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Educational Differences in Adolescents' Sexual Health: A Pervasive Phenomenon in a National Dutch Sample

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Educational level is strongly associated with age of first intercourse and risk of unintended pregnancies. This study examined these associations in a large representative sample of Dutch adolescents and also included associations of educational level with other sexual health aspects. Adolescents aged 12 to 25 (3,926 boys and 3,915 girls) completed an online questionnaire that included measures of romantic and sexual experience; the evaluation of their sexual debut; the risk of sexually transmitted infections (STIs) and pregnancy; and sexual attitudes, satisfaction, self-efficacy, knowledge, victimization, and functioning. The results showed that adolescents on a vocational track or who completed fewer years of education were more at risk of several adverse sexual health outcomes than adolescents on an academic track. They had their first sexual experiences at an earlier age; evaluated these experiences less favorably; had less sexual health knowledge and fewer refusal skills; and had a higher risk of unintended pregnancy, STIs, and victimization. Possible explanations for these consistent differences are discussed. Sex education and services should pay specific and targeted attention to less educated young people and tailor their efforts specifically to the needs, characteristics, and realities of this group.

The Netherlands has been recognized for its positive adolescent sexual health outcomes, especially with regard to high levels of contraceptive use and low rates of teenage pregnancy. The pregnancy rate among teenage girls is one of the lowest in the world (Singh & Darroch, 2000). In 2010, 33 out of 1,000 American girls aged 15 to 19 years gave birth. In the Netherlands, this applies to 5 out of 1,000 girls within this age group (World Bank Group, 2012). The Health Behavior of School-Aged Children (HBSC) Study, which was conducted in 43 countries and regions across Europe and North America, showed that the Netherlands was one of seven countries where 15-year-olds were the least sexually experienced and that Dutch adolescents protected themselves relatively well against unintended pregnancies (Currie et al., 2012). These positive sexual health outcomes for Dutch adolescents are often attributed to adequate access to sex education and services. Sex education policies and practices are liberal and comprehensive (Ferguson, Vanwesenbeeck & Knijn, 2008; Parker, Wellings, & Lazarus, 2009; Weaver, Smith, & Kippax, 2005). Furthermore, all Dutch adolescents aged 16 or older have access to contraceptives, condoms, and free abortion (Hardon, 2003).

However, some subgroups in the Netherlands have an earlier sexual debut or are more at risk of unintended pregnancies than others. Educational level plays an important role in these sexual health differences. In the Netherlands, secondary education is divided into different educational levels that range from prevocational to preuniversity education. Students are directed to these different levels based on their achievements during elementary school. The sexual health of young people has been monitored for several decades in the Netherlands (Brugman, Goedhart, Vogels, & Van Zessen, 1995; De Graaf, Meijer, Poelman, & Vanwesenbeeck, 2005; Vogels & Van der Vliet, 1990). In these population studies, youth on a vocational track continuously report an earlier sexual debut and more sexual partners than youth on an academic track, despite the fact that these groups have equal access to education and services.

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These associations between educational attainment and sexual health are not confined to the Netherlands, although the measurements of educational level in other developed countries are different due to other educational systems. An extensive review of studies conducted in the United States found that adolescents who stay in school and earn good grades are less likely to initiate sexual activity at an early age or to become pregnant (Kirby & Lepore, 2007). In a more recent review of North American studies, all studies concerning the association between academic achievement and sexual behaviors increasing the risk of pregnancy and sexually transmitted infections (STIs) found an inverse relationship (Bradley & Greene, 2013). In Britain, low educational attainment is also associated with motherhood before age 18 (Wellings et al., 2001). In France, women with no high school diploma are less likely to use contraceptives (although they do not intend to get pregnant), are more likely to have an unintended pregnancy, and less likely to have an abortion following an unintended pregnancy, than women who completed high school (Rossier, Michelot, Bajos, & the COCON Group, 2007). A New Zealand prospective study found that less academically able girls are more likely to leave high school unqualified and that these girls, in turn, are more likely to become pregnant at an early age (Fergusson & Woodward, 2000).

Studies of educational differences in aspects of sexual health other than early sexual intercourse and pregnancy are scarce. This study adds to the existing literature by replicating past findings with regard to experience of sexual intercourse and pregnancy within a large representative sample and by examining other sexual health aspects as well. Examining educational differences in several sexual health aspects could shed light on the robustness of these differences and possibly guide us in finding explanations for these differences. We used a broad definition of sexual health, adopting the working definition of the World Health Organization. According to this definition, sexual health is "a state of physical, emotional, mental and social well-being related to sexuality; it is 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" (World Health Organization, 2006, p. 5).

One explanation for educational differences in early sexual intercourse can be derived from problem behavior theory (Donovan, Jessor, & Costa, 1991). One of the assumptions of this theory is that different types of "problem behavior" (such as low educational attainment and sexual risk behavior) derive from the same background factors (individual as well as environmental). Based on this theory, one could expect that these shared background factors make less educated adolescents also more vulnerable with regard to aspects of sexual health other than early sexual intercourse and pregnancy. A few studies have suggested that these differences indeed exist. Halpern, Joyner, Udry, and Suchindran (2000) found that intelligence (which is closely related to educational level) was negatively related to all kinds of partnered sexual experience. Dutch youth on a vocational track were more often the victim of unwanted sexual experiences than youth on an academic track (De Bruijn, Burrie & Van Wel, 2006; De Graaf et al., 2005; Van Dorsselaer et al., 2010). In their review of North American studies, Bradley and Greene (2013) also found an inverse association between academic achievement and sexual victimization or aggression. In a Swedish study, boys enrolled in vocational training programs were more likely to ever have sold sex than boys who followed general and economic courses (Svedin & Priebe, 2007). The Dutch 2005 youth population study confirmed these findings and found the same associations for buying sex (De Graaf et al., 2005). Most research on sexual health focuses on sexual risk, and studies on educational differences concerning the positive aspects of sexual health (namely, sexual satisfaction or sexual pleasure) are, therefore, scarce. In one study of sexual enjoyment that did include measures of socioeconomic status, no associations with this measure were found (Galinsky & Sonenstein, 2011).

The goals of the present study were (1) to replicate earlier findings with regard to educational differences in early sexual initiation and pregnancy in a Dutch representative sample, (2) to investigate whether these educational differences also exist with regard to other aspects of sexual health, and (3) to offer an overview of possible explanations for these differences in sexual health based on a review of the literature. For this purpose, we used data from a Dutch population study on adolescents aged 12 to 25 called Sex Under the Age of 25 conducted in 2011. This study used a participatory action approach: Individuals and organizations that benefit from the results of this study (the stakeholders) were involved in all phases of the study, including selection of the research questions. This round of consultations resulted in an abundance of themes related to sexual health included in the study, and we were therefore able to investigate educational differences in a broad array of sexual health aspects. Based on the key elements of sexual health suggested by the World Health Organization (2010), we included the following sexual health aspects in this study: romantic and sexual experience; the evaluation of the sexual debut; the risk of STIs and pregnancy; and sexual attitudes, satisfaction, self-efficacy, knowledge, victimization, and functioning. Following the evidence described, we expected to find that individuals on a vocational track or who completed fewer years of education would have an earlier sexual debut and run more sexual risks, for example, relating to unplanned pregnancy, STIs, or sexual victimization. Because less is known about

educational differences in other aspects of sexual health, such as sexual attitudes and knowledge and problems with sexual functioning, we explored educational differences in these aspects of sexual health.

Method

Participants

Participants were recruited in two ways. Secondary school students aged 12 to 16 years came from randomly selected schools, geographically spread across the Netherlands. Of the 55 randomly selected high schools, 21 immediately announced their willingness to participate. We were able to replace the remaining high schools with 22 schools that were comparable in terms of size, educational level, and denomination, resulting in 43 high schools participating in the study. Of the selected students, 7% did not participate, usually because of their absence during data collection. In addition, 33,000 individuals aged 17 to 25 years were randomly selected from likewise randomly selected Municipal Basic Administrations (MBA). This is a database containing demographic information about the residents of a municipality, available in every city hall in the Netherlands, which can be consulted for scientific purposes. Of the MBA-selected adolescents, 84% did not respond to our invitation. Respondents who completed less than one-quarter of the questionnaire were excluded from the sample. To correct for selective nonresponse and to realize the requirements of sample representativeness, we applied weighting techniques before data analysis. As a result, our sample is representative of the Dutch population aged 12 to 25 years in terms of biological sex, age, ethnic background, and educational level. The final sample comprised 3,926 boys and 3,915 girls. The distribution of biological sex, age, ethnic background, educational level and sexual orientation within the sample is listed in Table 1.

Table 1. *Demographic Characteristics*

Demographic	%
Sex	
Boys	50.1
Girls	49.9
Age	
12–14 years	23.1
15–17 years	25.7
18–20 years	23.3
21–24 years	27.9
Mean (SD)	18.4 (3.53)
Ethnic background	
Dutch/Western	83.6
Turkish	3.6
Moroccan	3.1
Surinamese	2.7
Antillean	1.4
Other	5.6
Educational level	
Prevocational students	22.6
Senior general secondary students	10.3
Preuniversity students	13.0
Secondary vocational students	17.6
Higher professional students	10.4
University students	4.9
Out of school	21.3
Sexual orientation	
No same-sex attraction	96.1
Same-sex attraction	2.7
Unknown	1.1

Note. $N = 7{,}841$.

Measurements

The questionnaire began with questions about demographics: sex, age, education, ethnic background, and religion.

Educational level. Educational level was measured by asking students about their current level of education and asking working and unemployed youth to indicate the highest level of education that they had completed. Participants were classified as "less educated" if they were prevocational or secondary vocational students or if they were no longer enrolled in school and had completed preuniversity education at most. Participants were classified as "more educated" if they were general secondary or preuniversity students or if they were higher professional or university students or graduates. Less and more educated adolescents did not differ in age.

Romantic and sexual experience. Romantic experience was measured by asking participants if they had (a) ever been in love and (b) ever had a steady relationship (0 = *No*; 1 = *Yes, once*; 2 = *Yes, more than once*). To assess sexual experience, participants were asked whether they had engaged in (a) masturbation, (b) French kissing, (c) petting, (d) manual sex, (e) vaginal intercourse, (f) oral sex, (g) anal sex, and (h) same-sex sexual experience (1 = *No*; 2 = *Yes*). These measures were used in previous studies of Dutch youth (Brugman et al., 1995; De Graaf et al., 2005). Because romantic and sexual experiences are normative aspects of development among older adolescents (Centers for Disease Control and Prevention, 2012), we selected younger adolescents (age 12 to 15) for the analyses on these measures.

Evaluation of first sexual intercourse. Participants who had engaged in sexual intercourse were asked to evaluate their first sexual intercourse with regard to four aspects: planning, timing, general evaluation, and regret. Planning was assessed by the question "When you had sexual intercourse for the first time, was it planned?" (1 = *No, it was unexpected*; 2 = *I knew it would happen soon, but did not expect it to be that day*; 3 = *I knew it would happen that day*). Timing was measured by asking participants whether their first sexual intercourse happened at the right time (1 = *I had wanted it earlier*;

2 = *It was the right time*; 3 = *I had actually wanted to wait longer*). Participants were asked to evaluate their first sexual intercourse using three categories (1 = *Pleasant*, 2 = *Nothing special*, 3 = *Unpleasant*). Furthermore, they were asked whether they regretted their first sexual intercourse afterward (1 = *No*; 2 = *Yes, a bit*; 3 = *Yes*). These measures were used in earlier Dutch and German studies (Bundeszentrale für gesundheitliche Aufklärung, 2010; De Graaf et al., 2005).

Sexual attitudes, satisfaction, self-efficacy, and knowledge. We included five scales to measure various emotions, cognitions, and competences with regard to sexuality: (a) positive sexual attitude, (b) permissive sexual attitude, (c) sexual satisfaction, (d) self-efficacy to refuse unwanted sex, and (e) sexual health knowledge. Most of these measures were based on the Sexual Interaction Behavior Scale (Vanwesenbeeck, Bekker, & Van Lenning, 1998). Table 2 shows the psychometric characteristics of these scales and sample questions. The first four scales were highly reliable; for these scales, mean scale scores were calculated by dividing the total sum score by the number of items. Sexual health knowledge is an additive measure. The separate items of this scale do not need to correlate to one another, because they are meant to measure separate aspects of knowledge. To correct for guessing, items were coded as −1 if the answer was not correct, as 0 if a participant reported that he or she did not know the answer, and as 1 if the answer was correct. Subsequently, a sum scale score was calculated (−8 = all incorrect; 8 = all correct).

Risk for STIs and pregnancy. To assess the risk of STIs, we followed the European Centre for Disease Prevention and Control recommendations for core indicators for STI/HIV behavioral surveillance and included measures of the number of sexual partners, experiences of commercial sex, condom use, and experiences of STI (European Centre for Disease Prevention and Control, 2013). The risk for unplanned pregnancy was measured by asking about contraceptive use and experiences of unplanned pregnancy.

Answers to the following open-ended question were dichotomized: "With how many different persons did you have intercourse in your life?" We defined multiple partners as four or more sexual partners, to be consistent with the cutoff used in the youth risk behavior surveillance (Centers for Disease Control and Prevention, 2012). Commercial sex was measured by asking whether the participant had ever (a) given money for sex, (b) given something else in exchange for sex, (c) received money for sex, or (d) received something else in exchange for sex. These questions were condensed in either giving or receiving money or gifts for sex (0 = *No*; 1 = *Yes*).

Participants who reported having had sexual intercourse were asked whether contraceptives (encompassing hormonal contraceptives, intrauterine devices, and barrier methods) and/or condoms were used. Both questions were asked with reference to first intercourse (0 = *No*; 1 = *Yes*) and with reference to the last partner (1 = *Always*; 2 = *Sometimes*; 3 = *Only in the beginning of our relationship* (*for condoms*); 4 = *Never*). The answers were dichotomized (0 = *Less than always*; 1 = *Always*) because we wanted to distinguish the group that runs *any* risk of a pregnancy or STIs from the group that does not. Furthermore, participants were asked whether they had tested positive for an STI or had been pregnant in the past 12 months (*Yes*/*No*). In the case of a pregnancy, they were subsequently asked whether this pregnancy was planned.

Sexual victimization. All participants answered a general question about sexual coercion: "Have you ever been coerced into something sexual?" Subsequently, we used a simplified version of the Sexual Experience Survey (SES) to measure sexual experiences against their will and coercive tactics (Koss et al., 2007). In the SES, each sexual experience against the will is combined with the coercive tactic that was used. This combined measurement, however, does not meet the guidelines for the language level that vocational students can read (Council of Europe, 2011). We, therefore, chose to use separate scales to measure these concepts. Furthermore, we used three answering categories instead of four (0 = *No*; 1 = *Yes, once*; 2 = *Yes, more than once*). Participants were questioned whether they had experienced against their will any of six kinds of sexual behavior (namely, kissing, petting, manual sex, oral sex, vaginal intercourse, and anal intercourse). Furthermore, they were asked whether someone had used specific coercive tactics to have sex with them (e.g., "threatening to end

Table 2. *Psychometric Characteristics of the Scales*

Scale (Number of Items)	Sample Question	Categories	α
Positive sexual attitude (9)	Sex is important to me.	1 = Totally disagree, 5 = Totally agree	.85
Permissive sexual attitude (4)	How do you feel about sex without being in love?	1 = Full approval, 4 = Full disapproval	.83
Sexual satisfaction (4)	How satisfied are you about your sex life?	1 = Very unsatisfied, 5 = Very satisfied	.89
Self-efficacy to refuse unwanted sex (8)	I can refuse unwanted sex when I'm drunk.	1 = Certainly, 5 = Certainly not	.93
Sexual health knowledge (8)	Washing after having sex reduces STI risk (−).	−1 = Incorrect, 0 = Don't know, 1 = Correct	.63

Note. STI = sexually transmitted infection; α = Cronbach's alpha.

the relationship'' or ''threatening to physically harm me''). Four dichotomous measurements were created based on these questions: (at least one) sexual experience against their will; vaginal intercourse against their will; confronted with (at least one) coercive tactic; confronted with physical force.

Problems with sexual functioning. We assessed five different problems with sexual functioning: (a) lack of sexual desire, (b) failure to attain or maintain sexual arousal, (c) inability to achieve orgasm, (d) achieving orgasm too early, and (e) pain during intercourse. Participants were asked to indicate how often these aspects of sexual functioning had disturbed them in the past six months (1 = *Never*; 5 = *Always*). To approach the *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition, criterion for sexual disorders—that the problem should be present in approximately 75% occasions of sexual activity (American Psychiatric Association, 2013)—we dichotomized the answers into *Regularly or always* (1) and *Less than regularly* (0) for each separate problem with sexual functioning.

Procedure

High school students were informed about the study by their teachers and received a letter to take home prior to the study. This letter informed parents about the study and about their right to refuse their child's participation. Participants who were selected from the municipal database received a letter in which they were invited to participate and told that an iPad tablet would be awarded at random among the participants through a prize drawing. The questionnaire started with written instructions explaining, among other things, the importance of answering truthfully, that anonymity was assured, and the survey's practical guidelines. Students also received verbal instructions from their teachers (who had received written instructions from the researchers). The questionnaire was computerized, and all participants completed the measures online. Participants recruited in secondary schools completed the questionnaire during a regular class period, while participants who had responded positively in the MBA arm of the study completed the questionnaire at home. The study protocol was exempt from formal medical-ethical approval under Dutch law.

Statistical Analyses

We used IBM SPSS Statistics 19 for statistical analyses. Because of drop-out, the extent of missing data gradually increased to 9.8% for the final questions. Missing data were handled by listwise deletion. Differences between less and more educated young people were examined using chi-square analyses (if the outcome measure was categorical) or analyses of variance (if the outcome measure was continuous). If a categorical outcome measure had more than two categories, we used adjusted residuals to determine for which of these categories educational differences were significant. To compensate for the problem of multiple comparisons, a significance level of 0.01 was used. Because previous studies showed large gender differences on a number of the sexual health outcomes investigated in this study (Petersen & Hyde, 2010), all analyses were performed separately for boys and girls.

Results

Romantic and Sexual Experience

Table 3 shows that less educated boys and girls had more romantic and sexual experience before age 16 than their more educated peers. For example, about one in five less educated boys aged 12 to 15 had had sexual intercourse, compared to one in sixteen more educated boys, ($\chi^2(1) = 58.03$, $p < .001$). One in eight less educated girls, and one in twenty more educated girls in this age group had had this experience, ($\chi^2(1) = 17.37$,

Table 3. *Educational Differences in Romantic and Sexual Experience Among 12- to 15-Year-Olds*

	Boys			Girls		
Romantic and Sexual Experiences	**% Less Educated (N = 750)**	**% More Educated (N = 554)**	**χ**	**% Less Educated (N = 674)**	**% More Educated (N = 610)**	**χ**
Being in love	91.4	87.6	4.96	91.9	85.3	13. 83***
Going steady	76.5	69.3	8.19**	71.2	54.6	37.88***
Masturbation	62.9	65.9	1.21	19.7	21.0	0.30
French kissing	60.4	45.1	29.92***	50.1	37.2	21.74***
Petting	49.8	36.2	24.50***	35.2	24.5	17.00***
Manual sex	29.2	16.1	30.57***	21.4	13.4	13.95***
Vaginal intercourse	21.6	6.3	58.03***	11.5	5.1	17.37***
Oral sex	23.3	10.2	36.74***	13.4	7.4	11.74***
Anal intercourse	3.8	1.9	3.46	2.0	1.0	1.98
Same sex experience	2.4	1.4	1.49	2.2	2.1	0.01

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

$p < .001$). With regard to masturbation and anal sex, no educational differences were found. About two-thirds of the boys and one-fifth of the girls had masturbated at this age, regardless of their educational background. Very few early adolescents had experience of anal sex.

Evaluating the Sexual Debut

Less educated young adolescents thus had their first sexual intercourse at an earlier age than more educated youth. In addition, among adolescents who had engaged in sexual intercourse, less and more educated adolescents perceived their sexual debut differently. Less educated boys and girls stated more often than more educated boys and girls that their sexual debut came unexpectedly (boys: $\chi^2(2) = 30.62$, $p < .001$; girls: $\chi^2(2) = 52.10$, $p < .001$). In addition, less educated boys and girls more often reported that they would rather have waited a bit longer before having sexual intercourse (boys: $\chi^2(2) = 14.55$, $p < .001$; girls: $\chi^2(2) = 14.43$, $p < .001$). For boys, no differences were found with regard to the general evaluation of first intercourse and whether they experienced regret afterward. Less educated girls, however, less often perceived their sexual debut as pleasant ($\chi^2(2) = 13.16$, $p < .01$) and more often experienced regret afterward ($\chi^2(2) = 20.54$, $p < .001$), compared to their more educated peers (refer to Table 4).

Sexual Attitudes, Satisfaction, Self-Efficacy, and Knowledge

Because less educated boys and girls were more sexually experienced at an early age, one would expect them to have more positive and permissive sexual attitudes. However, no educational differences were found regarding positive sexual attitudes. For permissive sexual attitudes, differences were found in the opposite direction: less educated boys and girls were less supportive of having sex in less committed relationships than more educated boys and girls (boys: F (1, 3891) = 56.72, $p < .001$; girls: F (1, 3876) = 88.83, $p < .001$). Moreover, they had less sexual health knowledge than their more educated peers (boys: F (1, 3891) = 82.15, $p < .001$; girls: F (1, 3876) = 111.19, $p < .001$) and expected themselves to be less able to refuse unwanted sex in different situations (boys: F (1, 3891) = 6.74, $p < .01$; girls: F (1, 3876) = 14.97, $p < .001$). No educational differences were found among sexually active boys and girls with regard to sexual satisfaction (refer to Table 5).

STIs and Pregnancy Risk

Less educated adolescents were found to be more at risk of contracting an STI. Both less educated boys and girls more often reported vaginal or anal intercourse with four or more different sexual partners, compared to their more educated peers (boys: $\chi^2(1) = 74.24$, $p < .001$; girls: $\chi^2(1) = 30.38$, $p < .001$). In addition, less educated boys relatively reported they had given ($\chi^2(1) = 42.42$, $p < .001$) or received ($\chi^2(1) = 23.62$, $p < .001$) money or gifts in exchange for sex. No educational differences were found with regard to condom use at first intercourse, but less educated boys less often reported infrequent condom use with the last sexual partner than more educated boys ($\chi^2(1) = 22.71$, $p < .001$). The percentage of adolescents that actually contracted an STI

Table 4. *Educational Differences in the Evaluation of First Sexual Intercourse*

	Boys			Girls		
Type of Evaluation	**% Less Educated ($N = 1{,}399$)[a]**	**% More Educated ($N = 699$)[a]**	**χ**	**% Less Educated ($N = 1{,}235$)[a]**	**% More Educated ($N = 849$)[a]**	**χ**
Planning						
It came unexpected	41.7	29.3[b]	30.62***	36.7	21.9[b]	52.10***
I knew it would happen soon	44.6	53.1[c]		47.9	60.2[c]	
I knew it would happen that day	13.7	17.6		15.4	17.9	
Timing						
I wanted it earlier	8.2	12.1[c]	14.55**	1.6	1.9	14.43**
It was the right time	82.8	82.4		73.2	80.0[c]	
I had actually wanted to wait	9.0	5.5[b]		25.2	18.1[b]	
General evaluation						
Pleasant	73.4	71.5	1.00	40.0	48.0[c]	13.16**
Nothing special	21.4	23.3		35.6	30.6[b]	
Unpleasant	5.2	5.2		24.3	21.4	
Regret						
No	83.5	85.0	0.84	68.4	75.3[c]	20.54***
Yes, a bit	12.9	12.0		18.2	17.4	
Yes	3.6	3.0		13.3	7.3[b]	

[a]Only participants who engaged in sexual intercourse.
[b]Lower in the more educated group ($p < .01$).
[c]Higher in the more educated group ($p < .01$).
**$p < .01$. ***$p < .001$.

Table 5. *Educational Differences in Sexual Attitudes, Knowledge, Self-Efficacy, and Satisfaction*

	Boys			Girls		
Feelings or Cognitions	***M* Lower Educated**	***M* Higher Educated**	***F***	***M* Lower Educated**	***M* Higher Educated**	***F***
	($N = 2,370$)	($N = 1,524$)		($N = 2,154$)	($N = 1,724$)	
Positive sexual attitude	3.9	3.9	0.40	3.6	3.6	1.02
Permissive sexual attitude	3.1	3.3	56.72***	2.9	3.1	88.83***
Sexual health knowledge	4.5	5.3	82.14***	5.0	6.0	111.19***
Self-efficacy to refuse unwanted sex	3.5	3.6	6.74**	3.8	3.9	14.97***
	($N = 1,819$)[a]	($N = 1,038$)[a]		($N = 1,544$)[a]	($N = 1,144$)[a]	
Sexual satisfaction	3.9	3.8	4.63	4.0	3.9	4.81

[a]Adolescents with experience of manual sex.
**$p < .01$. ***$p < .001$.

in the past 12 months was very small, but for less educated girls this was about twice as high as for more educated girls ($\chi^2(1) = 7.41$, $p < .01$).

Furthermore, less educated adolescents were more at risk of (unplanned) pregnancy. Of the less educated girls, 11% did not use contraceptives at first intercourse, compared to 6% of the more educated girls ($\chi^2(1) = 17.88$, $p < .001$). Both less educated boys and girls more often reported not having used contraceptives consistently with their last partner than their more educated peers (boys: $\chi^2(1) = 23.39$, $p < .001$; girls: $\chi^2(1) = 38.49$, $p < .001$). As a result, less educated boys and girls more often reported a pregnancy in the past 12 months (boys: $\chi^2(1) = 28.47$, $p < .001$; girls: $\chi^2(1) = 41.16$, $p < .001$). These educational differences were also present when only unplanned pregnancies were investigated (boys: $\chi^2(1) = 18.43$, $p < .001$; girls: $\chi^2(1) = 22.23$, $p < .001$) (refer to Table 6).

Sexual Victimization

Almost 6% of the less educated boys and almost 20% of the less educated girls were coerced into at least one sexual experience in their lives, compared to, respectively, 2.7% and 12.7% of the more educated boys and girls (boys: $\chi^2(1) = 16.74$, $p < .001$; girls: $\chi^2(1) = 34.10$, $p < .001$). These figures reflect the answers to our general question about sexual victimization. The questions about specific kinds of sexual behavior against their will or about being confronted with specific kinds of coercive tactics generated a higher prevalence of sexual victimization. The findings for the role of educational differences for these different measurements of sexual victimization, however, all pointed in the same direction (refer to Table 7). Almost 10% of the less educated girls experienced sexual intercourse against their will, for example, compared to almost 5% of the more educated girls ($\chi^2(1) = 31.63$, $p < .001$). The same applies to 2.5% of the less educated boys and 0.6% of the more educated boys ($\chi^2(1) = 17.14$, $p < .001$).

Problems with Sexual Functioning

No educational differences were found for four out of the five different problems with sexual functioning that were assessed: lack of sexual desire, failure to attain or

Table 6. *Educational Differences in the Risk for Sexually Transmitted Infections and Pregnancy*

	Boys			Girls		
Risk Factors	**% Less Educated**	**% More Educated**	**χ**	**% Less Educated**	**% More Educated**	**χ**
	($N = 2,338$)	($N = 1,516$)		($N = 2,141$)	($N = 1,710$)	
Four or more sexual partners lifetime	25.7	14.1	74.24***	21.6	14.7	30.38***
Gave money or gifts for sex	11.0	4.8	42.42***	0.6	0.4	0.32
Received money or gifts for sex	5.4	2.1	23.62***	2.3	1.5	2.45
	($N = 1,397$)[a]	($N = 706$)[a]		($N = 1,220$)[a]	($N = 844$)[a]	
No condom at first intercourse	26.8	30.9	3.86	25.9	25.1	0.15
No contraceptives at first intercourse	13.6	10.6	3.78	11.3	5.9	17.88***
Infrequent condom use last partner	59.3	69.9	22.71***	78.2	80.8	2.13
Infrequent contraceptive use last partner	25.5	16.0	23.39***	23.1	12.2	38.49***
	($N = 2,149$)	($N = 1,459$)		($N = 2,008$)	($N = 1,654$)	
Sexually transmitted infection in the past 12 months	1.0	0.6	1.69	1.7	0.8	7.41**
Pregnancy in the past 12 months	4.4	1.2	28.47***	4.4	0.8	41.16***
Unplanned pregnancy in the past 12 months	3.2	1.0	18.43***	2.6	0.6	22.23***

[a]Only participants who engaged in sexual intercourse.
**$p < .01$. ***$p < .001$.

Table 7. *Educational Differences in Experiences With Sexual Violence*

	Boys			Girls		
Type of Sexual Violence	**% Less Educated ($N = 2,128$)**	**% More Educated ($N = 1,449$)**	**χ**	**% Less Educated ($N = 1,991$)**	**% More Educated ($N = 1,642$)**	**χ**
Coerced into a sexual experience	5.6	2.7	16.74***	19.9	12.7	34.10***
Sexual experience against their will	23.5	16.4	26.62***	44.3	37.2	18.80***
Vaginal intercourse against their will	2.5	0.6	17.14***	9.8	4.8	31.63***
Someone used a coercive tactic	25.4	17.6	29.97***	41.0	33.9	19.26***
Someone used physical force	2.5	0.8	13.55***	7.5	3.6	25.31***

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

Table 8. *Educational Differences in Problems With Sexual Functioning*

	Boys			Girls		
Sexual Function Problem	**% Less Educated ($N = 1,679$)[a]**	**% More Educated ($N = 1,006$)[a]**	**χ**	**% Less Educated ($N = 1,472$)[a]**	**% More Educated ($N = 1,108$)[a]**	**χ**
Lack of sexual desire	5.7	5.8	0.05	18.6	15.8	3.56
Failure to attain/maintain sexual arousal	5.4	4.1	1.89	13.8	12.4	1.00
Inability to achieve orgasm	5.3	4.9	0.10	21.2	25.2	5.84
Achieving orgasm too early	20.5	17.2	4.38	6.4	3.9	7.88**
Pain during intercourse	2.5	2.0	0.74	11.8	10.5	1.01

[a]Only participants who engaged in manual sex.
**$p < .01$. ***$p < .001$.

maintain sexual arousal, inability to achieve orgasm, and pain during intercourse. Less educated girls slightly more often reported that they had a problem with achieving orgasm too early, compared to more educated girls ($\chi^2(1) = 7.88$, $p < .01$) (refer to Table 8).

Additional Analyses

One could assume that some of the sexual health differences between less and more educated adolescents are related to the extent to which they have had sexual experiences. It seems logical, for example, that adolescents who start having sex at an earlier age have more sexual partners and thus run higher risks for contracting STIs, getting pregnant, or encountering coercion during one of these experiences. Furthermore, social-cognitive factors such as knowledge or self-efficacy are theoretically related to sexual health outcomes (Abraham, Sheeran & Johnston, 1998). We, therefore, conducted three additional analyses to investigate the robustness of the educational differences we found. The results of these analyses are summarized here, because of space limits, and details can be obtained from the corresponding author.

We conducted three binary logistic regression analyses, with experience of unplanned pregnancy, STI, and victimization as outcome measures, respectively. Age, age of first intercourse, number of lifetime sexual partners, and knowledge were included as control variables in the first step for all these analyses; and for the analyses on victimization we included self-efficacy as well. Educational level was entered in the second step. These additional analyses revealed that educational differences in experiences with unplanned pregnancy and sexual victimization persisted after controlling for the variables that were included. These additional analyses confirmed the robustness of our findings. For experience of STIs, however, educational differences disappeared after controlling for the previously mentioned variables. Number of sexual partners appeared to be the only variable that correlated positively with STI experience.

Discussion

The present study investigated educational differences in sexual health in a representative sample of Dutch adolescents aged 12 to 25. This study adds to the existing literature by broadening the focus on the role of educational differences from experience of sexual intercourse and pregnancy to a broad range of sexual health aspects. Robust educational differences with regard to sexual health were found. Less educated adolescents not only had their first sexual intercourse at an earlier age; the same was true for their first experiences of several other forms of sexual behavior. Less educated adolescents also had more conservative attitudes, which makes the gap between their sexual attitudes and actual behavior larger for them than for their more educated peers. In addition, less educated adolescents had

relatively poor sexual health knowledge and abilities to refuse unwanted sex. Furthermore, they were not only more at risk of unintended pregnancy but also of STI and sexual victimization than their more educated peers. The majority of these educational differences persisted after controlling for a number of relevant variables. No educational differences were found with regard to positive sexual attitudes, sexual satisfaction, and sexual functioning.

Let us draw on the international literature to see what explanations are available for the associations between educational level and the behavioral, risk-related aspects of sexual health. As for (the risk of) unintended pregnancies, several explanations are suggested. The safeguarding hypothesis, for example, assumes that adolescents on an academic track do not want to spoil their future dreams (e.g., getting a college degree) by getting pregnant (Harden & Mendle, 2011). For less educated adolescents, parenthood can be a means to escape existing living conditions or school. In the absence of better future perspectives, parenthood can be appealing (Harden et al., 2006). It is possible that less educated adolescents may be living up to expectations in their environment, in their family, and/or at school by getting pregnant at an early age or not (Rudoe & Thomson, 2009). The life history evolution theory proposes that adolescents who expect their lives to be shorter will invest less in their educational career and start to reproduce at an earlier age. In a Canadian study, a higher life expectancy at birth was indeed found to be associated with an increase in the age of reproduction and educational attainment (Krupp, 2012).

The earlier age of different first sexual experiences in less educated youth could possibly be ascribed to their overall accelerated development. Due to their shorter educational period, these adolescents start several adult activities (e.g., getting a full-time job) earlier than their peers who are enrolled in education for a longer period. The normative process of becoming more distant from parents and closer to peers seems to take place at an earlier age (De Looze et al., 2012). Moreover, less educated adolescents expect transitions that are associated with adulthood at a younger age (De Looze, ter Bogt, & Vollebergh, 2013). The accelerated development also seems to take place at a biological level. There are indications that earlier pubertal maturation, for example, is related to academic outcomes, such as grade point average and dropping out (Cavanagh, Riegle-Crumb, & Crosnoe, 2007; Harden & Mendle, 2011). Furthermore, it has been suggested that brain development is delayed in preacademic students. The phase of cortical increase and brain plasticity lasts longer for preacademic students than for prevocational students, and these adolescents show patterns of brain activity that are similar to younger children (Van den Bos, Crone & Güroğlu, 2012). Such adult behaviors as sexual activity concur with this earlier maturation in general. Another interpretation is that less educated adolescents have less time to enjoy the freedom of adolescence because of their accelerated development. They, therefore, want to live life to the fullest before adulthood kicks in (De Looze et al., 2013).

The explanations suggested here, however, do not enhance our understanding of educational differences in aspects of sexual health other than early sexual intercourse and pregnancy. The link between educational attainment and several aspects of sexual health could be explained by confounding variables. According to problem behavior theory (Donovan et al., 1991), different types of "problem behavior" (such as low educational attainment and sexual risk behavior) tend to co-occur because they share risk and protective factors. One of these similarities can be found in the family: Sexually active adolescents who run more sexual risks come from the same kinds of families as less educated adolescents (Harden & Mendle, 2011). These families are, relatively often, characterized by a lower socioeconomic status and higher levels of maltreatment (Kirby & Lepore, 2007). Other background factors that educational level and sexual health have in common can be found in parenting styles. Higher levels of parental support and monitoring are positively related to several aspects of sexual health (De Graaf, Vanwesenbeeck, Woertman & Meeus, 2011) as well as to educational attainment (Spera, 2005). Shared background factors can also be genetic. Based on a twins study, Harden and Mendle (2011) attributed the link between educational level and age of first intercourse entirely to common genetic backgrounds. The absence of educational differences, with regard to positive sexual attitudes, sexual satisfaction, and sexual functioning, could suggest that the common background factors of education level and sexual risk behavior are unrelated to these other aspects of sexual health.

Furthermore, one could wonder whether young people enrolled in lower educational levels really do have the same access to education and services as young people enrolled in higher educational levels. Although some school-based sexuality education is obligatory in the Netherlands, high schools are fairly independent in determining the quality and quantity of sexuality education they provide. This also depends on the individual capacities of the teacher and on classroom context. It could be more difficult to talk about sexuality in prevocational classes than in preuniversity classes. A large proportion of the prevocational students have an immigrant background. Because of their cultural and religious backgrounds, these students tend to have more conservative beliefs with regard to sexuality. Teachers could be more reluctant to talk about certain topics in these classes (Van de Bongardt, 2012). In addition, it is possible that current sexuality education curricula are less appropriate for less educated students than for more educated students. A recent study of the effects

of the Dutch sex education curriculum Long Live Love showed stronger effects for general secondary or preuniversity students than for prevocational students. It is possible that sex education lessons need to be repeated more often in prevocational classes than in preuniversity classes to be effective (Van Keulen et al., 2014).

The present study had a number of limitations. First, the use of a cross-sectional design makes conclusions about causal relationships impossible. Less education could put adolescents at risk of unintended pregnancies, STIs, and sexual victimization, but an early sexual debut and negative sexual experiences could also impede adolescents in their schoolwork. As described, the link could also be ascribed to common backgrounds and thus be spurious. Schvaneveldt, Miller, Berry, and Lee (2001) found a bidirectional relationship between educational achievement and the age of first intercourse. The direction of the link between educational level and sexual health should be investigated more carefully in the future, preferably by studies using a longitudinal design.

A second limitation was that the design of a population study restricts the measurements that can be included. Our questionnaire had to cover a broad spectrum of sexual health concepts, and participants needed to be able to complete it within one class hour. In addition, the questionnaire had to fit the language level of students in the lowest educational levels and the experiences of both early and late adolescents. The requirements of comprehensiveness, brevity, and comprehensibility had consequences for the measurements. Participants could, for example, report only whether they had engaged in various sexual behaviors, not how often they had engaged in these behaviors. In addition, validated scales (such as the SES) had to be shortened and adapted to the language level of vocational students. The validity of the adapted versions of these scales is not clear. Because of the large age range in the sample, we were compelled to combine measures of current and completed education level. The dichotomous measure of education level appeared to be the only combination of these measures that was independent of age.

A third limitation was that we were not able to test the explanations for educational differences in sexual health that are suggested. Because of obvious space constraints in a survey that was meant to provide descriptive results on all sexual health aspects, explanatory factors have had less attention than would have been desirable. Numerous factors, such as social economic status, personality qualities, peer norms (school-wide, or among their closest friends), family climate, and physical factors, could explain the relationship between education level and sexual health. Several explanations for this link were suggested, but investigating the complex interplay among these factors in explaining educational differences in sexual health provides a challenge for future studies.

Despite these limitations, this research provides evidence that less educated adolescents are more involved in sexual behavior and more at risk of several adverse sexual health outcomes than their more educated peers. This study also offers several explanations for these findings. Although it is not clear what truly explains these differences, these findings show that sex education and services should pay specific and targeted attention to less educated young people and tailor their efforts specifically to the needs, characteristics, and realities of this group.

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