boys are frequently the intended audience of many STI/HIV risk reduction efforts, and therefore are comparatively more concerned about the risks of STIs/HIV (Cheng & Huang, 2018; Clayton, Andrzejewski, Johns, Lowry, & Ashley, 2019). Such efforts may have an effect on knowledge, SSE, and condom use among homosexual boys in ways that distinguish them from heterosexuals (Clayton et al., 2019). This hypothesis warrants additional empirical research.

Lower or higher SSE did not predict casual sex, or vice versa, among adolescent boys. A possible explanation could be that the measurement of SSE was limited because this data set measured only SSE with the last sex partner, while experience with casual sex was measured over a lifetime. Sexual self-esteem may be too prone to fluctuation in different social or sexual interactions (Goodson, Buhi, & Dunsmore, 2006), which change significantly, especially during adolescence (Dubé, Lavoie, Blais, & Hébert, 2017). All in all, one interaction cannot reflect a complete picture of one's general SSE in relation to one's sexual experiences and preferences. Thus, future research should use a more general measurement of SSE.

In contrast to what was expected, homosexual- and heterosexual boys do not significantly differ in their age at initial sexual activity. Therefore, ESD does not explain why homosexual- and heterosexual boys differ in rates of SRB. However, as expected, ESD was

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associated with condomless sex and more casual sex (Kaplan et al., 2013; 2013; Lowry et al., 2017). Future studies should investigate a possible interaction effect in whether ESD is an equally strong risk factor for SRB among homosexual- and heterosexual boys.

Minority stress and Sexual Risk Behaviour Among Homosexual Males

The second model was only tested among homosexual boys and showed that minority stress offers little explanation for their SRB. This finding was surprising, as prior data (Hatzenbuehler et al., 2008; Meyer, 1995; Tan, 2018) suggested a direct association between minority stress and SRB. This difference between studies may be attributable to the choice of analytic strategy employed. Namely, this study was limited to testing the differences in minority stress levels between homosexual- and heterosexual boys because only homosexuals answered the questions about minority stress. Therefore, future research should determine whether minority stress could be a factor in explaining the difference in SRB between these two groups.

Furthermore, homosexual boys' level of minority stress was not very high ($M = 2.2$), implying that homosexual boys do not experience significant problems with their sexual minority status. However, this research was conducted in Holland, which is a relatively tolerant country for homosexuals (Kuyper, Iedema, & Keuzenkamp, 2013). A likely explanation is that these positive attitudes regarding homosexuality could explain the low levels of minority stress among Dutch homosexual boys. However, the boys' actual level of minority stress was likely higher because there may have been some homosexual boys who identified themselves as heterosexual on the survey and who probably experience higher levels of minority stress compared to boys who had already come out publicly.

Since our opportunities for data were limited, the results do not confirm homosexual boys' rates of casual sex as a potential coping strategy in response to minority stress experiences. However, the parental investment theory (Trivers, 1972) might offer an explanation as to why homosexual boys have more casual sex compared to heterosexuals. According to this model, females are more selective in their choice of partners because they need to invest more resources in their offspring (e.g., pregnancy and nursing), and therefore have less casual sex. In contrast, males' investment of resources is minimal (i.e., reproducing), and they therefore have the opportunity to have more casual sex. Instinctively, males' priority would be to have the maximum possible number of sex partners to maximise their probability of reproducing. In the case of sexual relationships between boys,

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homosexuals would therefore find available sex partners more easily in comparison to heterosexuals, because from an evolutionary perspective, both homosexual boys have the urge to have multiple partners (Passarelli & Vidotto, 2015).

Strengths and limitations

The present study is based on a large sample ($n = 2,107$). Moreover, to the best of the author's knowledge, this is the first study which investigates the association between sexual orientation and SRB as explained by minority stress, SSE, and an ESD in Dutch adolescent boys. Despite these strengths, there are several limitations that should be mentioned. First, the hypothesised model was theoretically aligned and in one case statistically supported; however, as a note of caution, the researcher recognises that testing these pathways (mediation) in a cross-sectional dataset limits the ability to make causal assertions. Future longitudinal research testing the model prospectively is warranted.

Second, the greatest limitations of the study are related to the questionnaire. Initially, the main goal of this study was to compare female and male heterosexuals with gay, lesbian, and bisexual youth to determine whether they differ in SRB. Unfortunately, the measurement of SRB was not applicable to lesbian/bisexual girls because this was only measured based on vaginal/anal penetration. Therefore, it was not possible to conduct research on SRB for both sexual-minority girls and boys. Future research should focus on sexual-minority girls and include measures of SRB that are sufficient for all sexes and sexual orientations.

Third, the content validity of minority stress is inadequate because minority stress was only measured in homosexual youth. Future studies should take heterosexual youth into account because without this kind of measurement, it is impossible to determine whether minority stress explains the differences between the two groups. Rather than assuming that heterosexuals do not experience minority stress, it is necessary to measure it. Fourth, the current study used a measure of sexual orientation based on attraction. Although there is an overlap between the various dimensions of sexual orientation (i.e., self-identification, sexual behaviour, and attraction), other measures such as sexual behaviour might yield different results (Hegna & Rossow, 2007; Marshal et al., 2008).

Fifth, it would have been preferable to conduct separate analyses to compare homosexuals ($n = 87$) and bisexuals ($n = 6$) with each other in the case of SRB, but the relatively small sample size of bisexuals did not allow for reliable separate analyses. Overall, the small sample size of homosexual boys ($n = 93$) was striking. The actual percentages of

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homosexuals may be higher because boys who had not yet determined their sexual orientation or who are mainly but not exclusively attracted to the opposite sex were not included in this sample due to the limitations of the questionnaire. Finally, the response rate of the municipalities was very low (16.4%). Although it was found that the non-response group did not significantly differ from the response group (De Graaf et al., 2012), it is unlikely that the sample from the municipalities is generalisable. It is almost certain that adolescents who have doubts about their sexual orientation or who have sexual problems did not reply to the questionnaire.

Conclusion and implications

This study reveals that homosexual boys do not always demonstrate more SRB as previous studies suggest, and that their lower SSE is somewhat related to this. This rather contradictory result may be because the measurement of SRB is limited, and more research is warranted. Therefore, researchers should invest in more reliable concepts of SRB, in particular for lesbian/bisexual girls. In addition, future questionnaires about SRB should take into account whether sex takes place in a relationship or not. Additionally, the consistent finding of higher rates of SRB for those who sexually debut at younger ages warrants public health attention, and interventions to delay sexual debut seem justified. Finally, minority stress should be investigated among both homosexuals and heterosexuals to determine whether this is associated with more SRB among homosexuals.

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