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**A Large-scale Comparison of Canadian Sexual/Gender Minority and Heterosexual,
Cisgender Adolescents' Pornography Use Characteristics**

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Abstract

Background: The ease of access to pornography has made its use common among adolescents. Although sexual and gender minority (SGM) (e.g., gay, transgender) adolescents may be more prone to use pornography due to sexual orientation related information seeking and/or scarcity of potential romantic or sexual partners, relatively little attention has been paid to their pornography use and to the quantitative examination of the similarities and differences between heterosexual, cisgender (HC) and SGM adolescents' pornography use characteristics.

Aim: The aim of the present study was to compare SGM and HC adolescents' pornography use considering potential sex differences.

Methods: We used a sample of 2846 adolescents (52.5% girls; $M_{age} = 14.5$, $SD = 0.6$) which was collected as part of an ongoing longitudinal study on adolescents' sexual health. Data were analyzed with five groups: HC boys; HC girls; SGM boys; SGM girls; and SGM non-binary individuals.

Outcomes: Adolescents completed a self-report questionnaire about sexual and gender minority status, and pornography use (i.e., lifetime use, age at first exposure, and frequency of use in the past three months).

Results: Results indicated significant differences between all groups: 88.2% of HC boys, 78.2% of SGM boys, 54.2% of SGM girls, 39.4% of HC girls, and 29.4% of SGM non-binary individuals reported having ever viewed pornography by the age of 14. SGM girls indicated a significantly younger age at first pornography use than HC girls, but this difference was not significant among boys. SGM boys reported the highest (median: many times per week), while HC girls reported the lowest (median: less than once a month) frequency of pornography use.

Clinical Translation: Results suggest that SGM and HC boys' pornography use characteristics are rather similar, while SGM and HC girls' pornography use patterns may be considered

different presumably due to the varying underlying motivations (e.g., using pornography to confirm sexual orientation).

Strengths & Limitations: Self-report measures and cross-sectional designs have potential biases that should be considered. However, the present study involved a large sample of adolescents including SGM adolescents, a population group that is understudied.

Conclusion: Approximately two-thirds of teenagers had gained their first experience with pornography in the present sample, and 52.2% reported using it once a week or more often in the past three months, indicating that pornography use may play an important role in both HC and SGM adolescents' sexual development. Gender-based differences concerning pornography use seem to be robust regardless of SGM status.

Keywords: bisexual; gender minority; gay; lesbian; LGBT; pornography; sexual minority

Introduction

The ease of access to pornography has made its use common among both adults [1] and adolescents [2]. In 2005, more than 40% of adolescents aged between 10 and 17 years reported past-year pornography use in a nationally representative American sample [3]. In 2010, similar pornography use rates were reported in a large-scale study, including 25 European countries with more than 25,000 pre-adolescents and adolescents who had used the internet [4]. Overall, 23% of the 9 to 16 years old participants reported seeing sexual images online or offline in the past year with a high variability between the countries: past-year pornography use was the lowest in Germany (10%), while Norwegian pre-adolescents and adolescents reported the highest prevalence of pornography use (46%) [4]. This early exposure to pornography has been increasing, especially among younger adolescents. For example, computer-based pornography use increased by 10% among pre-adolescents (aged between 7-12) between 2004-2016 in Poland [5]. This ratio is presumably higher, as pornography use via mobile devices (e.g., smartphones) was not assessed and is particularly popular among the visitors of one of the most popular pornography sites (80% of the visitors of this site viewed pornography on their mobile devices in the past year) [6].

Pornography may play an important role in adolescents' sexual development through changes in sexual attitudes, beliefs, and behaviors [2] and may have long-term effects on adult sexuality [7,8]. Although sexual and gender minority (SGM) adolescents may be more prone to use pornography due to sexual orientation and gender-related information seeking and/or scarcity of potential romantic or sexual partners [9], relatively little scientific attention has been paid to their pornography use characteristics and to the examination of the similarities and differences between heterosexual, cisgender (HC) and SGM adolescents' pornography use characteristics

[10]. The aim of this study was to examine and compare SGM and HC adolescents' pornography use.

First experience with pornography among HC and SGM adolescents

Teenagers tend to have their first experience with pornography in early adolescence with one-third of them having their first experience before the age of 11 [2,11]. Although no prior studies have directly compared quantitatively HC and SGM adolescents' pornography use, based on the results of a large-scale Australian study among adolescents and young adults (15 to 29 years old), young SGM women were 1.3 times more likely to start viewing pornography at a younger age than HC women, with no significant differences between young SGM and HC men [12]. It should be noted that 60% of the participants were aged between 20 and 29 years; thus, generalizing the results of this study to adolescents may lead to potential biases (e.g., recall bias may be present in adults when asking them about their first pornography use). Considering concerns about the early exposure to pornography with its potential effects on sexual development [2,7,13,14], and the findings that sexual minority adolescents are less likely to receive information on sexual activities of their interest from traditional sources of sexual education (e.g., school-based sexual education programs) [15–17]; it is essential to examine whether SGM adolescents have their first experiences with pornography at a younger age than their HC peers.

Lifetime pornography use among HC and SGM adolescents

HC and SGM adolescents may not only show different patterns of first experiences with pornography but may also use pornography with a different frequency. Prevalence rates or lifetime use of pornography among adolescents have shown wide variability from one study to another potentially due to methodological weaknesses (e.g., operationalization of pornography, different sampling methods) [2]. Determining pornography use among SGM adolescents may be

even more challenging because greater shortcomings may be present (e.g., prevalence rates for sexual orientation groups were not calculated separately for each group; some adolescents may not have explored their sexual orientation yet).

According to a recent systematic review, no accurate prevalence rates of pornography use have been reported in previous studies examining pornography use among SGM adolescents and no prior study directly compared HC and SGM adolescents' lifetime pornography use [10]. One study examining SGM boys' pornography use reported that approximately 80% of them used pornography during their first same-sex sexual experience [15]. This rate of lifetime use is similar to HC boys' lifetime pornography use [3]. As for girls, mixed results were reported. One Swiss study with older adolescents (aged between 16 and 20 years) did not report significant differences between HC and SGM girls' lifetime pornography use [18], while another Swedish study with first-year high school girls revealed three times higher pornography use among SGM girls compared to HC girls [19]. These mixed results may be attributed to methodological and conceptual issues (e.g., different sampling methods, cultural diversity) [2].

Pornography use frequency among HC and SGM adolescents

Similarly to lifetime pornography use, some studies reported no significant differences between SGM and HC adolescents' pornography use frequency (i.e., both groups viewed pornography once a month on average) [20], while in other studies, SGM adolescents used pornography three times more frequently than HC adolescents [12]. This high variability in the results of previous studies may be attributed to the different sampling methodologies used (e.g., national probability-based versus convenience samples [19,21]); the different assessment of pornography use (e.g., differentiation versus no differentiation between wanted and unwanted exposure to pornography [3,21]); and the cultural diversity of the samples (e.g., Sweden has one

of the highest levels of sexual liberalism in Europe and SGM girls' three times higher pornography use frequency—compared to HC girls—was reported in a Swedish sample [22]).

The aim of the present study

Based on the limited number of studies examining both HC and SGM adolescents' pornography use characteristics [10], only broad assumptions can be made. It may be hypothesized that SGM girls start to use pornography at a younger age than HC girls, but this may not be the case for SGM boys compared to HC boys [12]. Pornography use may be more frequent among SGM adolescents than among HC adolescents supposedly due to its different roles (e.g., sexual identity-related information seeking [15,23,24]). However, direct quantitative comparisons between SGM and HC adolescents' pornography use characteristics have never been conducted on large samples of adolescents, resulting in a gap in knowledge concerning the similarities and differences between SGM and HC adolescents' pornography use characteristics [10]. The aim of the present study was to systematically examine and compare SGM and HC adolescents' pornography use (i.e., lifetime use, frequency of use in the past three months, and age at first use).

Material and Methods

Procedure

Data were collected as part of an ongoing bi-center Canadian longitudinal study on adolescents' sexual health that began in 2018. The cohort was recruited from large metropolitan, urban, and rural areas to ensure sample diversity. Schools presenting different socioeconomic backgrounds as well as Caucasian and multi-ethnic populations were approached. Participants completed a self-report, anonymous survey (Qualtrics Research Suite) in their classrooms on tablets provided by research assistants. Prior to enrollment, participants received detailed

information about the study and provided informed consent¹. Then, they completed a 35-minute survey including three additional attention-testing questions. Study participation was compensated with a 10\$ gift card. The research procedure was approved by the two research centers' Institutional Review Boards and was carried out under the Declaration of Helsinki.

Forty-seven schools were initially invited to participate in the study, of which 15 did not reply to the invitation, 11 refused to participate, and 21 accepted to participate in the study. Therefore, a convenience sample of 3013 students attending ninth grade was selected, and a participation rate of 99.3% was reached (only 20 students refused to participate, and one participant withdrew from participation). Selection criteria were: (1) attending ninth grade; (2) being at least 14 years old; and (3) having no intellectual disabilities. Out of the 2992 adolescents who accepted to participate, we excluded two participants who did not meet the eligibility criteria (i.e., they were 13 years old); 140 participants because they failed at least two out of the three attention-testing questions; and four participants whose answers appeared invalid (e.g., giving inconsistent answers to several questions) resulting in a final sample of 2846 adolescents.

Measures

Sexual Minority Status. Participants' sexual orientation was assessed with one item: *"People describe their sexual orientation in different ways. Which expression best describes your current sexual orientation? If no expression describes you, check "None of the above" and write the answer that describes you personally."* They indicated their answers using the following categories: straight; I do not know yet or I am currently questioning my sexual orientation; gay or lesbian or homosexual; heteroflexible; homoflexible; bisexual; queer; pansexual; asexual; none of the above; I don't want to answer; other (with specification).

¹In Québec, adolescents can provide their own informed consent from age 14. Not relying on parental consent can ensure the safety of students involved in the study, and can prevent sampling biases that may distort the results.

Gender Minority Status. Participants' gender identity was assessed with two items. Gender identity: "*What gender or gender identity do you identify with?*", answer options: boy; girl; indigenous or other cultural gender minority identity (e.g., two-spirit); non-binary, gender fluid or something else (e.g., genderqueer); and other (with specification). Trans status: "*Some people are trans (including transgender, transsexual, persons having undergone a transition/gender-affirming process, etc.). Are you a trans person?*", answer options: no, I am not a trans person; yes, a trans boy; yes, a trans girl; yes, a non-binary trans person; I am questioning my gender identity; and I don't know what it means.

Pornography Use. Before answering the pornography-related questions, participants were provided the following definition [25]: "For the following questions, the term 'pornography' is used to refer to: intentionally looking at or listening to: (1) pictures or videos of nude individuals, (2) pictures or videos in which people are having sexual activities". Participants answered three pornography-related questions: lifetime use ("*Have you ever watched pornography in your life?*"; 0 = no; 1 = yes); age at first use ("*How old were you the first time you watched pornography?*"), and frequency of use in the past three months ("*On average in the last three months, how many times did you watch pornography?*"; eight-point scale from 0 = never to 7 = many times per day) [25].

Participants

A total of 2846 participants ($M_{age} = 14.52$ years, $SD = 0.61$) were included in the present study, 1493 (52.5%) were girls. Regarding the participants' gender, 1362 (47.9%) adolescents reported being a boy, 1464 (51.4%) reported being a girl, three (0.1%) reported being indigenous or other cultural gender minority identity (e.g., two-spirit), 11 (0.4%) reported being non-binary, gender fluid or something else (e.g., genderqueer), and six (0.2%) indicated the "other" answer option. As for trans status, 2810 (98.7%) adolescents reported not being a trans person, three

(0.1%) reported being a trans boy, one (< 0.1%) reported being a trans girl, no one reported being a non-binary trans person, 17 (0.6%) were questioning their gender identity, and 15 (0.5%) did not know what “trans” means. Regarding sexual orientation, 2333 (81.9%) adolescents reported being heterosexual, 148 (5.2%) were questioning their sexual orientation, 25 (0.9%) reported being homosexual, 28 (1.0%) reported being heteroflexible, one (< 0.1%) reported being homoflexible, 108 (3.8%) reported being bisexual, five (0.2%) reported being queer, 30 (1.1%) reported being pansexual, five (0.2%) reported being asexual, 110 (3.9%) chose the “none of the above” answer option, and 49 (1.7%) did not want to answer to this question. Detailed sociodemographic information is presented in Table 1. To simplify the statistical analysis and increase the statistical power, we created five groups (see Appendix A): HC boys ($n = 1166$), SGM boys ($n = 156$), HC girls ($n = 1136$), SGM girls ($n = 313$), and SGM non-binary individuals ($n = 18$).

Statistical Analysis

Using SPSS 25, a chi-square test with a post-hoc z-test was used to compare the five groups' (i.e., HC boys, SGM boys, HC girls, SGM girls, and SGM non-binary individuals) lifetime pornography use. After examining the assumptions, a one-way analysis of variance (ANOVA) with a Bonferroni post-hoc test was conducted to compare adolescents' age at first pornography use among those adolescents who had used pornography in their lifetime. Then, a Kruskal-Wallis H-test with a Bonferroni adjusted post-hoc test was conducted to compare adolescents' pornography use frequency in the past three months among those adolescents who had used pornography in their lifetime².

Results

²To reduce the risk of Type I errors, Bonferroni correction was applied ($\alpha = .05$; $m = 12$). Consequently, the differences between the groups were considered significant at the level of $p < .004$.

Overall, 1796 adolescents (63.1%) reported having ever viewed pornography in their lifetime. According to the chi-square test, significant differences could be observed ($\chi^2(3, N = 2776) = 617.561, p < .001$) between the HC boys, SGM boys, HC girls, and SGM girls groups' *lifetime pornography use*: 88.2% of the HC boys; 78.2% of the SGM boys; 54.2% of the SGM girls; and 39.4% of the HC girls reported having ever viewed pornography in their lifetime. However, the SGM non-binary group did not differ significantly from any of the other groups (29.4% of them reported having ever viewed pornography in their lifetime), presumably due to the low sample size in this group.

The one-way ANOVA indicated that SGM boys reported the youngest *age of first pornography use* ($M = 11.58$ years, $SD = 1.67$), followed by HC boys ($M = 11.87$ years, $SD = 1.56$); SGM girls ($M = 12.34$ years, $SD = 1.75$); SGM non-binary individuals ($M = 12.50$ years, $SD = 1.00$); and HC girls ($M = 12.92$ years, $SD = 1.44$). The SGM non-binary group did not differ significantly from any of the other groups. The difference between HC boys' and SGM boys' age at their first experience with pornography was not significant, but all the other groups (except for the SGM non-binary group) differed significantly from one another (Table 2).

According to the results of the Kruskal-Wallis H-test, there was a statistically significant difference in HC and SGM adolescents' pornography use frequency. SGM boys reported the highest *frequency of pornography use* (median: many times per week) followed by HC boys (median: once a week); SGM girls (median: once a month); SGM non-binary individuals (median: once a month or less than once a month); and HC girls (median: less than once a month). Again, the SGM non-binary group did not differ significantly from any of the other groups. The difference between HC boys' and SGM boys' pornography use frequency was not significant, but all the other groups (except for the SGM non-binary group) differed significantly from one another (Table 2).

Discussion

In the past twenty years, there has been an increasing scientific interest in adolescents' pornography use [2,13,14,26], and a documented higher tendency of SGM adolescents to use the internet for sexual purposes (e.g., finding romantic or sexual partners [9,27–29]). However, little scientific attention has been paid to the quantitative examination of pornography use among SGM adolescents, particularly girls and SGM non-binary individuals, leading to significant knowledge gaps in this area [10]. This large scale study contributes to the pornography literature by comparing HC and SGM adolescents' pornography use characteristics [10].

On average, adolescents reported their *first pornography use* at the age of 12 in the present study. Despite the limited knowledge on SGM adolescents' pornography use, the current findings are in accordance with prior Australian findings reporting a significant age difference for *first pornography use* between HC and SGM young women, but not for young men [10]. SGM girls may be more likely to start using pornography at an earlier age than HC girls presumably as a result of their emerging sexual orientation/gender identity [30] and/or their interest in sexual activities related to their sexual orientation that they cannot find through other sources of information [30,31]. Due to the earlier interest in sexuality among adolescent boys relative to girls [32], both SGM and HC boys may start to search for sexual information at younger ages. Thus, SGM boys may not have opportunities at a significantly younger age than HC boys to start viewing pornography, given that overall, studies suggest that half of boys start to view pornography before the age of 11 [11,15]. The SGM non-binary group did not differ significantly from the other groups in the present study, presumably due to lack of statistical power. However, their age at first use rather showed similarities with HC and SGM girls' age than with HC and SGM boys' age at first pornography use.

The *lifetime use of pornography* in our study was similar to reports included in a recent review [2]. Regarding boys' lifetime pornography use, approximately 85% of them used pornography in our sample, and this rate was similar among both HC [2,3,33] and SGM boys [34] in prior studies. However, when examining HC and SGM girls, prior studies reported mixed results, with some suggesting higher rates of lifetime pornography use in the case of SGM girls compared to HC girls [10]. The present findings supported prior findings from an older adolescent sample from Sweden (participants were aged between 15 and 20 years), reporting a higher ratio of SGM girls using pornography than HC girls (3 to 9% of the pornography user group were SGM girls, while only 0 to 1% of the non-user group was SGM girls) [19]. However, the differences between SGM and HC girls were not as pronounced in the present study. The SGM non-binary group did not differ significantly from the other groups regarding their lifetime pornography use in the present study, presumably due to a lack of statistical power.

No significant difference was observed in SGM and HC boys' *pornography use frequency*, SGM boys reported viewing pornography many times a week (median), while HC boys reported viewing pornography once a week (median) in the present study [20,35]. Although HC and SGM boys' primary motivation of frequent use of pornography may be to experience sexual pleasure [24,34,36–38], different motivations may also underlie their use. SGM boys may also use pornography in the process of their sexual orientation or gender identity development (e.g., confirming their attraction to same-sex individuals, learning about sexual scripts in different types of sexual relationships) [15,20,23,24,30]. This difference may also be present in the case of girls, and it may manifest in more frequent pornography use for SGM girls compared to HC girls, presumably due to the different primary motivations. HC girls reported viewing pornography less than once a month (median) in the past three months, while SGM girls reported viewing pornography once a month (median) in the present study. SGM girls may view pornography more

frequently (but still less frequently than boys) to seek information and confirm their sexual orientation/gender identity than HC girls, whose primary motivation may be related to sexual pleasure [30,36,37]. Also, HC girls could potentially gain information about sexual activities from different sources more easily (such as traditional sexual education, parents, or friends) than SGM girls [31,39]. Similarly to the HC and SGM girls' groups, the SGM non-binary group reported viewing pornography once or less than once a month (median).

Moreover, the gender-based differences in pornography use may also derive from girls' and boys' different perceptions of pornography. Girls may consider pornography as material for boys to satisfy their sexual needs, they may hold more negative attitudes towards pornography, and they may find the acts it depicts to be "dirty" and "disgusting" [38,40]. However, boys may see pornography as a simple tool to experience sexual pleasure [24]. Based on the results of a nationally representative US-based study among adults, both men's and women's opposition towards pornography decreased from 1975 to 2012 (men: from 34% to 23%, women: from 53% to 43%). Nevertheless, women's opposition remained consistently higher than men's, and men's opposition towards pornography decreased faster than women's, widening the gender-based gap in attitudes towards pornography [41].

Limitations and Future Studies

The current findings should be considered alongside some limitations. The use of self-report, cross-sectional measures may have led to potential biases such as social desirability. We only assessed the frequency of pornography use, but not problematic or out-of-control use, content or type of pornographic material, nor the underlying motivations for use [42]. The present study assessed intentional pornography use, thus it did not differentiate between wanted and unwanted exposure to pornography (i.e., more than two-thirds of US and European adolescents have reported unwanted exposure to pornography with one-third of them also reporting

intentional pornography use in the past 30 days [21,43]). The present study used a definition of pornography that included pictures or videos of nude individuals [25]. Some adolescents might have considered that this definition includes artistic pieces that depict nudity without pornographic purposes. Therefore, some adolescents may not have used pornography before but still indicated pornography use due to exposure to nudity in art.

Adolescents start to explore their sexual orientation and/or gender identity in early adolescence, but this process may not be complete until late adolescence [44]. Thus, some teenagers in the present study may not have explored their sexual orientation and/or gender identity, potentially distorting the results. Although this study involved a large sample including SGM adolescents, a population group that is understudied in the literature in terms of pornography use as well as other aspects of sexual health, the number of SGM non-binary participants was low compared to the sample size of the other groups. These unbalanced sample sizes might have contributed to the mainly non-significant differences between the SGM non-binary group and the other groups. However, the present study expands our understanding of SGM adolescents'—and particularly SGM non-binary adolescents—pornography use, and it is a crucial step toward decreasing the exclusion and marginalization of SGM individuals in research [45]. Future studies should oversample SGM non-binary adolescents to provide more meaningful comparisons between HC girls and boys, SGM girls and boys, and SGM non-binary adolescents.

Conclusions

Approximately two-thirds of teenagers had already gained their first experience with pornography in the present sample of relatively young adolescents (mean age: 14.5 years). Out of those adolescents who reported pornography use, 52.2% reported using it once a week or more often in the past three months, indicating that viewing pornography may play an important role in both SGM and HC adolescents' sexual development. SGM and HC boys' pornography use

characteristics showed similarities, while SGM and HC girls' patterns of use presented some differences. Although it was not examined in the present study, these differences may be attributed to varying underlying motivations (e.g., recognition of sexual identity by pornography use in the case of SGM girls) [30,36,37] and/or reflect access to sources of knowledge on sexuality-related topics (e.g., parents, friends, or pornography) [31], highlighting the importance of the differentiated examination of pornography use in these groups of adolescents. Results are also of importance for policymakers, as they might suggest that information regarding the normative sexuality of SGM youth may be lacking in current sexual education curricula [17].

Statement of Authorship:

Category 1:

(a) conception and design: Beáta Bóthe, Marie Pier Vaillancourt-Morel, Alice Girouard, Jacinthe Dion, Sophie Bergeron

(b) analysis of data: Beáta Bóthe; Alice Girouard

(c) interpretation of data: Beáta Bóthe, Marie Pier Vaillancourt-Morel, Alice Girouard, Aleksandar Stulhofer, Jacinthe Dion, Sophie Bergeron

Category 2:

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(b) revising it critically for important intellectual content: Marie Pier Vaillancourt-Morel, Aleksandar Stulhofer, Jacinthe Dion, Sophie Bergeron

Category 3:

(a) final approval of the version to be published: Beáta Bóthe, Marie Pier Vaillancourt-Morel, Alice Girouard, Aleksandar Stulhofer, Jacinthe Dion, Sophie Bergeron

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Table 1. Detailed sociodemographic characteristics of the sample and the distribution of pornography use frequency categories

Characteristics	Total sample (<i>N</i> = 1764- 2846 (%))	(1) Heterosexual, cisgender boys (<i>n</i> = 1020-1166 (%))	(2) Sexual and gender minority boys (<i>n</i> = 121- 156 (%))	(3) Heterosexual, cisgender girls (<i>n</i> = 442-1136 (%))	(4) Sexual and gender minority girls (<i>n</i> = 169- 313 (%))	(5) Sexual and gender minority non-binary individuals (<i>n</i> = 12-18 (%))	Chi square tests of independence
Sex assigned at birth							
Male	1353 (47.5%)	1166 (100.0%)	154 (98.7%)	0 (0.0%)	0 (0.0%)	4 (22.2%)	$\chi^2 (4, N = 2789) = 2768.6, p < .001$
Female	1493 (52.5%)	0 (0.0%)	2 (1.3%)	1136 (100.0%)	313 (100.0%)	14 (77.8%)	
Age							
14 years old	1517 (53.3%)	614 (52.7%)	79 (50.6%)	623 (54.8%)	155 (49.5%)	11 (61.6%)	$\chi^2 (16, N = 2789) = 16.60, p = .412$
15 years old	1184 (41.6%)	483 (41.4%)	65 (41.7%)	468 (41.2%)	144 (46.0%)	7 (38.9%)	
16 years old	128 (4.5%)	58 (5.0%)	11 (7.1%)	40 (3.5%)	14 (4.5%)	0 (0.0%)	
17 years old	16 (0.6%)	11 (0.9%)	1 (0.6%)	4 (0.4%)	0 (0.0%)	0 (0.0%)	
18 years old	1 (<0.1%)	0 (0.0%)	0 (0.0%)	1 (0.1%)	0 (0.0%)	0 (0.0%)	
Cultural identity							
French	1873 (65.8%)	765 (65.7%)	98 (62.8%)	771 (67.9%)	198 (63.3%)	9 (50.0%)	$\chi^2 (52, N = 2786) = 65.55, p = .098$
Canadian/"Québécois"	403 (14.2%)	174 (14.9%)	25 (16.0%)	148 (13.00%)	44 (14.1%)	2 (11.1%)	
American	17 (0.6%)	11 (0.9%)	0 (0.0%)	5 (0.4%)	0 (0.0%)	0 (0.0%)	
Western European	33 (1.2%)	17 (1.5%)	4 (2.6%)	6 (0.5%)	3 (1.0%)	1 (5.6%)	
Eastern European	23 (0.8%)	11 (0.9%)	1 (0.6%)	8 (0.7%)	3 (1.0%)	0 (0.0%)	
African	74 (2.6%)	32 (2.7%)	6 (3.8%)	28 (2.5%)	7 (2.2%)	1 (5.6%)	
Asian	50 (1.8%)	17 (1.5%)	6 (3.8%)	15 (1.4%)	10 (3.2%)	1 (5.6%)	
Aboriginal/First Nations	25 (0.9%)	12 (1.0%)	0 (0.0%)	10 (0.9%)	3 (1.0%)	0 (0.0%)	
Middle Eastern	57 (2.0)	23 (2.0%)	2 (1.3%)	21 (1.9%)	6 (1.9%)	0 (0.0%)	
Latin/South American	60 (2.1)	19 (1.6%)	3 (1.9%)	28 (2.5%)	8 (2.6%)	1 (5.6%)	
Greek/Italian	26 (0.9%)	10 (0.9%)	1 (0.6%)	11 (1.0%)	4 (1.3%)	0 (0.0%)	
Pakistani/Hindu	6 (0.2%)	2 (0.2%)	1 (0.6%)	3 (0.3%)	0 (0.0%)	0 (0.0%)	
Caribbean	71 (2.5%)	30 (2.6%)	1 (0.6%)	24 (2.1%)	10 (3.2%)	3 (16.7%)	
Other	125 (4.4%)	41 (3.5%)	8 (5.1%)	57 (5.0%)	17 (5.4%)	0 (0.0%)	
Living situation							
With my mother and my father	1951 (68.6%)	803 (68.9%)	104 (66.7%)	782 (68.8%)	206 (65.8%)	14 (77.8%)	$\chi^2 (32, N = 2789) = 47.50, p = .038$
With my two mothers	6 (0.2%)	2 (0.2%)	0 (0.0%)	3 (0.3%)	1 (0.3%)	0 (0.0%)	
With my two fathers	1 (<0.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.3%)	0 (0.0%)	
With my mother only	239 (8.4%)	84 (7.2%)	13 (8.3%)	109 (9.6%)	30 (9.6%)	2 (11.1%)	
With my mother and her partner	196 (6.9%)	75 (6.4%)	10 (6.4%)	85 (7.5%)	22 (7.0%)	0 (0.0%)	

With my father only	49 (1.7%)	20 (1.7%)	2 (1.3%)	21 (1.8%)	6 (1.9%)	0 (0.0%)	
With my father and his partner	37 (1.3%)	14 (1.2%)	6 (3.8%)	13 (1.1%)	4 (1.3%)	0 (0.0%)	
As much with one parent as with the other	330 (11.6%)	150 (12.9%)	19 (12.2%)	114 (10.0%)	38 (12.1%)	0 (0.0%)	
Other (guardian, family or foster home, alone, with a roommate, etc.)	37 (1.3%)	18 (1.5%)	2 (1.3%)	9 (0.8%)	5 (1.6%)	2 (11.1%)	
Religion in which the adolescent has been raised							
Buddhist	16 (0.6%)	5 (0.4%)	2 (1.3%)	5 (0.4%)	4 (1.3%)	0 (0.0%)	$\chi^2 (24, N = 2783) = 51.92, p = .001$
Catholic	1389 (48.8%)	557 (47.9%)	70 (44.9%)	589 (51.9%)	134 (42.9%)	9 (50.0%)	
Jewish	7 (0.2%)	4 (0.3%)	0 (0.0%)	1 (0.1%)	2 (0.6%)	0 (0.0%)	
Muslim	155 (5.4%)	62 (5.3%)	10 (6.4%)	65 (5.7%)	12 (3.8%)	1 (5.6%)	
Protestant	103 (3.6%)	41 (3.5%)	1 (0.6%)	44 (3.9%)	13 (4.2%)	3 (16.7%)	
None	1088 (38.2%)	474 (40.8%)	66 (42.3%)	385 (34.0%)	138 (44.2%)	5 (27.8%)	
Other	82 (2.9%)	20 (1.7%)	7 (4.5%)	45 (4.0%)	9 (2.9%)	0 (0.0%)	
Mother's highest level of education							
Elementary	2 (0.1%)	0 (0.0%)	1 (0.6%)	1 (0.1%)	0 (0.0%)	0 (0.0%)	$\chi^2 (28, N = 2786) = 54.18, p = .002$
High school, uncompleted studies	127 (4.5%)	47 (4.0%)	7 (4.5%)	48 (4.2%)	22 (7.0%)	0 (0.0%)	
High school, completed studies	243 (8.5%)	109 (9.4%)	14 (9.0%)	91 (8.0%)	24 (7.7%)	1 (5.6%)	
College (CEGEP, trade school)	638 (22.4%)	248 (21.3%)	26 (16.7%)	295 (26.0%)	63 (20.1%)	4 (22.2%)	
University	1326 (46.6%)	565 (48.5%)	72 (46.2%)	526 (46.3%)	135 (43.1%)	7 (38.9%)	
Other	24 (0.8%)	6 (0.5%)	2 (1.3%)	9 (0.8%)	6 (1.9%)	1 (5.6%)	
I don't know	475 (16.7%)	183 (15.7%)	34 (21.8%)	165 (14.5%)	62 (19.8%)	5 (27.8%)	
Not applicable (no mother or female adult in charge of me)	7 (0.2%)	6 (0.5%)	0 (0.0%)	0 (0.0%)	1 (0.3%)	0 (0.0%)	
Father's highest level of education							
Elementary	6 (0.2%)	2 (0.2%)	1 (0.6%)	2 (0.2%)	1 (0.3%)	0 (0.0%)	$\chi^2 (28, N = 2786) = 33.14, p = .231$
High school, uncompleted studies	254 (8.9%)	98 (8.4%)	16 (10.3%)	108 (9.5%)	29 (9.3%)	1 (5.6%)	
High school, completed studies	304 (10.7%)	130 (11.2%)	13 (8.3%)	118 (10.4%)	33 (10.5%)	3 (16.7%)	

College (CEGEP, trade school)	614 (21.6%)	267 (22.9%)	28 (7.9%)	259 (22.8%)	55 (17.6%)	2 (11.1%)	
University	1028 (36.1%)	436 (37.5%)	57 (36.5%)	400 (35.2%)	110 (35.1%)	8 (44.4%)	
Other	28 (1.0%)	10 (0.9%)	1 (0.6%)	13 (1.1%)	3 (1.0%)	1 (5.6%)	
I don't know	573 (20.2%)	208 (17.9%)	40 (25.6%)	222 (19.6%)	74 (23.6%)	2 (11.1%)	
Not applicable (no father or male adult in charge of me)	35 (1.2%)	13 (1.1%)	0 (0.0%)	13 (1.1%)	8 (2.6%)	1 (5.6%)	
Mother's employment status							
Working	2487 (87.4%)	1015 (87.7%)	130 (83.3%)	1010 (89.0%)	266 (85.3%)	16 (88.9%)	
Studying	60 (2.1%)	26 (2.2%)	5 (3.2%)	20 (1.8%)	7 (2.2%)	1 (5.6%)	
Retired	9 (0.3%)	7 (0.6%)	0 (0.0%)	1 (0.1%)	0 (0.0%)	0 (0.0%)	
Receiving welfare benefits	23 (0.8%)	9 (0.8%)	0 (0.0%)	11 (1.0%)	3 (1.0%)	0 (0.0%)	
Unemployed or looking for a job	26 (0.9%)	11 (0.9%)	1 (0.6%)	10(0.9%)	4 (1.3%)	0 (0.0%)	$\chi^2 (32, N = 2779) = 29.10, p = .614$
Not receiving an income (staying at home)	138 (4.8%)	57 (4.9%)	12 (7.7%)	50 (4.4%)	19 (6.1%)	0 (0.0%)	
Deceased	11 (0.4%)	4 (0.3%)	1 (0.6%)	6 (0.5%)	0 (0.0%)	0 (0.0%)	
Other	61 (2.1%)	19 (1.6%)	6 (3.8%)	23 (2.0%)	10 (3.2%)	1 (5.6%)	
I don't know	20 (0.7%)	10 (0.9%)	1 (0.6%)	4 (0.4%)	3 (1.0%)	0 (0.0%)	
Father's employment status							
Working	2601 (91.4%)	1076 (93.5%)	148 (94.9%)	1036 (92.3%)	274 (89-8%)	14 (82.4%)	
Studying	12 (0.4%)	5 (0.4%)	0 (0.0%)	5 (0.4%)	1 (0.3%)	1 (5-9%)	
Retired	37 (1.3%)	13 (1.1%)	3 (1.9%)	14 (1.2%)	6 (2.0%)	1 (5.9%)	
Receiving welfare benefits	14 (0.5%)	4 (0.3%)	0 (0.0%)	6 (0.5%)(4 (1.3%)	0 (0.0%)	
Unemployed or looking for a job	25 (0.9%)	7 (0.6%)	1 (0.6%)	11 (1.0%)	5 (1.6%)	1 (5.9%)	$\chi^2 (32, N = 2751) = 36.44, p = .270$
Not receiving an income (staying at home)	7 (0.2%)	4 (0.3%)	0 (0.0%)	3 (0.3%)	0 (0.0%)	0 (0.0%)	
Deceased	23 (0.8%)	9 (0.8%)	1 (0.6%)	10 (0.9%)	2 (0.7%)	0 (0.0%)	
Other	33 (1.2%)	13 (1.1%)	0 (0.0%)	14 (1.2%)	5 (1.6%)	0 (0.0%)	
I don't know	55 (1.9%)	20 (1.7%)	3 (1.9%)	23 (2.0%)	8 (2.6%)	0 (0.0%)	
Pornography use frequency (past three months)							
Never	198 (11.2%)	53 (5.2%)	5 (4.1%)	115 (26.0%)	22 (13.0%)	3 (25.0%)	$\chi^2 (28, N = 1764) = 550.81, p < .001$
Less than one time per month	263 (14.9%)	65 (6.4%)	11 (9.1%)	131 (29.6%)	53 (31.4%)	3 (25.0%)	
One time per month	119 (6.7%)	48 (4.7%)	10 (8.3%)	45 (10.2%)	14 (8.3%)	2 (16.7%)	

Two to three times per month	263 (14.9%)	134 (13.1%)	14 (11.6%)	85 (19.2%)	29 (17.2%)	1 (8.3%)
One time per week	276 (15.6%)	210 (20.6%)	10 (8.3%)	37 (8.4%)	16 (9.5%)	3 (25.0%)
Many times per week	434 (24.6%)	337 (33.0%)	39 (32.2%)	26 (5.9%)	32 (18.9%)	0 (0.0%)
One time per day	162 (9.2%)	135 (13.2%)	22 (18.2%)	2 (0.5%)	3 (1.8%)	0 (0.0%)
Many times per day	49 (2.8%)	38 (3.7%)	10 (8.3%)	1 (0.2%)	0 (0.0%)	0 (0.0%)

Note. Based on Bonferroni correction, $p < .004$ indicate significant difference between the groups within the same variable.

Table 2. Comparisons of heterosexual, cisgender and sexual and gender minority groups of adolescents regarding their pornography use

	Total sample of adolescents who used pornography ($N = 1751-1788$) M (SD)/Median	(1)	(2)	(3)	(4)	(5)	ANOVA/Kruskal-Wallis H ^a		
		Heterosexual, cisgender boys ($n = 998-1019$) M (SD)/Median	Sexual and gender minority boys ($n = 120-121$) M (SD)/Median	Heterosexual, cisgender girls ($n = 429-442$) M (SD)/Median	Sexual and gender minority girls ($n = 167-169$) M (SD)/Median	Non-binary individuals ($n = 12$) M (SD)/Median	F/ χ^2	p	η^2/η^2_H
Age at first pornography use	12.16 (1.63)	11.87 (1.56) ^{3,4}	11.58 (1.67) ^{3,4}	12.92 (1.44) ^{1,2,4}	12.34 (1.75) ^{1,2,3}	12.50 (1.00)	39.48	<.001	.08
Frequency of pornography use in the past three months ^b	4	4 ^{3,4,5}	5 ^{3,4,5}	1 ^{1,2,4}	2 ^{1,2,3}	1.5 ^{1,2}	483.05	<.001	.27

Note. ^a = We used one-way ANOVA to compare the groups regarding the continuous variable (i.e., age at first pornography use), while we used the Kruskal-Wallis H-test to compare the groups regarding the ordinal variable (i.e., frequency of pornography use in the past three months). ^b = 0: never, 1: less than one time per month, 2: one time per month, 3: two to three times per month, 4: one time per week, 5: many times per week, 6: one time per day, 7: many times per day. M = mean; SD = standard deviation; η^2 = eta-squared. Superscript numbers (^{1, 2, 3, 4, 5}) indicate significant ($p < .004$) difference between the given group and the indexed group within the same variable.

Appendix A. Detailed description of the process of creating heterosexual, cisgender and sexual and gender minority groups of adolescents

To simplify the statistical analysis and increase the statistical power, we created five groups based on adolescents' reported sex assigned at birth, gender identity, trans status, and sexual orientation. We excluded from further analyses those adolescents who did not report their gender identity, trans status, or sexual orientation.

Those adolescents who reported their sex assigned at birth being "male", their gender identity being "boy", their trans status being "I am not a trans person/I don't know what it means", and their sexual orientation being "straight" were categorized as *heterosexual, cisgender boys* ($n = 1166$). Those adolescents who reported their sex assigned at birth being "female", their gender identity being "girl", their trans status being "I am not a trans person/I don't know what it means", and their sexual orientation being "straight" were categorized as *heterosexual, cisgender girls* ($n = 1136$).

Regarding *gender identity*, we merged the "boy" (with female sex assigned at birth) and the "girl" (with male sex assigned at birth) groups into a gender minority boy or girl group, while we merged the "indigenous or other cultural gender minority identity (e.g., two-spirit)", the "Non-binary, gender fluid or something else (e.g., genderqueer)", and the "other" groups into the non-binary individuals group. Regarding *trans status*, we merged the "trans man" and the "trans woman" groups into a gender minority boy or girl group, we coded the "non-binary trans person" response category into the non-binary individuals group, and we coded the "questioning gender identity" group into a gender minority boy or girl, or the non-binary individuals group based on their gender identity answer. Regarding *sexual orientation*, we merged the "bisexual", the "gay/lesbian/homosexual", the "queer", the "pansexual", the "asexual", the "heteroflexible", the "homoflexible", the "none of these categories" and the "questioning" groups into a sexual

minority group. After these categorizations, we created the groups of *sexual and gender minority boys* ($n = 156$), *sexual and gender minority girls* ($n = 313$), and the sexual and gender minority non-binary individuals ($n = 18$). We used these five groups for further analyses.