



Pornography Use and Adolescent Sexual Self-Concept: The Role of Pornography-Related Expectancies and Generalizations

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Abstract

While researchers have emphasized the need to investigate pornography use in relation to normative or positive aspects of adolescent sexuality and understand differential susceptibility among users, empirical studies remain sparse. In response, this study investigated the link between pornography use and adolescents' sexual self-concept (i.e., sexual self-esteem, body-esteem, sexual anxiety, and self-efficacy). Specifically, it compared the sexual self-concept of adolescents who had used pornography with those who had not, while also examining how frequency of use, pornography-related sexual expectancies, and generalizations were linked to sexual self-concept in a subset of users. A sample of 1584 Canadian adolescents (49.3% cisgender girls; Mage = 15.53 years) completed self-report questionnaires about their sexual functioning. Significant differences in sexual self-concept were found between adolescents who had and had not used pornography, with gender-specific effects. Among those who had used pornography, higher pornography-related sexual expectancies were associated with higher sexual anxiety and lower body-esteem, while higher generalizations were associated with lower sexual self-efficacy. The findings emphasized the importance of incorporating positive and normative aspects of sexuality into adolescent pornography research while considering individual- and pornography use-related factors that could be linked to targeted outcomes.

Introduction

During adolescence, psychosexual development involves forming a sexual self-concept, an internal framework comprised of a person's perceptions and feelings toward their own sexual qualities and behaviors (O'Sullivan et al., 2006). While conceptual models of sexual self-concept vary in the dimensions they identify, several core components consistently appear across theoretical frameworks of adolescent sexual well-being and positive sexuality (Arbeit, 2014; Harden, 2014; Kågsten & van Reeuwijk, 2021; Kotiuga et al., 2022; Mitchell et al., 2021). These include sexual self- and

body-esteem (i.e., a person's self-evaluation of their worth as a sexual being, with regard to their behavior, conduct, and attractiveness), sexual self-efficacy (i.e., self-perceptions of efficacy in experiencing sexual pleasure), and low levels of negative affect such as sexual anxiety (i.e., the tendency to feel discomfort or anxiety about one's sexuality) (Astle et al., 2025; Deutsch et al., 2014; Snell, 2001). Adolescents and adults with higher sexual self-esteem, body-esteem, sexual self-efficacy, and lower sexual anxiety typically report greater sexual satisfaction, lower sexual distress, and more positive perceptions of their sexual communication skills (Brasileiro et al., 2023; Brassard et al., 2015; Hensel & Fortenberry, 2013; Kotiuga et al., 2022).

Sexual self-concept evolves in part through sexual socialization and experiences heavily influenced by social learning and comparisons (Deutsch et al., 2014; Hensel et al., 2011). For contemporary adolescents, sexual socialization increasingly occurs within digital environments, notably through online pornography, which is defined as sexually explicit content intended to elicit sexual arousal (Ashton et al., 2019; Lewczuk et al., 2022). Studies indicate that over 55% of Canadian adolescents aged 14 years have voluntarily used pornography, often well before engaging in partnered sexual

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behaviors (Böthe et al., 2020; Kotiuga et al., 2022). Despite this widespread use, few studies have examined associations between pornography use and positive or normative aspects of adolescent sexuality development (Peter & Valkenburg, 2016). Instead, most research has concentrated on negative outcomes, such as risky sexual behaviors and sexual violence (Brown & L'Engle, 2009; Hald et al., 2010; Tokunaga et al., 2020). Yet, positive psychosexual development extends beyond mere risk avoidance and includes forming a positive sexual self-concept (Deutsch et al., 2014; Harden, 2014). Understanding the relationship between pornography use and adolescents' sexual self-concept is therefore needed for grasping how this common practice fits into the broader context of adolescent sexuality development. This knowledge, in turn, is essential for devising effective strategies to promote healthy sexuality development in our digital era.

The limited research examining the links between pornography use and sexual self-concept or related constructs, such as sexuality-related attitudes, sexual uncertainty, and insecurity, suggests that both positive and negative associations may coexist in adolescents and adults (Doornwaard et al., 2015; Kvaem et al., 2016; Peter & Valkenburg, 2008; Wright et al., 2023). This underscores the value of exploring which individual and contextual factors are associated with the presence and direction of these links. For instance, one Canadian study categorizing adolescents based on their sexual self-concept found high rates of pornography use in groups with both highly positive and highly negative sexual self-concepts (Kotiuga et al., 2022). Qualitative research further highlights this complexity, with some adolescents feeling sexually empowered by pornography use, while others experience significant performance anxiety, discomfort, or both (Ashton et al., 2018; Litsou et al., 2021; Löfgren-Mårtenson & Månsson, 2010; Martellozzo et al., 2016; Paslakis et al., 2022; Rothman et al., 2015, 2021). These findings indicate the need to move beyond simplistic binary comparisons of users versus nonusers, and instead explore how variations in pornography use relate to differences in adolescents' thoughts and feelings about their sexuality.

Current theoretical models that aim to make sense of the varied outcomes associated with pornography use emphasize the importance of considering how different personal and contextual factors (e.g., cognitive or emotional responses) may moderate identified outcomes (e.g., Campbell & Kohut, 2017; Valkenburg & Peter, 2013; Wright, 2011). Additionally, these models underscore the necessity of accounting for factors that are associated with both pornography use and criterion outcomes, since significant associations may in fact be attributed to these elements. In the context of sexual self-concept, relevant factors include age, gender, sexual orientation, and experiences with masturbation and partnered sexual behaviors (Horne & Zimmer-Gembeck, 2006; Kotiuga et al., 2022; Marengo et al., 2019; O'Sullivan

et al., 2006; Ševčíková & Daneback, 2014). Pornography-related factors potentially influencing adolescents' sexual self-concept include the extent to which adolescents base their expectations for sexual interactions on pornography and their tendency to generalize from pornographic content, disregarding individual sexual preferences (Ashton et al., 2018; Litsou et al., 2021). Indeed, it is plausible to hypothesize that adolescents who base their sexual expectations on pornography may experience higher sexual anxiety and lower sexual self-esteem and efficacy compared to those who do not. Similarly, those who make broad generalizations to the effect that what is depicted in pornography is a direct representation of what most individuals want in sex might face challenges with sexual body-esteem and self-efficacy, unlike those who do not hold such beliefs. In both cases, relying on such expectancies and generalizations can widen the gap between an individual's appreciation of their body, their personal sexual preferences, their perceived sexual competence, and their conceptions of "ideal" sexual standards (Higgins, 1987; Kuan et al., 2022).

This study aims to provide preliminary insights into: (1) whether dimensions of the sexual self-concept differ among adolescents who have and have not used pornography, and (2) whether, among those who have used pornography, frequency of use and pornography-related sexual expectancies and generalizations are associated with dimensions of the sexual self-concept. Building on previous research and theoretical models, age, gender, sexual orientation, and masturbation experience are controlled for in the model, and partnered sexual behaviors are included as a moderating variable.

Method

Participants and Procedure

As part of a broader study on adolescent sexuality, 1585 participants completed a 45-min online survey during class time, adapting to a hybrid in-person and online teaching mode due to the COVID-19 pandemic. The survey was administered either during a French or an ethics class, as sexuality education—mandatory in the province where the study was conducted—is most commonly delivered through these two subjects. Parental consent was not required in accordance with provincial legislation allowing adolescents aged 14 and older to consent to study participation. The first author presented the study to ensure comprehension and consent form and remained available throughout the data collection period to address any questions.

Participants were French-Canadian adolescents aged 14 to 18, with nearly equal representation of cisgender girls (49.3%) and cisgender boys (49.3%), and 1.4% identifying as gender diverse. They were recruited from nine high schools

across Quebec, Canada. Two schools were classified in the lowest socioeconomic rank by the Quebec Ministry of Education and Higher Education, three in the middle, and four in the highest. The majority of participants identified as White (80.4%), followed by Black (4.7%), Latino (1.8%), Native (4.8%), Middle Eastern (2.4%), South Asian (0.3%), East Asian (0.8%), Mixed (0.6%), or Other (3.0%) ethnicity. As for sexual orientation, most youth said they were exclusively (77.2%) or primarily (9.3%) attracted to the other binary gender, 5.5% identified as bisexual or fluid in their sexual attraction, 2.6% were exclusively or primarily attracted to the same gender, 1.6% reported no sexual attraction, and 3.8% were questioning. Regarding sexual practices, 81% reported having engaged in solitary masturbation and 68% reported having voluntarily viewed pornography. Figure 1 presents the frequency of pornography use across age groups, genders, and sexual orientations, with the average age of first use being 11.94 years ($SD = 2.21$). Three quarters (74.7%) had experienced non-genital intimate contacts with a partner (e.g., holding hands, hugging, or kissing a partner, or being

naked with a partner), 41.1% experienced some form of genital sexual contact (e.g., masturbating a partner, performing oral sex), and 33.4% reported having vaginal or anal sexual intercourse, with a partner.

Measures

Sociodemographic Variables

Sociodemographic information was collected for participants' age, gender, and sexual orientation. For the purpose of increasing statistical power, respondents were categorized into three groups based on their gender identity, which included cisgender girls, cisgender boys, and gender-diverse individuals. Similarly, a new variable was created based on participants' reported sexual orientation to create groups of heterosexual ($n = 1217$; 77.2%) and sexually diverse ($n = 360$; 22.8%) individuals.

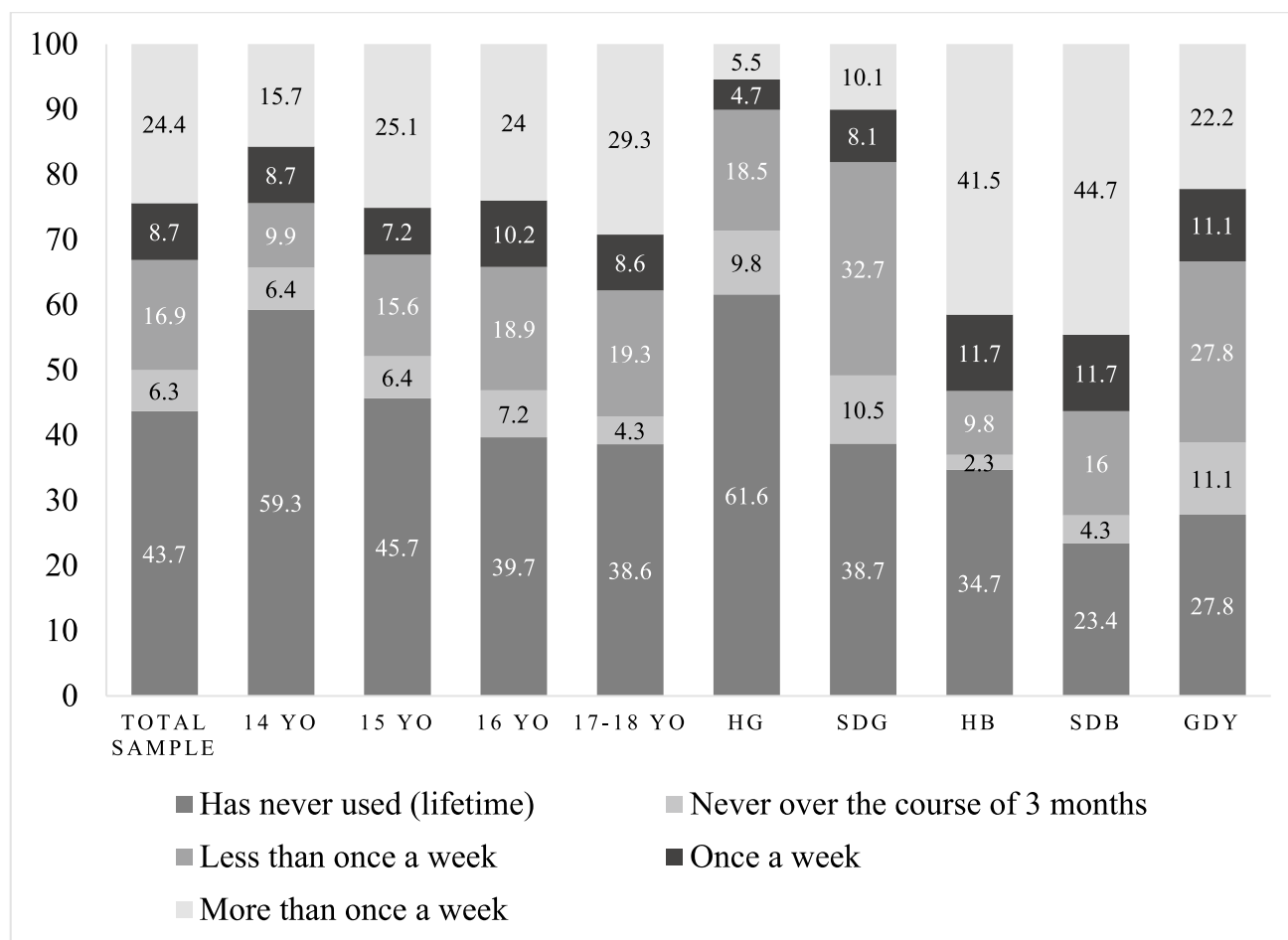


Fig. 1 Occurrence rates of pornography use over the last 3 months across age groups, gender, and sexual orientation. Note. HG = heterosexual girls; SMG = sexual diversity cisgender girls; HB = heterosexual boys; SDB = sexual diversity cisgender boys; GDY = gender-diverse youth

Autoerotic and Partnered Sexual Practices

Participants' reported whether they had ever engaged in a series of autoerotic (e.g., masturbation, voluntary use of pornography) and consensual partnered sexual behaviors. Based on the provided responses, three dichotomous variables were created: (1) voluntary use of pornography, (2) self-masturbation, and (3) partnered genital sexual practices. Adolescents who previously reported having voluntarily used pornography were asked to report on their frequency of use in the past 3 months using an eight-point scale: 0 = never, 1 = less than 1 time per month, 2 = 1 time per month, 3 = 2–3 times per month, 4 = 1 time per month, 5 = many times per week, 6 = 1 time per day, and 7 = many times per day.

Pornography-Related Sexual Expectancies and Generalizations

For the purpose of the study, a brief scale was developed to assess the extent to which adolescents' who had used pornography reported relying on the content to inform their sexual expectancies and generalizations. All five items were rated on a seven-point Likert-type scale. Exploratory (EFA) and confirmatory factor analyses (CFA) were conducted to examine the factor structure of this newly created scale (Schmitt et al., 2018). The EFA, using the principal axis factoring method with Promax rotation, suggested a two-factor structure for the scale, with three items on the Sexual expectancies factor ("I would like my sex life [current or future] to look like what I see in pornographic videos; I feel like I should want to engage in the same forms of sexual practices that I view in pornography; I want to find sexual partners who are as open-minded as the individuals I see in porn videos"), and two items on the Sexual generalizations factor (e.g., "Pornography represents what women like in sex; Pornography represents what men like in sex"). All factor loadings ranged between 0.43 and 0.93. A CFA was conducted with the two factors based on the results of the EFA with the robust maximum likelihood (MLR) estimator to further corroborate the findings. According to the results of the CFA, the two-factor model had an excellent fit to the data ($CFI = 0.985$, $TLI = 0.972$, $RMSEA = 0.043$ [90% CI 0.024–0.062]), and all items had acceptable standardized factor loadings (ranging between 0.53 and 0.81) on their respective factors. The correlation between the factors was $r = 0.39$. The internal consistency of the factors was also acceptable ($\alpha = 0.68$ and 0.75 , respectively).

Sexual Self-Concept

Sexual self-esteem and sexual anxiety were assessed using two subscales of the Multidimensional Sexual Self-Concept Questionnaire (MSSCQ; Snell, 2001), with sample items

including "I feel good about the way I express my sexual needs and desires" and "I feel anxious when I think about the sexual aspects of my life." Sexual body-esteem and sexual self-efficacy were assessed using the five-item scale of the Sexual Subjectivity Inventory (Zimmer-Gembeck, 2019; Zimmer-Gembeck & French, 2016). Sample items included "I am confident that a romantic partner would find me sexually attractive" and "I would be able to ask a partner to provide the sexual stimulation I need." All scales were rated using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree) and demonstrated good internal consistency, with Cronbach's alpha values ranging from 0.68 to 0.91.

Statistical Analyses

Descriptive statistics, correlations between the study variables, and two-way ANOVAs were computed in SPSS (version 28) to examine differences on dimensions of the sexual self-concept across girls and boys who had or had not used pornography. Due to the limited number of gender-diverse adolescents, only descriptive statistics are provided for this group. Next, a path analysis was conducted in *Mplus* 8.7 (Muthén & Muthén, 1998) to examine associations between frequency of pornography use, pornography-related sexual expectancies and generalizations, and dimensions of the sexual self-concept among the subsample of participants who had used pornography. Age, gender, sexual orientation, and masturbation were included as control variables (Bothe et al., 2020; Kotiuga et al., 2022; Ševčíková & Daneback, 2014) whereas experience with a partner was incorporated as a moderating variable (Doornwaard et al., 2015). Based on preestablished guidelines (Hu & Bentler, 1999; Marsh et al., 2005; Schermelleh-Engel et al., 2003): The Comparative Fit Index (CFI), the Tucker–Lewis Index (TLI), and the root mean square error of approximation (RMSEA) were used to evaluate the model. The suggested cutoff criteria for good fit are as follows: a $CFI \geq 0.95$, a $TLI \geq 0.90$, and a $RMSEA \leq 0.05$. Missing data (0–5.6%) were handled with the Full Information Maximum Likelihood Method in the path analysis to estimate model parameters, even though missing values were not completely random based on Little's MCAR test, $\chi^2(157) = 225.71$, $p < 0.001$, given that FIML is recommended to be used in these cases as well (Newman, 2014).

Results

Differences in Sexual Self-Concept Between Adolescents Who Have Used and Not Used Pornography

As shown in Table 1, significant group differences across adolescents who had used pornography and those who had not were identified for sexual self-esteem, sexual body-esteem, sexual anxiety, and sexual self-efficacy. Regardless of gender, adolescents who had used pornography reported significantly lower sexual body-esteem and higher sexual self-efficacy compared to those who had not. Furthermore, significant interaction effects between gender and pornography use were observed for sexual self-esteem and sexual anxiety, indicating different patterns across cisgender girls and cisgender boys. Specifically, cisgender girls who had used pornography reported higher sexual self-esteem than those who had not while boys who had used pornography reported lower sexual self-esteem compared to nonusers. In terms of sexual anxiety, girls who had used pornography reported lower levels compared to nonusers, whereas boys who had used pornography reported higher levels of sexual anxiety than those who had not.

Associations Between Pornography-Related Sexual Expectancies and Generalizations and the Sexual Self-Concept among Adolescents Who Have Used Pornography

Descriptive statistics and correlations for all study variables among the subset of adolescents who reported having used pornography are shown in Table 2. The model (see Fig. 2), which included 595 participants, had excellent fit to the data ($CFI=1.00$; $TLI=1.00$; $RMSEA=0.00$, $90\% CI=[0.00, 0.00]$) as the model was fully saturated. The results indicated that adolescents who reported a higher frequency of pornography use also reported higher sexual anxiety ($\beta=0.09$, $p=0.004$), although the effect sizes were small. In addition, adolescents who reported higher pornography-related sexual expectancies also reported higher levels of sexual anxiety ($\beta=0.19$, $p<0.001$) and lower levels of sexual body-esteem ($\beta=-0.11$, $p=0.007$). Furthermore, adolescents who reported higher pornography-related generalizations about sexual desires reported lower sexual self-efficacy ($\beta=-0.09$, $p=0.035$). Overall, the model explained 5% of the variance in sexual self-esteem, 11% in sexual body-esteem, 6% in sexual anxiety, and 4% in sexual self-efficacy.

Table 1 Group comparisons of sexual self-concept across cisgender girls and boys who reported having used or not used pornography

	Gender diverse		Girls		Boys		Main effect for pornography use		Main effect for gender		Interaction between gender and pornography	
	Has ever used pornography ($n=15$)	Has never used pornography ($n=5$)	Has ever used pornography ($n=246$)	Has never used pornography ($n=389$)	Has ever used pornography ($n=362$)	Has never used pornography ($n=208$)	F	η^2	F	η^2	F	η^2
	$M (SD)$	$M (SD)$	$M (SD)$	$M (SD)$	$M (SD)$	$M (SD)$						
Sexual self-esteem	3.21 (0.65)	2.00 (0.17)	3.22 (0.97)	2.73 (1.07)	2.90 (0.98)	2.96 (1.03)	12.84**	.01	0.73	<.001	20.11***	.02
Sexual body-esteem	2.66 (0.92)	3.15 (1.22)	2.74 (0.83)	2.84 (0.85)	3.11 (0.82)	3.34 (0.78)	11.12***	.01	79.28***	.06	1.72	<.001
Sexual anxiety	2.37 (0.82)	2.36 (1.61)	2.33 (.95)	2.37 (0.96)	2.24 (0.92)	1.98 (0.90)	3.53**	.003	19.24***	.02	7.25**	.01
Sexual self-efficacy	3.28 (0.76)	2.35 (1.17)	3.66 (0.76)	3.40 (0.79)	3.53 (0.71)	3.45 (0.85)	13.78***	.01	0.55	<.001	3.84	.003

Gender-diverse youth were excluded from the group comparison analyses due to the small sample size

*** $p<.01$. ** $p<.001$

Table 2 Descriptive statistics and correlations between study variables among adolescents who used pornography

Variables	n	Range	M(SD)	1	2	3	4	5	6	7	8	9	10	11
1. Pornography use frequency	594	0–8	0.12 (0.94)											
2. Sexual expectancies	594	1–5	2.22 (0.90)	.16***										
3. Sexual generalizations	594	1–5	2.35(1.02)	-.04	.42**									
4. Sexual self-esteem	591	1–5	3.04 (0.98)	-.06	.01	-.01	–							
5. Sexual body-esteem	594	1–5	2.95 (0.84)	.07	-.07	-.08*	.23**							
6. Sexual self-efficacy	595	1–5	3.58 (0.73)	-.05	-.06	-.08	.39**	.24**						
7. Sexual anxiety	595	1–5	2.27 (0.93)	.04	.16*	.05	-.17**	-.42**	-.22**	–				
8. Age	595	14–18	15.74(0.90)	-.01	-.03	-.01	.10*	.09*	-.14**	-.07				
9. Cisgender girls	235	0–1	–	-.54**	-.01	.04	.16**	-.21**	.08*	.50	.01			
10. Cisgender boys	352	0–1	–	.54**	-.01	-.05	-.16**	.22**	-.08	-.05	-.02	-.97**		
11. Gender diverse	8	0–1	–	.01	.02	.05	.01	-.06	-.01	-.01	.08*	-.09*	-.14**	
12. Sexual orientation ^a	593	0–1	–	-.16**	-.07	-.08*	.05	-.13**	-.01	.05	.03	.31**	-.34**	.16**
13. Masturbation	595	0–1	–	.27**	.03	-.02	.05	-.01	-.05	.01	.07	-.12**	.12**	.02
14. Partnered sexual activities	595	0–1	–	-.13**	-.03	-.08	.39**	.10	-.32**	-.20*	.25**	.16**	-.16*	-.02

M = mean; *SD* = standard deviation^aSexual orientation was dichotomized: 0 = heterosexual (452; 23.7), 1 = sexual diversity (141; 23.7)**p* < .05. ***p* < .01

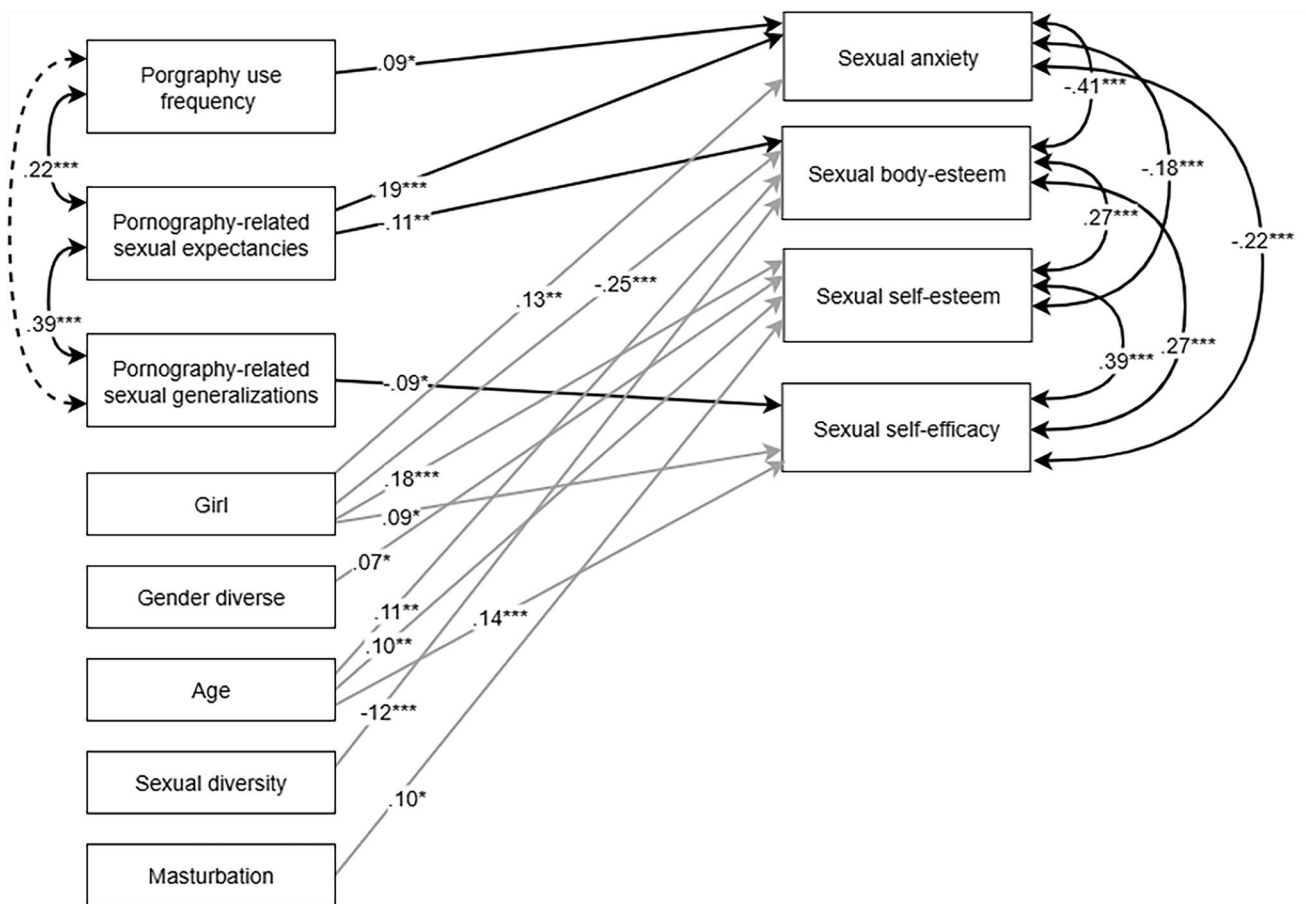


Fig. 2 Model of associations between frequency of pornography use, pornography-related sexual expectancies and generalizations, and dimensions of the sexual self-concept * $p < .05$. ** $p < .01$

Discussion

Although researchers have emphasized the need to explore pornography use in relation to normative or positive aspects of adolescent sexuality and to understand differential susceptibility among users, empirical studies in remain sparse (Peter & Valkenburg, 2016). To address this gap, the present study examined adolescents' sexual self-concept (i.e., sexual anxiety, sexual self- and body-esteem, and sexual self-efficacy) in relation to their pornography use. Results indicated that, on average, adolescents who had used pornography differed from those who had not across dimensions of their sexual self-concept. Notably, regardless of gender, adolescents who used pornography reported lower sexual body-esteem but higher sexual self-efficacy. These findings are consistent with research showing that many adolescents actively seek information and guidance about sexuality, and that access to such information—regardless of its source or accuracy—can foster feelings of competence and confidence (Litsou et al., 2021; Nurgitz et al., 2021; Rothman et al., 2015; SIECCAN, 2019). They also align with the substantial body of evidence

linking pornography use to body concerns and insecurities, in part due to the way it facilitates social comparison (Maheux et al., 2021; Paslakis et al., 2022). This duality underscores the importance of moving beyond simplistic narratives that fail to reflect the complexity of adolescents' experiences and risk diverting attention from initiatives aimed at offering alternatives to meet the needs adolescents often address through pornography (e.g., comprehensive sexuality education) (Peterson et al., 2023).

In addition, gender-specific trends emerged for sexual self-esteem and sexual anxiety. While cisgender girls who reported using pornography exhibited higher sexual self-esteem and lower sexual anxiety, the opposite pattern was observed among cisgender boys. These gender-specific effects are consistent with adult studies showing that pornography use is linked to higher sexual desire and lower distress in women, but to lower relational or sexual satisfaction in men (Böthe et al., 2022; Kohut et al., 2017; Leonhardt & Willoughby, 2019; Willoughby & Leonhardt, 2018). One possible explanation involves the gender gap in pornography use prevalence rates: Fewer cisgender girls engage with it,

and those who do may already feel more confident and less anxious about sexuality (Böthe et al., 2020; Kotiuga et al., 2022). In contrast, boys are more likely to use pornography to suppress emotions, which may partially explain these negative associations (Böthe et al., 2022). These results are useful deconstruct common myths about pornography (e.g., pornography is inherently empowering for boys) and reinforce the importance of interconnected conversations about gender when addressing patterns of pornography engagement, underlying motivations, and associated consequences with youth. While these general trends provide insight into how pornography use may relate to adolescent sexuality, they overlook intergroup variability, which is a significant limitation given the well-established diversity in consequences among adolescents who use pornography (Valkenburg & Peter, 2013).

To move beyond the binary comparison of users versus non-users, the study also examined, within the subgroup of adolescents who had used pornography, the associations between frequency of use, pornography-related sexual expectancies and generalizations, and sexual self-concept. Findings showed that frequency of use was weakly associated with higher sexual anxiety, consistent with prior studies linking pornography use to greater sexual insecurity and uncertainty (Peter & Valkenburg, 2008; Wright et al., 2023). In addition, adolescents who reported forming expectations for current or future sexual encounters based on pornography also reported higher sexual anxiety and lower sexual body-esteem. Although prior studies suggest that many adolescents approach pornography with a critical and reflective stance (Byron et al., 2021; Löfgren-Mårtenson & Månsson, 2010), these associations suggest that those who internalize the pornographic representations as a reflection of their own aspirations tend to experience higher discomfort regarding their own body and sexuality. This could stem from a wider gap between their perceived competence and feelings of desirability, and the standards they aspire to emulate. Moreover, adolescents who believed that pornography accurately depicts typical sexual desires—disregarding individual preferences—reported lower sexual self-efficacy. While further research is needed, this association may suggest that overreliance on pornography could narrow adolescents' understanding of the diverse range of sexual preferences, needs, and boundaries. In turn, this may limit their ability to explore, recognize, and confidently express their own desires. Given that forming expectations and developing attitudes about sex and relationships is a natural part of adolescent development, it is essential to provide youth with reliable sources of information that foster a flexible and inclusive understanding of sexuality. Equally important is supporting their ability to critically reflect on the limitations of pornography as a model for intimacy.

Study Limitations and Future Directions

The present findings, along with the study's limitations, highlight important avenues for future research. Notably, the fact that the model accounted for only 4% to 11% of the variance suggests that key variables contributing to the relationship between pornography use and sexual self-concept were not captured. Notably, specific content used and the ways in which adolescents interpret or engage with that content were not assessed, despite the wide variability in pornographic material (e.g., violent vs. relational) and individual meaning-making processes (Nolin et al., 2025; Vertongen et al., 2022). The results also reinforce the relevance of adopting person-specific media effects approaches to more precisely identify which characteristics, under what conditions, shape specific outcomes related to pornography use (Valkenburg et al., 2024).

In terms of study limitations, the study did not provide participants with a clear operational definition of online pornography, which may have led to varying interpretations of what constitutes pornography, potentially leading to varying interpretations among participants. Furthermore, the subscales used to assess sexual expectancies and generalizations could be strengthened by incorporating items that capture a broader range of relevant dimensions—for example, what adolescents would specifically want to reenact or replicate in their own sexual experiences. Expanding these measures would provide a richer portrait of the extent to which pornography informs adolescents' sexuality-related cognitions and emotions. The sample also consisted predominantly of cisgender, white adolescents from an affluent region. This lack of diversity limits the study's applicability across different demographics and socioeconomic contexts. In addition, potential self-selection and self-reporting biases may also impinge on the study's reliability, with adolescents more comfortable discussing sexuality possibly overrepresented and participants' responses possibly shaped by social desirability bias.

Conclusion

This exploratory study emphasizes the importance of including positive and normative aspects of sexuality into research on adolescent pornography use. It also highlights the need to account for individual or contextual characteristics, as well as developmental factors that may contribute to individual differences in psychosocial functioning and sexual well-being among adolescents who use pornography. Given the significant role of pornography in contemporary adolescents' sexual repertoires and the normative motivations for its use, further research in this field is of paramount importance. Such research is essential for developing interventions that prevent negative outcomes related to pornography use and

promote sexual health and well-being, while aligning with adolescents' realities and needs.

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Data Availability The datasets generated and analyzed during the current study are not publicly available, but are available from the corresponding author upon reasonable request.

Declarations

Conflict of interest The authors declared no conflicts of interest with respect to the authorship or the publication of this article.

Ethical approval This study received approval from the Ethics Committee for Research with Human Subjects at Université Laval.

References

- Arbeit, M. R. (2014). What does healthy sex look like among youth? Towards a skills-based model for promoting adolescent sexuality development. *Human Development*, 57(5), 259–286. <https://doi.org/10.1159/000367856>
- Ashton, S., McDonald, K., & Kirkman, M. (2018). Women's experiences of pornography: A systematic review of research using qualitative methods. *Journal of Sex Research*, 55(3), 334–347.
- Ashton, S., McDonald, K., & Kirkman, M. (2019). Pornography and women's sexual pleasure: Accounts from young women in Australia. *Feminism & Psychology*, 29(3), 409–432. <https://doi.org/10.1177/0959353519833410>
- Astle, S., Anders, K. M., McAllister, P., Hanna-Walker, V., & Yelland, E. (2025). The conceptualization and measurement of sexual self-concept and sexual self-schema: A systematic literature review. *Journal of Sex Research*, 62, 95–106. <https://doi.org/10.1080/00224499.2023.2244937>
- Bôthe, B., Vaillancourt-Morel, M.-P., Dion, J., Paquette, M.-M., Massé-Pfister, M., Tóth-Király, I., & Bergeron, S. (2022). A longitudinal study of adolescents' pornography use frequency, motivations, and problematic use before and during the COVID-19 pandemic. *Archives of Sexual Behavior*, 51(1), 139–156. <https://doi.org/10.1007/s10508-021-02282-4>
- Bôthe, B., Vaillancourt-Morel, M.-P., Girouard, A., Stulhofer, A., Dion, J., & Bergeron, S. (2020). A large-scale comparison of Canadian sexual/gender minority and heterosexual, cisgender adolescents' pornography use characteristics. *International Journal of Environmental Research and Public Health*, 17(3). <https://doi.org/10.1016/j.jsxm.2020.02.009>
- Brasileiro, J., Widman, L., & Hurst, J. L. (2023). Sexual self-efficacy and sexual communication among adolescent girls: Moderated mediation results from a randomized controlled trial. *Psychology & Health*, 38, 1273–1287. <https://doi.org/10.1080/08870446.2021.2012573>
- Brassard, A., Dupuy, E., Bergeron, S., & Shaver, P. R. (2015). Attachment insecurities and women's sexual function and satisfaction: The mediating roles of sexual self-esteem, sexual anxiety, and sexual assertiveness. *Journal of Sex Research*, 52(1), 110–119. <https://doi.org/10.1080/00224499.2013.838744>
- Brown, J. D., & L'Engle, K. L. (2009). X-rated: Sexual attitudes and behaviors associated with US early adolescents' exposure to sexually explicit media. *Communication Research*, 36(1), 129–151. <https://doi.org/10.1177/0093650208326465>
- Byron, P., McKee, A., Watson, A., Litsou, K., & Ingham, R. (2021). Reading for realism: Porn literacies, digital media, and young people. *Sexuality & Culture*, 25(3), 786–805. <https://doi.org/10.1007/s12119-020-09786-2>
- Campbell, L., & Kohut, T. (2017). The use and effects of pornography in romantic relationships. *Current Opinion in Psychology*, 13, 6–10.
- Deutsch, A. R., Hoffman, L., & Wilcox, B. L. (2014). Sexual self-concept: Testing a hypothetical model for men and women. *Journal of Sex Research*, 51(8), 932–945. <https://doi.org/10.1080/00224499.2013.805315>
- Doornwaard, S. M., van den Eijnden, R. J., Overbeek, G., & ter Bogt, T. F. (2015). Differential developmental profiles of adolescents using sexually explicit internet material. *Journal of Sex Research*, 52(3), 269–281. <https://doi.org/10.1080/00224499.2013.866195>
- Hald, G. M., Malamuth, N. M., & Yuen, C. (2010). Pornography and attitudes supporting violence against women: Revisiting the relationship in nonexperimental studies. *Aggressive Behavior*, 36(1), 14–20. <https://doi.org/10.1002/ab.20328>
- Harden, K. P. (2014). A sex-positive framework for research on adolescent sexuality. *Perspectives on Psychological Science*, 9(5), 455–469. <https://doi.org/10.1177/1745691614535934>
- Hensel, D. J., & Fortenberry, J. D. (2013). A multidimensional model of sexual health and sexual and prevention behavior among adolescent women. *Journal of Adolescent Health*, 52(2), 219–227. <https://doi.org/10.1016/j.jadohealth.2012.05.017>
- Hensel, D. J., Fortenberry, J. D., O'Sullivan, L. F., & Orr, D. P. (2011). The developmental association of sexual self-concept with sexual behavior among adolescent women. *Journal of Adolescence*, 34(4), 675–684. <https://doi.org/10.1016/j.adolescence.2010.09.005>
- Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review*, 94(3), 319–340. <https://doi.org/10.1037/0033-295X.94.3.319>
- Horne, S., & Zimmer-Gembeck, M. J. (2006). Female sexual subjectivity and well-being: Comparing late adolescents with different sexual experiences. *Sexuality Research and Social Policy*, 3(3), 25–40. <https://doi.org/10.1525/srsp.2005.2.3.25>
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Kågesten, A., & van Reeuwijk, M. (2021). Healthy sexuality development in adolescence: Proposing a competency-based framework to inform programmes and research. *Sexual and Reproductive Health Matters*, 29(1), Article 1996116. <https://doi.org/10.1080/26410397.2021.1996116>
- Kohut, T., Fisher, W. A., & Campbell, L. (2017). Perceived effects of pornography on the couple relationship: Initial findings of open-ended, participant-informed, “bottom-up” research. *Archives of Sexual Behavior*, 46(2), 585–602. <https://doi.org/10.1007/s10508-016-0783-6>
- Kotiuga, J., Yampolsky, M. A., & Martin, G. M. (2022). Adolescents' perception of their sexual self, relational capacities, attitudes towards sexual pleasure and sexual practices: A descriptive analysis. *Journal of Youth and Adolescence*, 51(3), 486–498. <https://doi.org/10.1007/s10964-021-01543-8>
- Kuan, H. T., Senn, C. Y., & Garcia, D. M. (2022). The role of discrepancies between online pornography created ideals and actual sexual relationships in heterosexual men's sexual satisfaction and well-being. *SAGE Open*, 12. <https://doi.org/10.1177/21582440221079923>
- Kvalem, I. L., Træen, B., & Iantaffi, A. (2016). Internet pornography use, body ideals, and sexual self-esteem in Norwegian gay and bisexual men. *Journal of Homosexuality*, 63(4), 522–540. <https://doi.org/10.1080/00918369.2015.1083782>

- Leonhardt, N. D., & Willoughby, B. J. (2019). Pornography, provocative sexual media, and their differing associations with multiple aspects of sexual satisfaction. *Journal of Social and Personal Relationships*, 36(2), 618–641. <https://doi.org/10.1177/0265407517743096>
- Lewczuk, K., Wójcik, A., & Gola, M. (2022). Increase in the prevalence of online pornography use: Objective data analysis from the period between 2004 and 2016 in Poland. *Archives of Sexual Behavior*, 51(2), 1157–1171.
- Litsou, K., Byron, P., McKee, A., & Ingham, R. (2021). Learning from pornography: Results of a mixed methods systematic review. *Sex Education*, 21(2), 236–252.
- Löfgren-Mårtensson, L., & Månsson, S.-A. (2010). Lust, love, and life: A qualitative study of Swedish adolescents' perceptions and experiences with pornography. *Journal of Sex Research*, 47(6), 568–579.
- Maheux, A. J., Roberts, S. R., Evans, R., Widman, L., & Choukas-Bradley, S. (2021). Associations between adolescents' pornography consumption and self-objectification, body comparison, and body shame. *Body Image*, 37, 89–93.
- Marengo, D., Settanni, M., & Longobardi, C. (2019). The associations between sex drive, sexual self-concept, sexual orientation, and exposure to online victimization in Italian adolescents: Investigating the mediating role of verbal and visual sexting behaviors. *Children and Youth Services Review*, 102, 18–26. <https://doi.org/10.1016/j.childyouth.2019.04.023>
- Marsh, H. W., Hau, K.-T., & Grayson, D. (2005). Goodness of fit in structural equation models. In A. Maydeu-Olivares & J. McArdle (Eds.), *Contemporary psychometrics: A festschrift for Rodrick P. McDonald* (pp. 275–340). Lawrence Erlbaum Associates Publishers.
- Martellozzo, E., Monaghan, A., Adler, J. R., Davidson, J., Leyva, R., & Horvath, M. A. H. (2016). "I wasn't sure it was normal to watch it..." A quantitative and qualitative examination of the impact of online pornography on the values, attitudes, beliefs and behaviours of children and young people. Middlesex University. <https://doi.org/10.6084/m9.figshare.3382393>
- Mitchell, K. R., Lewis, R., O'Sullivan, L. F., & Fortenberry, J. D. (2021). What is sexual wellbeing and why does it matter for public health? *The Lancet Public Health*, 6(8), e608–e613. [https://doi.org/10.1016/S2468-2667\(21\)00099-2](https://doi.org/10.1016/S2468-2667(21)00099-2)
- Muthén, L. K., & Muthén, B. O. (1998). *Mplus user's guide* (7th ed.). Muthén & Muthén.
- Newman, D. A. (2014). Missing data: Five practical guidelines. *Organizational Research Methods*, 17(4), 372–411. <https://doi.org/10.1177/1094428114548590>
- Nolin, M.-C., Daspe, M.-È., Bôthe, B., Brassard, A., Joyal, C., & Vailancourt-Morel, M.-P. (2025). Associations between contents of pornography and sexual satisfaction and function among young adults. *Journal of Sex Research*, 62, 568–581. <https://doi.org/10.1080/00224499.2024.2311874>
- Nurgitz, R., Pacheco, R. A., Senn, C. Y., & Hobden, K. L. (2021). The impact of sexual education and socialization on sexual satisfaction, attitudes, and self-efficacy. *Canadian Journal of Human Sexuality*, 30(2), 265–277. <https://doi.org/10.3138/cjhs.2021-0028>
- O'Sullivan, L. F., Meyer-Bahlburg, H. F. L., & McKeague, I. W. (2006). The development of the sexual self-concept inventory for early adolescent girls. *Psychology of Women Quarterly*, 30(2), 139–149. <https://doi.org/10.1111/j.1471-6402.2006.00277.x>
- Paslakis, G., Chiclana Actis, C., & Mestre-Bach, G. (2022). Associations between pornography exposure, body image and sexual body image: A systematic review. *Journal of Health Psychology*, 27(3), 743–760. <https://doi.org/10.1177/1359105320967085>
- Peter, J., & Valkenburg, P. M. (2008). Adolescents' exposure to sexually explicit internet material and sexual preoccupation: A three-wave panel study. *Media Psychology*, 11(2), 207–234. <https://doi.org/10.1080/15213260801994238>
- Peter, J., & Valkenburg, P. M. (2016). Adolescents and pornography: A review of 20 years of research. *Journal of Sex Research*, 53(4–5), 509–531. <https://doi.org/10.1080/00224499.2016.1143441>
- Peterson, A. J., Silver, G. K., Bell, H. A., Guinosso, S. A., & Coyle, K. K. (2023). Young people's views on pornography and their sexual development, attitudes, and behaviors: A systematic review and synthesis of qualitative research. *American Journal of Sexuality Education*, 18(2), 171–209. <https://doi.org/10.1080/15546128.2022.2096163>
- Rothman, E. F., Beckmeyer, J. J., Herbenick, D., Fu, T.-C., Dodge, B., & Fortenberry, J. D. (2021). The prevalence of using pornography for information about how to have sex: Findings from a nationally representative survey of U.S. adolescents and young adults. *Archives of Sexual Behavior*, 50(2), 629–646. <https://doi.org/10.1007/s10508-020-01877-7>
- Rothman, E. F., Kaczmarzsky, C., Burke, N., Jansen, E., & Baughman, A. (2015). "Without porn... I wouldn't know half the things I know now": A qualitative study of pornography use among a sample of urban, low-income, Black and Hispanic youth. *Journal of Sex Research*, 52(7), 736–746. <https://doi.org/10.1080/00224499.2014.960908>
- Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online*, 8(2), 23–74.
- Schmitt, T. A., Sass, D. A., Chappelle, W., & Thompson, W. (2018). Selecting the "best" factor structure and moving measurement validation forward: An illustration. *Journal of Personality Assessment*, 100(4), 345–362. <https://doi.org/10.1080/00223891.2018.1449116>
- Ševčíková, A., & Daneback, K. (2014). Online pornography use in adolescence: Age and gender differences. *European Journal of Developmental Psychology*, 11(6), 674–686. <https://doi.org/10.1080/17405629.2014.926808>
- Sex Information and Education Council of Canada (SIECCAN). (2019). *Canadian guidelines for sexual health education*. <https://www.sieccan.org/resources/canadian-guidelines-for-sexual-health-education>
- Snell, W. E., Jr. (2001). Measuring multiple aspects of the sexual self-concept: The Multidimensional Sexual Self-Concept Questionnaire. In W. E. Snell Jr. (Ed.), *New directions in the psychology of human sexuality* (pp. 133–147). Snell publications. <https://snell.socialpsychology.org/publications>
- Tokunaga, R. S., Wright, P. J., & Vangeel, L. (2020). Is pornography consumption a risk factor for condomless sex? *Human Communication Research*, 46(2–3), 273–299. <https://doi.org/10.1093/hcr/hqaa005>
- Valkenburg, P. M., Beyens, I., de Vaate, N. B., Janssen, L., & Van Der Wal, A. (2024). Person-specific media effects. In T. Araujo & P. Neijens (Eds.), *Communication research into the digital society: Fundamental insights from the Amsterdam School of Communication Research* (pp. 233–245). Amsterdam University Press.
- Valkenburg, P. M., & Peter, J. (2013). The differential susceptibility to media effects model. *Journal of Communication*, 63(2), 221–243. <https://doi.org/10.1111/jcom.12024>
- Vertongen, R., Chamberlain, K., & van Ommen, C. (2022). Pornography and adolescents: Unravelling dominant research assumptions. *Porn Studies*, 9(4), 430–444. <https://doi.org/10.1080/23268743.2022.2114532>
- Willoughby, B. J., & Leonhardt, N. D. (2018). Behind closed doors: Individual and joint pornography use among romantic couples. *Journal of Sex Research*, 57(1), 77–91. <https://doi.org/10.1080/00224499.2018.1541440>
- Wright, P. J. (2011). Mass media effects on youth sexual behavior: Assessing the claim for causality. *Annals of the International*

- Communication Association*, 35(1), 343–385. <https://doi.org/10.1080/23808985.2011.11679121>
- Wright, P. J., Tokunaga, R. S., Herbenick, D., & Paul, B. (2023). Pornography, sexual insecurity, and orgasm difficulty. *Health Communication*, 38(3), 552–561. <https://doi.org/10.1080/10410236.2021.1958985>
- Zimmer-Gembeck, M. J. (2019). Female sexual subjectivity inventory and male sexual subjectivity inventory. In T. D. Fisher, C. M. Davis, W. L. Yarber, & S. L. Davis (Eds.), *Handbook of sexuality-related measures* (4th ed., pp. 561–563). Routledge.
- Zimmer-Gembeck, M. J., & French, J. (2016). Associations of sexual subjectivity with global and sexual well-being: A new measure for young males and comparison to females. *Archives of Sexual Behavior*, 45(2), 315–327. <https://doi.org/10.1007/s10508-014-0387-y>

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