

Social Policy and Public Health

Thesis Based on Existing Data Social Policy and Public Health (201800155)

**The association between school-based sex education and
experienced sexual pleasure of young adults in the Netherlands**

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Abstract

While sex positive thinking is up and coming, pleasure is an issue still neglected in education, policy and research. Using data from the ‘Sex under 25’ study of Rutgers, this research tested the assumption that the comprehensiveness of sex education is associated with the perceived sexual pleasure of adolescents. Participants filled in a questionnaire on the topics they discussed during school based sex education and the quality of their sexual experiences. The sample included 6.186 participants. In this data no significant correlation was found between the comprehensiveness of sex ed and perceived pleasure. However, there was a positive correlation between both parent and peer communication and pleasure. With the current limitations of this analysis, a correlation between CSE and pleasure can’t be ruled out, therefore more research is necessary.

Introduction

Societal issue

Sexual health and wellbeing is often seen in society as the absence of negative sexual outcomes. A few examples are the absence of unwanted pregnancies, the absence of STD’s and the prevention of sexual violence. While sex positive research is up and coming, there is still a dominant discourse of risk and danger surrounding the topic (Anderson, 2013). Since 2006 the WHO included positive, emotional and mental well-being factors in its definition of sexual health: “Sexual health is a state of physical, emotional, mental, and social well-being; not merely the absence of disease, dysfunction, or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination, and violence.” (WHO, 2019). It is important that sexual health and its determinants are researched because of the extensive benefits of improved sexual health for individuals and society.

Satisfying sexual activity has not only shown to be a reliable way to decrease stress and anxiety (Anderson, 2013, p. 221), but also a way to improve intimate partnerships, an important aspect of mental and physical health (Diamond & Huebner, 2012). Furthermore, a recent meta-analysis suggests that “programs and education which better capture a full working understanding of sexual health, which acknowledges that sexual experiences can be ‘pleasurable’, have been demonstrated to improve not only knowledge and attitudes around sexual health, but also safer sex practices.” (Zaneva et al., 2022, p. 10).

A part of the sex positive shift is the recognition of pleasure as an important outcome variable. Pleasure was positively related to autonomy, self-esteem and empathy in a large sample of young women between 18 and 26 years old (Galinsky & Sonenstein, 2011). Additionally, the quality of couples’ sex lives, including the quality of pleasure, contributes to the durability of relationships (Diamond & Huebner, 2012). A study by Ménard (2009) finds that high sexual satisfaction and physiological satisfaction was closely associated with psychological satisfaction. In a systematic review by Anderson (2013) sexual satisfaction, sexual pleasure, and positive sexual self-esteem improves not only sexual health but also mental and physical health outcomes. “It appears to be the prioritization of pleasure, without the need to deprioritize that of potential sexual partners, that has both health as well as protective benefits” (Laan et al., 2021). This positive view on sexual health fits perfectly with key conceptual elements of sexual health stated within the context of comprehensive sex education (CSE).

Problem statement

Although public health practitioners and policy-makers consider school-based sex education to be vital for the development of young people, “not enough is known about the effectiveness of sex education efforts” (Goldfarb & Lieberman, 2021). In a systematic literature review from Goldfarb & Lieberman (2021) researchers examined three decades of

research to find evidence for the effectiveness of CSE. This review offers strong support over a wide range of outcome variables for CSE. However, a few topics are notably missing. Specifically pleasure and desire. As Goldfarb & Lieberman note “the focus on sexual behavior as problematic itself eliminates the opportunity for young people to explore and experience normal, healthy, safe, and pleasurable sexual activity.” Another systematic review and meta-analysis done by Zaneva et al. focusses specifically on sexual health interventions that include pleasure (2022). They similarly note the lack of evidence and research on the effectiveness of sexual health education/interventions. “Currently, there is an evidence gap for the impacts of interventions incorporating pleasure on the level of the general population, including heterosexual individuals and couples, with a particularly pronounced gap for women of reproductive age as well as older women.” (Zaneva et al., 2022, p. 9)

As sexual pleasure is important for overall wellbeing and health (Laan et al., 2021; Anderson, 2013), it is important to promote this aspect of sexual health. CSE can play a vital role in making young adults more knowledgeable and empowered in the subject and could help close the gender pleasure gap, especially when young adults don't get the chance to talk about sex in a positive context at home.

Focus of this research

This research will focus on Dutch young adults of the age 12-25. This age group is in an important formative stage of their sexual development, but still lacks knowledge and skills to safely navigate their own boundaries and others (Kemigisha et al., 2018). Furthermore, the Netherlands is an interesting context for research. Data shows that adolescent pregnancy, birth, abortion and sexually transmitted infection (STI) rates are low and contraceptive use among adolescents is high (Ferguson et al., 2008). The country is also known for its liberal and comprehensive sexual health education (Lewis & Knijn, 2002; Ferguson et al., 2008). Multiple studies have established the link between Dutch CSE and its noteworthy adolescent

sexual health outcomes (Weaver et al., 2005; Dodge et al., 2005). However, education is still lacking in important areas. “When it comes to sexual coercion, sexual diversity, sexual pleasure and sex in the media, a majority of young people report having received little or no information.” (Graaf et al., 2017, p. 12). In the Dutch study Sex under the age of 25 Dutch young adults rated their school based sexual health education only a 5,8 out of 10 (Graaf et al., 2017). In 2012 this number was higher, then participants graded their education to be a 6,6 (H. de Graaf, 2012).

In another study by Cense et al. (2020) Dutch high school students miss topics like sexual orientation, gender identity, consent and coercion, online sexual behavior and sexual pleasure in their school based sexual health curriculum. There is still a lot that can be improved in Dutch sexual health education but knowledge on effects of more comprehensive sexual health education is lacking and promoting pleasure can help empower young people in their relationships and sexual development. This research will therefore focus on the effect of school based sex education on self-perceived pleasure during sex for adolescents.

Overview of existing research

Pleasure

Sexual pleasure refers to the positive intra-personal and inter-personal sensual experiences associated with sexuality, sexual relationships, and sexual practices (Abramson, 2002).

Fortenberry also uses a definition of pleasure including both positive emotional as well as positive physical enjoyment accompanying sexual experiences (2013). Sexual pleasure has been identified as one of the most accredited motivations for sexual behaviors (Meston, 2007) and is part of the WHO definition of sexual health. Sexual health is an important aspect of overall wellbeing. Studies have shown that there are associations between sexual activity and lower levels of depression among both men and women (Ganong & Larson, 2011).

Furthermore, “sexual satisfaction can improve intimate partnerships and consequently regulate emotion, an important aspect of mental and physical health” (Anderson, 2013). Having a sex positive view on sexual health has, according to Looze and Ditzhuijzen (2022), far reaching goals like making pleasure and boundaries openly discussable, giving people more agency and combatting inequality between sexual partners. As mentioned in the introduction, sexual pleasure is additionally important to be pursued as an outcome. Pleasure is associated with the longevity of committed relationships (Diamond & Huebner, 2012), the self-esteem and confidence of women (Galinsky & Sonenstein, 2011) and mental wellbeing (Anderson, 2013). Pursuing sexual pleasure can help with closing the existing gender pleasure gap and promote equality (Laan et al., 2021).

However, the topic of pleasure is still missed during CSE and research lacks behind in putting attention towards the subject (Cense et al., 2020; Jones, 2018). In ‘the sex under 25 study’ 37% of boys and 46% of girls indicate they did not get any information on the topic ‘pleasurable sex’ during their school based sex education (Graaf et al., 2017). “Despite the theoretically established importance of sexual pleasure in the context of sexual health, there remains a paucity of empirical research concerning its associations with specific sexual health outcomes.” (Klein et al., 2022).

Incorporating pleasure in sexual health education has multiple benefits. Firstly, including the topic within Sexual and Reproductive Health and Rights (SRHR) interventions, including education programs, can improve sexual health outcomes like increased condom use. This was for example found in a systematic review and meta-analysis by Zaneva et al. (2022). Furthermore, the program ‘Love Matters’, a digital platform for sexual health education, did research on their digital pathways. They found that their ‘pleasure’ pages were eight times more popular than their ‘family planning pages’ and that content more focused on pleasure served as a gateway to other information resources (Coleman et al., 2013; Müller et

al., 2017; Gruskin et al., 2019). In a study by Klein et al. sexual pleasure was associated with making sexually healthy decisions (e.g., condom use, STI communication) and sexually satisfying experiences (e.g., oral engagement, absence of sexual problems, and orgasm frequency) (Klein et al., 2022). This study also found that women reported significantly lower sexual pleasure than men did and that CSE programs are a key component in promoting women's pleasure to close this gender pleasure gap. "Continuing to underestimate pleasure as a means to a healthy sex life will only hinder our ability to understand how to improve sexual health, especially for women." (Klein et al., 2022).

Sexual pleasure is a sexual health component (WHO, 2019) and a valuable addition to interventions and education to improve other sexual health outcomes. But research on pleasure is still lacking. For example, it is unknown if education and knowledge can contribute to experiencing more pleasure and how positive parent and peer communication can contribute. As sexual pleasure is an important aspect of sexual health it is important to research how and why it is experienced as well as the determinants of experiencing sexual pleasure.

Comprehensive sex education (CSE)

Comprehensive sexuality education (CSE) is a way of teaching and learning about a wide and comprehensive range of aspects of sexuality. Not only physical aspects but also emotional, cognitive, and social aspects are included as topics (see figure 1). The goal is to equip young people with knowledge, skills, attitudes, and dignity so they are able to make their own healthy and respectful sexual choices. Another aim of CSE is to help young people learn about their own rights and how to protect them.

Figure 1.

Topics included in CSE (Unesco, 2022)

Topics included in CSE

- sexual and reproductive anatomy and physiology
- puberty and menstruation
- reproduction, contraception, pregnancy, and childbirth
- STIs, including HIV and AIDS
- sexuality
- human rights
- a healthy and respectful family life and interpersonal relationships
- personal and shared values
- cultural and social norms
- gender equality
- non-discrimination
- sexual behavior
- gender-based and other violence
- consent and bodily integrity
- sexual abuse and harmful practices such as child, early, and forced marriage, and female genital mutilation/cutting

It is important to include a wide range of topics in sexual health education, including positive components. Multiple studies show that including positive aspects of sexual health in education, instead of merely teaching about the dangers and abstinence, has multiple benefits. Firstly, intimacy, social status and sexual pleasure were identified as the three most common reasons to engage in sexual behavior for adolescents (Ott et al., 2006). Understanding these motivations and including these topics in education programs can help in effectively addressing negative outcomes of sexual behavior. Secondly, sexual pleasure and eroticization of condoms has shown to be an effective strategy in improving HIV prevention programs (Harper et al., 2003). Finally, there is strong evidence that CSE can increase knowledge, change attitudes, and improve skills to reduce dating violence and intimate partner violence and can reduce the incidence of both (Goldfarb & Lieberman, 2021). The most promising of the studies in Goldfarb & Liebermans literature review were from Foshee (1998) who

performed a randomized trial with 7 schools that engaged in a Safe Dates program and 7 control group schools, and a study by Crooks (2015) who did a post-test comparison design to evaluate a healthy relationships program. Foshee found that less psychological abuse, sexual violence, and violence perpetrated against dating partners were reported for the schools that followed the program than the control schools (1998). Crooks found that students were able to apply the gained knowledge to demonstrate critical thinking (2015).

The Netherlands is often seen as one of the more progressive countries in sex education for adolescents (Schalet, 2000). But adolescents only rate their sexual health education a 5.8 on a scale from one till ten. Only 28% of boys and 18% of girls in the Dutch ‘sex under 25’ data think they got enough or a lot of information on the pleasurable/fun sides of sex (Graaf et al., 2017). In a study by Cense et al. high school students talk about their experience with sex education. Almost every participant received some information but especially in biology classes on topics like contraception, reproduction, and STDs/HIV (2020). But what students in this research especially wanted was more sex positive education and information on topics like female pleasure. “Participants particularly missed education about subjects that are relevant for them at present, not in the future, about feelings, relationships, dating, sexual harassment, communication, and online and offline sexual behavior” (Cense et al., 2020).

Sexual Communication

This research will look at the relationship between CSE and experienced pleasure of adolescents. But not all sexual health education is school based. Parents and peers also play a role in the sexual development of adolescents (de Looze et al., 2014; Widman et al., 2016; Nogueira Avelar e Silva et al., 2016; Nogueira Avelar e Silva et al., 2019). Dutch youth was asked what they do when they want information on sexual topics. 36% of boys and 51% of girls would frequently talk to friends, 20% of boys and 26% of girls use their mothers as a

source of information (Graaf et al., 2017). As young adults get information not only from school based CSE but also from parents and peers, it is important to consider this association.

There are certain connections between sexual communication with parents and sexual health of adolescents. For example, Widman et al. claims that particularly communication with mothers has a small positive effect on safer sex behaviors of adolescents, mainly focused on condom use (2016). Boydell finds in her review that “the extent of prior positive parental communication” influences the amount of pleasure experienced by adolescents during their first sexual experience, especially for girls (2021). Furthermore, Boydell also mentions that multiple research studies showed the importance of positive parental communication. Good communication could positively benefit the development, agency and self-awareness of young adults (2021). That sex-supportive parental attitudes are related to safer sexual behaviors of adolescents is also mentioned by other researchers (Santtila et al., 2009). There are no current studies dedicated to the connection between parental communication and adolescent sexual satisfaction. Although there is not a concrete link between parental - adolescent communication and pleasure there is an apparent link between communication and other factors of sexual health. Therefore, this paper will include parental - adolescent sexual communication as a moderating variable.

Not a lot of information and research is available on peer - adolescents communication and its effect on perceived pleasure or sexual health in general. However, in a study by Nogueira Avelar e Silva et al. adolescents who had frequent communication with their friends reported significant increases in experiences with positive sexual behaviors later (2019). Peer - adolescent communication is frequent and could potentially influence sexual expectancies and knowledge (Ragsdale et al., 2013; Graaf et al., 2017). The significant connection between peer influence on pleasure expectancy is interesting to consider since

pleasure is a self-reported not objective variable (Ragsdale et al., 2013). Therefore peer - adolescent communication will be considered as a moderating variable.

Scientific and social relevance

Scientific relevance

There is a significant knowledge gap on the effects of comprehensive sex education, specifically on the positive effects and aspects (Goldfarb & Lieberman, 2021). Doing research on the effects of CSE within a new sex positive framework can help fill this knowledge gap (Harden, 2014). This research will focus on the effect of CSE on the self-perceived sexual pleasure of adolescents. “A more complete understanding of what contributes to adolescent sexual pleasure has important implications for efforts to improve multiple aspects of adolescent sexual health” (Beckmeyer et al., 2021).

Social relevance

Promoting pleasure for young adults can help in reducing the current pleasure gap between men and women. It could also promote better sexual, mental, and physical health.

Furthermore it could strengthen the longevity of relationships and the self-esteem of young women.

Adolescents in the Netherlands are not very content with their sexual health curriculum (Graaf et al., 2017; Cense et al., 2020). Improving our understanding of the effects and possible benefits of CSE can help in making programs better fitting to the needs of adolescents. Previous studies on pleasure and why it is important to incorporate sexual pleasure in CSE have indicated that more research is needed (Klein et al., 2022, Zaneva et al., 2022). “Continuing to underestimate pleasure as a means to a healthy sex life will only hinder

our ability to understand how to improve sexual health, especially for women.” (Klein et al., 2022).

Often sexuality and its positive aspects are still taboo topics, and this is still embedded in laws and policies (Gruskin et al., 2019). Having more knowledge on CSE and pleasure contributes to opening up the topic for more conversation and more inclusive policies. “With sexual health programs that only focus on the unwanted consequences of sexual behaviors, sexual morbidities and normalized heterosexual sexual practices further contribute to stigmatization” (Gruskin et al., 2019). Therefore it is important and socially relevant to research pleasure and CSE.

Interdisciplinarity

This research is about Pleasure and Comprehensive Sex Education, both interdisciplinary topics. Pleasure, as described in its definition, is both physiological as well as psychological and deeply intertwined with contextual and sociocultural factors (Laan et al., 2021). To look at the concept of pleasure and CSE and get a more well-developed perspective this thesis draws from multiple disciplines. For this paper the biopsychosocial perspective on sexual pleasure is used to formulate a research question and hypothesis. A biopsychosocial perspective looks at biological, psychological, and social aspects of pleasure and is inherently interdisciplinary.

Theoretical approach

This thesis will deliberately move away from the sexual risk paradigm where sex is seen as an “uncontrollable biological force that, if not repressed, will inevitably lead to societal chaos and anarchy.” (Laan et al., 2021) and focuses on adverse health outcomes and concomitant risks (Mitchell et al., 2021). Instead this thesis will use a biopsychosocial perspective to gain

a more complete understanding of pleasure. To be able to take a better look at adolescent sexual health, pleasure is taken as an important health outcome and CSE as a possible predictive variable. Learning and coping skills are part of the psychological aspect of health in the biopsychosocial model. CSE falls within this sphere. To also account for the social context of sexual health, social support is taken into account to look at the interaction of peer and parent communication with pleasure and CSE. As found in research by Laan et al. (2021), gender plays a large role in sexual health. As heterosexual women associate sexual activity less with pleasure and more with greater cost. (Laan et al., 2021).

Research question

The main research question of this thesis is: Is more comprehensive sex education associated with more self-perceived pleasure of adolescents? Furthermore, does parental and peer sexual communication affect this association?

Hypothesis

The hypothesis of this thesis is that the more comprehensive the participants sex education was, the more pleasure they experience. The comprehensiveness of sex education will be derived from the number of topics they discussed during their education. The same topic list will be used to measure the comprehensiveness of the communication with parents and peers. Another hypothesis is that for adolescents who have communicated little with parents and peers about sex, CSE is significantly more important in predicting pleasure than for kids who have communicated more about sex with parents and peers.

Methods

Participants and recruitment

The data used for this analyses comes from the 'sex under 25' study of Rutgers, a large-scale research project in the Netherlands. Surveys have been conducted in 2005, 2012 and, most recently, 2017. Data of 'sex under 25' study has been collected multiple times over the past 7 years, but participants are not followed up. For this analysis the data from the study in 2012 will be used. This data had the most fitting questions regarding communication with parents and peers. The data has been collected through a questionnaire filled out by young people aged 12 to 25. The total sample consists of 3.926 boys and 3.915 girls. These respondents were recruited through schools, the GGD (Dutch Health Organization) and the BRP (Dutch Population Register). During the randomized selection of participants and schools, the normal distribution of the Dutch population was considered. The data collection instrument for this research is an anonymous online questionnaire. Consent had to be given by participants in the beginning of the questionnaire where the aim and focus of the research was also explained. Participants were able to withdraw at any time during the questionnaire. Because there were some discrepancies between responses a weighted correction was done. For example, there were more girls that participated in the questionnaire than boys, and boys with a migration background generally responded less. The BRP sample was weighted for region, age, gender, origin, income, home or living away and urbanity. The sample was similar to the normal population of 12 till 25 years old in the Netherlands. Exclusion criteria for the sample were people who answered less than 90% of the questionnaire or respondents that agreed with the statement that they answered one or multiple questions not truthfully. The eventual sample size was 7841. For the purpose of this research only sexually active participants were taken into account. 3 groups were formed (2 = participants who have had anal or vaginal intercourse. 1 = people who have sexually touched another person, or had manual or oral sex.

0 = no sexual experience). Group 0 was excluded from the analysis because the hypothesis focusses on experienced pleasure/positive feelings towards sex, not expectations of sex. A sample size of 6.186 remained.

Variables

Sexual Pleasure (Outcome variable/dependent variable)

The variable 'pleasure' will be derived from the answers of three questions. "What do you think of the following statement: Sex is important to me; I want to try everything regarding sex; I find sex pleasurable." (H. de Graaf, 2012). Every question has 5 possible answers in a Likert scale. Possible answers are: Completely agree, agree, agree-disagree, disagree, completely disagree. The answer 'completely disagree' = 1, 'disagree' = 2, 'completely agree' = 5, etc. To create the variable 'pleasure' the mean of the 3 summed answers is taken. This 3 item variable is reliable with Cronbach's Alpha being higher than 0,7 ($\alpha = .82$).

CSE (predictor variable/independent variable)

The comprehensiveness of the participants received sex education is measured through the question: "On which subjects that you get information in school?" This list includes topics like; 'how to talk about wishes and boundaries' and 'STIs, HIV and aids'. Participants could check the answer 'yes, I discussed this topic in school' (1) or 'no, I didn't discuss this topic in school; (0). These answers were merged to compute the variable "Comprehensiveness SE". This 9 item merged variable is reliable, with Cronbach's Alpha being higher than 0,7 ($\alpha = .79$).

Figure 2.

Question 38, 'sex under 25' questionnaire (H. de Graaf, 2012)

38	Over welke onderwerpen heb je op school informatie gekregen? (Je kunt meerdere hokjes aanklikken.)
38.1	<input type="checkbox"/> ik heb op school geen informatie gekregen over relaties en seks
38.2	<input type="checkbox"/> homoseksualiteit
38.3	<input type="checkbox"/> de pil, condooms en andere voorbehoedmiddelen
38.4	<input type="checkbox"/> soa's, hiv en aids
38.5	<input type="checkbox"/> maagdelijkheid
38.6	<input type="checkbox"/> zwangerschap, kinderen krijgen en abortus
38.7	<input type="checkbox"/> verliefdheid en relaties (verkering)
38.8	<input type="checkbox"/> hoe je duidelijk maakt wat je wel en niet wilt op het gebied van seks
38.9	<input type="checkbox"/> seks op televisie of internet
38.10	<input type="checkbox"/> waar of bij wie je terecht kunt als je een vraag of probleem hebt over relaties en seks

Communication parents (moderating variable)

To determine the level of communication between parents and adolescents the question “Have you discussed the following topics with your parents?” was asked. Subjects like love and relationships, preventing pregnancies and things you want to sexually experience.

Possible answers are: Never/Sometimes/Regularly/Often/Very Often. The mean of 7 items were merged into the variable ‘Communication Parent’. Little communication with parents = 1, a lot of communication with parents = 5. The variable is reliable, with Cronbach’s Alpha being higher than 0,7 ($\alpha = .90$).

Figure 3.

Question 125A and 125B, 'sex under 25' questionnaire (H. de Graaf, 2012)

125A	[Indien 1jaren = 11 en 1maanden > 4 of indien 1jaren > 11] Praat je met je ouder(s) over de volgende onderwerpen?				
125B	[Indien 1jaren = 11 en 1maanden = 1-4 of indien 1jaren < 11] Heb je voor je 16e jaar met je ouder(s) over de volgende onderwerpen gepraat?				
		nooit	wel eens	regelmatig vaak	heel vaak
a	verliefdheid en relaties (verkering)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b	dingen die je graag doet of wilt doen op het gebied van seks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c	dingen die je niet wilt doen op het gebied van seks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d	wat je moet doen om zwangerschap te voorkomen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e	wat je moet doen om geen soa te krijgen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f	wat je moet doen om geen vervelende seksuele ervaring te krijgen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g	homoseksualiteit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Communication peers (moderating variable)

To determine the level of communication between peers and adolescents the question “Have you discussed the following topics with your peers?” was asked. Subjects like love and relationships, preventing pregnancies and things you want to sexually experience. Possible answers are: Never/Sometimes/Regularly/Often/Very Often. The mean of 6 items were merged into the variable ‘Communication Peers’. Little communication with peers = 1, a lot of communication with peers = 5. The variable is reliable, with Cronbach’s Alpha being higher than 0,7 ($\alpha = .91$).

Figure 4.

Question 131, ‘sex under 25’ questionnaire (H. de Graaf, 2012)

131 [Indien 130 > 1] Praat je met je goede vrienden of vriendinnen over de volgende onderwerpen?		nooit	wel eensregelmatig		heel vaak
			vaak	vaak	
a	verliefdheid en relaties (verkering)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b	dingen die je graag doet of wilt doen op het gebied van seks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c	dingen die je niet wilt doen op het gebied van seks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d	wat je moet doen om zwangerschap te voorkomen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e	wat je moet doen om geen soa’s te krijgen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f	wat je moet doen om geen vervelende ervaring te krijgen op het gebied van seks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Control variable

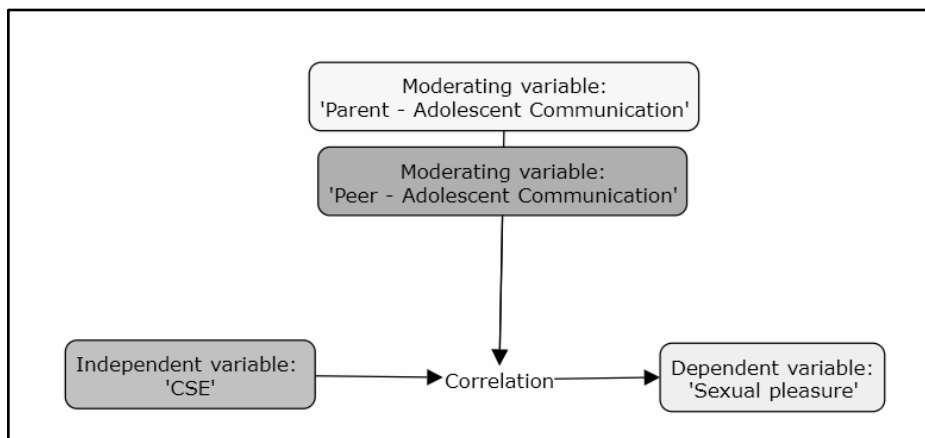
This research will control for gender. Gender is an important predictor of sexual pleasure and boys generally communication less with parents than girls (H. de Graaf, 2012; Graaf et al., 2017; Klein et al., 2022).

Analysis plan

The design of this research is shown in figure 5 and based on the interaction between four variables: sex-positive CSE, communication between adolescents and parent, communication between adolescents and peers, and sexual pleasure. The hypothesis is that both positive sexual health education and communication predict experienced sexual pleasure of adolescents. Furthermore, positive sexual health education and communication may also interact in affecting sexual pleasure: this research hypothesizes that the effect of sex-positive CSE on sexual pleasure is highest among participants who communicate well with parents (about sex). What these interactions will look like will be determined through a multiple regression analysis. The analysis will control for gender.

Figure 5.

Analysis plan; Pleasure, CSE and communication



Results

In total, data of 7.841 participants were available in this study, of which 1.655 indicated that they had no sexual experiences. Therefore these participants were excluded from the analysis, leading to a total valid sample of 6.186 participants ($N=6.186$). Of the participants 58.7% were female and 41.3% were male. In Table 1, the demographics of the participants are presented per gender group. More than half of the participants (59.4% of the girls and 58.2% of the boys) reported having finished HAVO, VWO or MBO and the vast majority was of a Western (including Dutch) ethnicity (83.2% of the girls and 83.9% of the boys).

Table 1.

Demographic characteristics of the participants and descriptives of the main variables in the study split by gender group ($N=6186$).

	<i>Girls (n=3629)</i>	<i>Boys (n=2557)</i>
<i>Demographics</i>		
<i>Age (mean (SD))</i>	<i>18.4</i>	<i>18.4</i>
<i>Highest finished education level (N (%))</i>		
• <i>Lagere school of vmbo</i>	<i>751 (20.7%)</i>	<i>742 (29.0%)</i>
• <i>Havo, vwo, mbo</i>	<i>2156 (59.4%)</i>	<i>1488 (58.2%)</i>
• <i>Hbo of wo</i>	<i>722 (19.9%)</i>	<i>327 (12.8%)</i>
<i>Ethnicity (N (%))</i>		
• <i>Dutch or western</i>	<i>3019 (83.2%)</i>	<i>2145 (83.9%)</i>
• <i>Turkish</i>	<i>127 (3.5%)</i>	<i>95 (3.7%)</i>
• <i>Moroccan</i>	<i>120 (3.3%)</i>	<i>74 (2.9%)</i>
• <i>Surinamese</i>	<i>105 (2.9%)</i>	<i>66 (2.6%)</i>

● <i>Antillean</i>	51 (1.4%)	38 (1.5%)
● <i>Remaining non western</i>	660 (5.7%)	138 (5.4%)
Religion (N (%))		
● <i>Not religious</i>	2294 (63.2%)	1759 (68.8%)
● <i>Christian (somewhat important)</i>	679 (18.7%)	389 (15.2%)
● <i>Christian (very important)</i>	229 (6.3%)	125 (4.9%)
● <i>Islamic</i>	276 (7.6%)	189 (7.4%)
● <i>Remaining</i>	149 (4.1%)	95 (3.7%)
Study Variables (mean (SD))		
<i>Experienced pleasure¹</i>	3.66 (0.86)	3.91 (0.85)
<i>Comprehensiveness sex ed²</i>	4.48 (2.37)	4.57 (2.49)
<i>Communication parents³</i>	2.12 (0.88)	1.79 (0.76)
<i>Communication peers⁴</i>	2.59 (0.99)	2.22 (0.92)

Note. ¹ *Experienced pleasure: positive feelings towards sex; Sex is important to me; I want to try everything regarding sex; I find sex pleasurable.*

² *Comprehensiveness sex ed: 'which topics did you discuss during school based sex education?'*

³ *Communication parents: 'which topics on sex did you discuss with your parents?'*

⁴ *Communication peers: 'which topics on sex did you discuss with your peers?'*

Table 2 displays the descriptive statistics of the main variables in the study for the total participant group. As can be seen, not all participants have answered the questions of all variables. All participants had completed the comprehensiveness sex education scale, but the communication with peers scale was completed by 5.885 participants (95%).

Table 2.

Descriptive statistics of the main variables in the study

	<i>N</i>	<i>Min.</i>	<i>Max.</i>	<i>M</i>	<i>SD</i>	<i>Skewness</i>	<i>Kurtosis</i>
<i>Experienced pleasure¹</i>	5979	1	5	3.76	0.86	-0.66	0.23
<i>Comprehensiveness sex ed²</i>	6186	0	9	4.50	2.42	0.10	-0.65
<i>Communication Parents³</i>	5917	1	5	1.98	0.85	1.17	1.16
<i>Communication Peers⁴</i>	5885	1	5	2.40	0.98	0.79	0.21

After visual inspection of the histogram and Q-Q plots it appeared that not all main variables were normally distributed. The experienced pleasure variable indicated a negative skewness, while the communication with parents variable showed a strong positive skew, with many participants who indicated that they rarely speak with their parents about sex. Furthermore, the communication with peers variable showed a positive skewness and comprehensiveness sex was normally distributed. No extreme outliers were found for each of the variables that were tested. Although the variables mostly appeared not normally distributed, it was decided to perform the parametric statistical analyses that were planned because, based on the Central Limit Theorem (Field, 2018) regression analyses are robust against violations of normality if the sample size is high ($N > 30$).

In Table 3 the correlations between the main variables are presented. Weak positive correlations were found between experienced pleasure and communication parents ($r = .065$, $p < .001$), communication peers ($r = .143$, $p < .001$) and gender ($r = .137$, $p < .001$). This

means that the more communication exists between the adolescent and their parents and peers the more pleasure is experienced. Also male adolescents in general reported higher levels of experienced pleasure than females. In addition to this, weak and positive correlations were found between comprehensiveness sex education and communication parents ($r = .175, p < .001$) and communication peers ($r = .106, p < .001$), suggesting that the more comprehensive the sex education at school is the more communication with parents and peers is reported. There was also a medium correlation between communication parents and communication peers ($r = .371, p < .001$), which means that adolescents who tend to communicate more with their parents also communicate more with their peers and vice versa. There are negative correlations between gender and communication with both parents ($r = -.190, p < .001$) and peers ($r = -.185, p < .001$), indicating that girls on average communicate more about sex with parents and peers than boys.

Table 3.

Pearson's correlation between the main variables in the study

Variables	1	2	3	4	5
<i>1. Experienced pleasure</i>	–				
<i>2. Comprehensiveness sex ed</i>	.015	–			
<i>3. Communication Parents</i>	.065**	.175**	–		
<i>4. Communication Peers</i>	.143**	.106**	.371**	–	
<i>5. Gender (Male = 1)</i>	.137**	.108	-.190**	-.185**	–

Note. ** $p < .01$

Main Analysis

A moderation analysis was performed with two moderators (communication with parents and communication with peers) on the association between comprehensiveness of sex education and experienced pleasure (Table 4). The moderators and the independent variable were mean centered before the interaction terms were calculated, this to prevent multicollinearity that is caused by the interaction terms in the model. Prior to interpreting the results of the analysis, the assumptions of a multiple regression analysis were tested. No multicollinearity was detected as the VIF-values all remained well below the threshold of 10 (Field, 2018). The histogram of the residuals showed a moderate negative skew, but considering the central limit theorem (Field, 2018) it was expected that the results of the regression were robust against violation of the assumption of normality. Also, the macro that was used to perform the moderation analysis (Process; Hayes, 2021) uses bootstrapping (5000 samples) which results in robust standard errors. No extreme outliers of the residuals were found and a scatter plot plotting the standardized residuals with the unstandardized predicted values showed that there was a linear relationship between the dependent variable and the combined predictors in the model. The same scatter plot also showed there was homoscedasticity as the variance in the residuals was comparable between the lower and higher levels of the predicted values.

The model was significant and explained 5% of the variance of experienced pleasure, $F(6,5878) = 51.49, p < .001, R^2 = .050$. There was a main effect of communication with the parents ($b = 0.04, p = .005$) and of communication with peers ($b = 0.14, p < .001$). This means that a higher level of communication with parents or peers is associated with a higher level of experienced pleasure. However there was no significant main effect of comprehensiveness of sex education ($b = 0.00, p = .395$). A significant interaction effect was found between comprehensiveness of sex education and communication with peers ($b = -0.01, p = .016$) indicating that the more the adolescent communicate with peers the lower the

effect of comprehensiveness of education on experienced pleasure (See Table 4). But no interaction effect between comprehensiveness and communication of the parents was found ($b = 0.01, p = .131$). Gender was a significant covariate in the model ($b = 0.30, p < .001$), which means that male adolescents report higher levels of experienced pleasure than females.

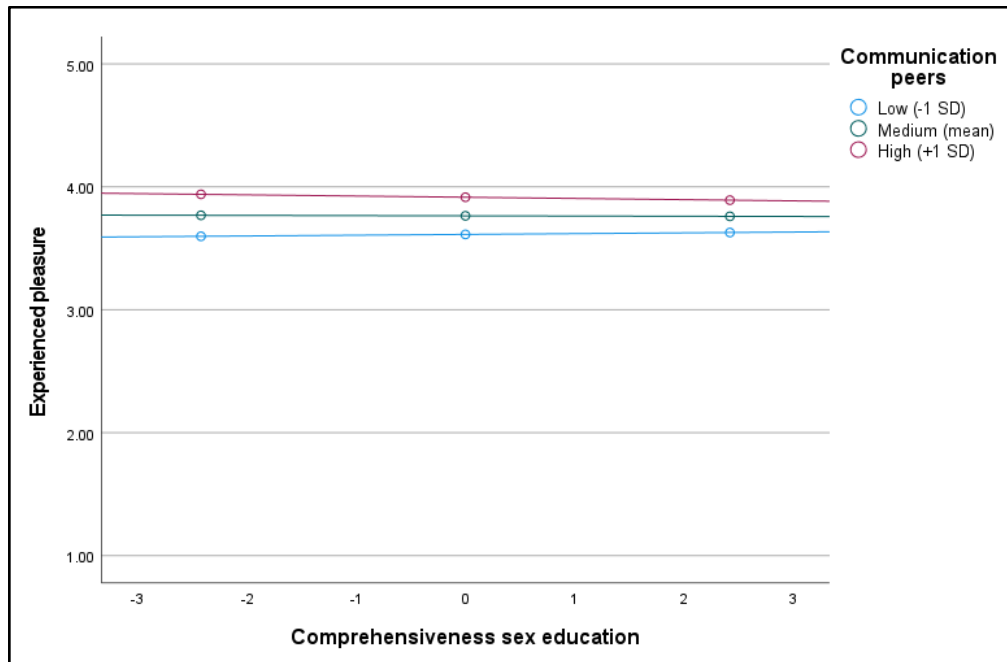
Table 4.

Results of the moderation analysis

<i>Experienced Pleasure</i>					
<i>Variable</i>	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>95% CI</i>
<i>Constant</i>	<i>3.64</i>	<i>0.01</i>	<i>250.41</i>	<i><.001</i>	<i>[3.61, 3.67]</i>
<i>Comprehensiveness sex ed</i>	<i>0.00</i>	<i>0.00</i>	<i>-0.85</i>	<i>.395</i>	<i>[-0.01, 0.01]</i>
<i>Communication parents</i>	<i>0.04</i>	<i>0.01</i>	<i>2.80</i>	<i>.005</i>	<i>[0.01, 0.07]</i>
<i>Communication peers</i>	<i>0.14</i>	<i>0.01</i>	<i>11.71</i>	<i><.001</i>	<i>[0.12, 0.17]</i>
<i>Comprehensive*comm parents</i>	<i>0.01</i>	<i>0.01</i>	<i>1.51</i>	<i>.130</i>	<i>[-0.00, 0.02]</i>
<i>Comprehensive*comm peers</i>	<i>-0.01</i>	<i>0.00</i>	<i>-2.41</i>	<i>.016</i>	<i>[-0.02, -0.00]</i>
<i>Gender (male=1)</i>	<i>0.30</i>	<i>0.02</i>	<i>13.22</i>	<i><.001</i>	<i>[0.26, 0.35]</i>
<i>df</i>	<i>6.5878</i>				
<i>F</i>	<i>51.49</i>				
<i>p</i>	<i><.001</i>				
<i>R²</i>	<i>.050</i>				

Figure 6.

Interaction effect of communication with peers on the association between comprehensiveness of sex education and experienced pleasure



Discussion

Interpretations

The main hypothesis of this thesis was that the more comprehensive the participants sex education was, the more pleasure they experience. In the current study we did not find evidence for this. There is no significant association between the comprehensiveness of SE and pleasure. This could have several reasons. First, sex education may not have a direct effect on experienced pleasure. Research has shown that the comprehensiveness of sexuality education matters for sexual health variables like condom use (Jaramillo et al., 2017) but no direct connections have been found between the sex ed and pleasure. Secondly, it could be the case that the type and quality of education received in 2000-2012 (which is when our sample would have had sex education in school) was not yet comprehensive enough to be

able to see results. Thirdly, it may be the case that there is an effect, but we were not able to show it, with the current design of study and data.

The interaction effects between CSE and parent and peer communication were also not significant. This means that there is no moderation effect present. This may be related to the finding that we did not find a main effect for CSE. There was however a significant correlation between peer communication and perceived pleasure and parent communication and perceived pleasure. This could either mean participants that talked more with peers and parents experience more pleasure or that participants who experience more pleasure are more likely to discuss the topic with peers and parents. This positive association was in line with existing studies on communication and pleasure. A study by Ragsdale et al. found that peer communication positively predicts pleasure expectancies of adolescents (2013). Since it is a correlation and not a causation it is likely that a confounding variable explains the correlation between pleasure and peer communication. For example, it is possible that being raised in a sex positive environments would make peer communication easier while also increasing the pleasure experienced during sexual encounters. Communication with parents, especially mothers, plays a protective role in safer sex behaviors (Widman et al., 2016), it is possible that this outcome also plays a role in perceiving more pleasure.

Furthermore this analysis found a significant difference in the experience of pleasure for men and women. Women, on average, experience less pleasure than men. Women communicate more about sex with parents and peers than men (see table 1). This mean difference in experienced pleasure was also found in the study by Laan et al. (2021). As mentioned in this study, gender differences are important to be taken into account and differences require more scientific attention in the future.

Limitations

The data used for this analysis has its limits. All variables are based on self-reported data and are therefore subjective. The variable pleasure is based on three questions indicating the participants positive feelings towards sex and their sexual experience. Since pleasure is a far more complex subject this will not be a complete indication of pleasure. Potential for a better method of measuring would be the Amsterdam Sexual Pleasure Index as used in Klein et al. (2022). The ASPI assesses individuals' tendency to experience pleasure.

The variable sexual health education in school had a limited topic list. Possible other discussed subjects haven't been taken into account in this study. For example, if participants discussed pleasure during their SE they were not able to include this option. Furthermore, the variable only gave an indication of how many topics were discussed but not the quality or tone of the topics. For example, participants could indicate if they discussed homosexuality during their SE but were not able to report on how they discussed it. It could be discussed in a positive and educating way, or could be condemned by an educator. It is also possible that not all participants were able to remember all the topics they had discussed during their SE, participants could be up to 25 years, which means they would be out of high school for 7 years already by the time they filled in the questionnaire. The data is based on retrospective reporting and therefore has a high chance of recall bias.

Implications and recommendations

Although this analysis did not find a significant effect between the comprehensiveness of sex education and perceived pleasure, because of the limitations of the data, there is still a possibility that an effect is there. Comprehensive SE has shown to be successful in reducing general sexual health risks by improving knowledge (Rabbitte & Enriquez, 2018). To fully understand the potential of comprehensive sex education in improving perceived pleasure more research is necessary. To research the impact of CSE on pleasure, a longitudinal controlled classroom experiment with a control group would be ideal. One class could be given a comprehensive sex education curriculum while the other class receives the usual program. Adolescents report on their experienced pleasure, views on sex in general and knowledge to see if a difference overtime between the groups can be found. If there is a positive correlation between comprehensive sex education and pleasure or comprehensive sex education and positive feelings towards sex, this could give more body to the argument to implement standardized CSE curriculums. If there is no correlation between CSE but there is a positive correlation between peer communication and pleasure, peers could be incorporated more into sex education to improve results.

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