



# Sociodemographic Predictors of Sexual Communication and Sexual Communication as a Predictor of Sexual, Relationship, and Life Satisfaction in Denmark, Finland, France, Norway, Sweden, and the UK

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## Abstract

Sexual communication is associated with higher levels of sexual and relationship satisfaction. However, research suggests that many struggle with sexual communication. Using a cross-country convenience sample of 7,139 respondents from six European countries (Denmark, Finland, France, Norway, Sweden, and the UK), we investigated sociodemographic predictors of different facets of sexual communication and their associations with sexual, relationship, and life satisfaction. Data was collected in May and June 2022 through respondent panels, by Cint, a market research software platform. Participants received an email invitation to the study and completed an online self-report survey. We found that a large proportion did report difficulties with sexual communication or a wish to improve such communication. We also found that sociodemographic factors predicted each facet (self-disclosure, frequency of communication, and quality of communication) of sexual communication as a set, but that the strongest predictors were sexual frequency and dissatisfaction with the low frequency of sex. Lastly, each facet of sexual communication was associated with higher levels of sexual, relationship, and life satisfaction. Across results, we generally found little cross-country variation.

**Keywords** Sexual communication · Sexual frequency · Dissatisfaction with low frequency of sex · Sexual satisfaction · Relationship satisfaction · Life satisfaction

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## Introduction

Much research has established the positive associations between sexual communication and sexual satisfaction and relationship satisfaction. In general, those that communicate more about their sexual desires, preferences, fears, and fantasies report higher levels of sexual satisfaction and relationship satisfaction (e.g., Byers, 2005; Fallis et al., 2016; Mallory, 2022; Merwin & Rosen, 2020; Montesi et al., 2011), and these are associated with greater life satisfaction (e.g., Schmiedeberg et al., 2017; Woloski-Wruble et al., 2010).

These findings are in line with the Interpersonal Process Model of Intimacy, which posits that relational intimacy develops through a dynamic process between self-disclosure of personal information to a partner and the partner's validating, understanding, accepting, and caring response to the disclosure (Laurenceau et al., 1998, 2004; Reis, 2017; Reis & Shaver, 1988). Research suggests that this model also applies to sexual communication and sexual and relational satisfaction (Merwin & Rosen, 2020). A similar model has also been developed within the domain of sexual communication, specifically, in the form of the Interpersonal Exchange Model of Sexual Satisfaction (IEMSS; Byers & MacNeil, 2006; Lawrance & Byers, 1995; MacNeil & Byers, 2005, 2009), which posits that sexual self-disclosure is associated with greater sexual satisfaction through two potential functions. The first is the factual/instrumental function, in which disclosure of sexual preferences, desires, and fantasies lead to greater opportunity for partner responsiveness in an attempt to meet the other's sexual desires and needs, ultimately allowing partners to engage in more rewarding and satisfactory sexual interactions (MacNeil & Byers, 2005, 2009). The second is the emotional/expressive function, in which sexual disclosure increases couples' experiences of intimacy, which can then increase sexual and relational satisfaction (MacNeil & Byers, 2005, 2009). It is acknowledged that the building of intimacy, with its repercussions for sexual and relationship satisfaction, is a process that takes place over time, through numerous interactions (Laurenceau et al., 1998, 2004; Reis, 2017).

## Sexual Communication

Sexual communication is deemed a unique form of communication that is crucial to developing and maintaining satisfying sexual relationships (Brown & Weigel, 2018; Coffelt & Hess, 2014; Jones & Lucero Jones, 2022; Lucero Jones et al., 2022; Merwin & Rosen, 2020), even beyond general self-disclosure (Montesi et al., 2011). The ability to speak with one's partner about sex is seen as a relational skill that is separate from other types of relational communication (Jones, Robinson, & Seedall, 2018; MacNeil & Byers, 1997). There are several facets to sexual communication; a recent meta-analysis suggested that sexual communication may be encapsulated by sexual self-disclosure, as well as the frequency and quality of the sexual communication (Mallory, 2022). *Sexual self-disclosure* encompasses telling a partner about sexual preferences, desires, and fantasies (MacNeil & Byers, 2005, 2009), sexual values, past sexual experiences, and sexual attitudes (Coffelt & Hess, 2014). This may be indicated by a sense that it is easy to communicate with a partner; that is, it stands to

reason that people likely engage in more sexual self-disclosure, if they perceive that it is easy to talk about sex, fantasies, and desires with their partner. *Frequency of sexual communication* concerns how often couples discuss their sexual relationship, including their fantasies and desires. And the *quality of sexual communication* captures the satisfaction with the (open) communication with the partner about the sexual relationship, including fantasies and desires (Cupach & Comstock, 1990; Montesi et al., 2011). Those that are not satisfied with their sexual communication and perceive the quality of the communication to be poor may harbor a wish that they and their partner become better at communicating about their sex life, desires, and fantasies.

All three facets of sexual communication have been found to be associated with sexual and relationship satisfaction (Mallory, 2022). For instance, research has found that relationally satisfied couples communicated more often and more positively about sex (Jones & Lucero Jones, 2022). Greater frequency of sexual self-disclosure has been associated with greater relational satisfaction (Coffelt & Hess, 2014) and a recent meta-analysis demonstrated small to moderate positive associations between each facet of sexual communication and sexual and relationship satisfaction, with quality of communication demonstrating the strongest association (Mallory, 2022).

### **Sexual Frequency and Desired Sexual Frequency**

One of the most consistent predictors of both sexual communication and sexual satisfaction is sexual frequency (Heiman et al., 2011; McNulty et al., 2016; Schoenfeld et al., 2017; Valvano et al., 2018). That is, the more frequently people have sex, the more they communicate about their sexual preferences, desires, and fantasies, and the more satisfied they are with their sex lives. Moreover, greater frequency of sex has also been directly (Simms & Byers, 2009) and indirectly tied to greater relationship satisfaction by way of greater sexual communication and sexual satisfaction (e.g., McNulty et al., 2016; Roels & Janssen, 2020; Schoenfeld et al., 2017), or other relationship orientations (e.g., for those of greater attachment anxiety; Roels & Janssen, 2022). A recent study examining the efficacy of a sexual frequency intervention found that some men and women qualitatively reported that the increased frequency of intercourse lead to increased closeness, and sexual and relational satisfaction (De Santis et al., 2019).

However, research also suggests that a common motivator for sexual communication is dissatisfaction, including dissatisfaction with the frequency of sex (Lucero Jones et al., 2022). In fact, research suggests that sexual and relational dissatisfaction may be related to dissatisfaction with the frequency of sex (Willoughby et al., 2014; Willoughby & Vitas, 2012) and that those that were dissatisfied with the frequency of sex generally wanted sex more frequently (Smith et al., 2011; Willoughby et al., 2014).

### **Sociodemographic Factors Related to Sexual Communication**

Research suggests that people are not good at engaging in sexual communication with their partner (Byers, 2011; Coffelt & Hess, 2014; Lucero Jones et al., 2022; MacNeil & Byers, 2005, 2009). In one study, couples in long-term relationships

endorsed middling levels of communication in terms of sexual likes and dislikes (on a scale ranging from ‘telling nothing at all’ to ‘everything’; MacNeil & Byers, 2009). Relatedly, studies have found that participants understood 67% of their partners’ sexual likes, but only 22% of their partners’ sexual dislikes (MacNeil & Byers, 2005, 2009). This is in line with other research that suggests that married people more readily disclose about positive affect related to sexual interactions and sexual preferences than about negative affect related to sexual interactions and sexual challenges (e.g., lack of desire, faking of sexual pleasure) to their partner (Coffelt & Hess, 2014).

Some research has examined who are better at sexual communication, with the research mainly focusing on gender, age, relationship length, and relationship status. With respect to gender, research suggest that men and women did not differ in their disclosure of sexual likes, but that women communicated more about their sexual dislikes than did men (MacNeil & Byers, 2005, 2009). However, some research suggests that women are less open in their sexual communication with their partner (Theiss, 2011), while other research has not found gender differences in the degree to which men and women have open sexual communication with their partner (Coffelt & Hess, 2014; Holmberg & Blair, 2009; Montesi et al., 2011; Quina et al., 2000) or the degree to which they are satisfied with their sexual communication (Montesi et al., 2011). Regarding age, it has been argued that people have more sexual experience as they age and that this experience should make it easier to communicate about sexual preferences and desires with their partner (Mallory, 2022). Interestingly, among a sample of adolescent girls, age was positively associated with more frequent sexual health communication with a dating partner (Widman et al., 2014), while a study of Iranian married women found that age of the respondent, as well as age of their partner, was negatively associated with sexual communication (Alimoradi et al., 2022), and yet, other research finds no association between age and open sexual communication (Quina et al., 2000). With respect to relationship length, the findings are also mixed. Montesi and colleagues (2011) found no association between relationship length and open sexual communication or satisfaction with communication among a sample of young adult college students. This is consistent with research that found no association between relationship length and open sexual communication, using a sample of community women at risk for contracting HIV (Quina et al., 2000). However, other research using college women found that the women found sexual self-disclosure easier, the longer they had been with their romantic partner (Herold & Way, 1988).

Other socio-demographic variables may be related to sexual communication. These may include education, sexual orientation, cohabitation status, parental status, and sexual history (i.e., number of sexual partners). However, to our knowledge, little research has studied these factors. With respect to education, one study found that an academic background (versus a non-academic background) was associated with more sexual communication (Alimoradi et al., 2022), while another study did not find that higher levels of education was associated with more open sexual communication (Quina et al., 2000). Quina and colleagues (2000) also did not find that lifetime number of sexual partners was associated with sexual communication. And lastly, regarding sexual orientation, one study has found that there were no significant differences in sexual communication based on whether people were in same-sex

versus different-sex relationships (e.g., Holmberg & Blair, 2009). However, although informative, much of the abovementioned research has relied on smaller samples of couples and/or college student samples, and a larger body of research in the area does not report on differences in communication based on socio-demographic factors, despite collecting the information.

## Present Study

In sum, research generally supports that sexual communication is associated with greater sexual and relationship satisfaction, and that frequency of sex and dissatisfaction with low frequency of sex may be important factors driving sexual communication, as well as the level of sexual and relational satisfaction. In the present study, we seek to expand on the extant literature in the following ways:

- 1) While sexual and relational satisfaction represent two key outcomes, there is a dearth of research examining associations between sexual communication and life satisfaction, a related and important outcome, as it is argued that life satisfaction is the product of the accumulation of satisfaction across different domains, including sex and relationship life (Cummins, 1996). Thus, we will examine the association between life satisfaction and sexual communication.
- 2) Additionally, much of the extant research focuses on openness in sexual communication (i.e., sexual self-disclosure) or satisfaction with communication. A recent meta-analysis (Mallory, 2022) argued that sexual communication can be captured by three facets: (1) self-disclosure, (2) frequency, and (3) quality. Given that each facet of sexual communication assesses different aspects of sexual communication and related dynamics, we seek to examine whether the facets are differentially associated with sexual, relationship, and life satisfaction.
- 3) Moreover, even though research suggests that people are generally poor sexual communicators, there is a lack of consensus in the research about which sociodemographic factors describe those that are better or worse at sexual communication. Thus, we seek to examine a broader set of sociodemographic as predictors of sexual communication.
- 4) Much of the cited research has focused on small samples of white college students or married couples. Thus, we will examine our research questions in a larger sample of participants, collected across 6 European countries.

Thus, we developed the following research questions:

**RQ1:** Are socio-demographic factors associated with sexual communication, and if so, in what way?

**RQ2:** Are frequency of sex and dissatisfaction with low sexual frequency associated with sexual communication, and if so, in what way?

**RQ3:** Is sexual communication associated with sexual, relationship, and life satisfaction beyond socio-demographic factors, frequency of sex, and dissatisfaction with frequency of sex?

## Methods

### Procedure and Participants

The data was collected by Cint, a globally leading market research software platform, on behalf of Radius, a Danish market research firm, and Sinful ApS, an online international sex toy company based in Denmark. Sinful commissioned Radius to develop the survey and Radius commissioned Cint to collect the data. Cint collaborates with several opt-in respondent panels that recruit participants for surveys. Cint's panel and sample source partners include market research agencies, media owners, (digital and traditional) publishers, non-profits, and companies with access to large-scale web traffic. Cint's panel partners source participants/panelists through a variety of methods to help build diverse and engaged panel communities. These include email recruitment through a panel owner's newsletters, specific invitations sent to a panel owner's database, email recruitment using a permission-based database, telephone-based recruitment, face-to-face (F2F) based recruitment. Please see the supplementary materials for additional information, including information about response rates.

The data was collected in six countries (Denmark, Sweden, Norway, Finland, France, and the UK) simultaneously, during the period from May 17, 2022, to June 8, 2022; participation was done online. Data was collected from these countries, as they represented countries in which Sinful had a market interest or share. The invited sample was selected based on demographics quotas; specifically, interlocked quotas were set up to ensure that the invited sample reflected the population of each country, in terms of gender, age, and region of country. Invited participants received an email invitation that used the "brand" of the specific panel of which they are a member. In the email, the participants were informed about the details for the survey, including where to access the full disclosure of incentive terms and conditions applying to the project, the opportunity to unsubscribe or opt-out, and the privacy policy or statement. Furthermore, participants were presented with a welcome statement in the survey, explaining the topic of the survey and that they had the option to not answer questions that they did not feel comfortable responding to. The funder of the survey (Sinful ApS) was not mentioned to the participants, as this could have affected their answers. Participants were compensated for survey participation according to the policy of the panel of which they were a member; typically, participants receive points that can be converted to products or services over time.

The researchers at the University of Copenhagen received access to the anonymous data after its collection. The Danish data protections agency provided approval for data processing by the researchers at the University of Copenhagen. In total, 13,173 clicked on the survey link and 12,071 people completed the survey, across the six countries; in the supplementary materials, we provide information about

response rates. The data was cleaned prior to being transferred to Sinful ApS, who subsequently sent to the researchers at the University of Copenhagen. The original cleaning process concerned removal of respondents that were “speeders” and who “straightlined” through the survey; this step was completed by people at Radius. The data file received by the University of Copenhagen contained 12,044 respondents. However, we elected to focus on those between the ages of 18 and 80<sup>1</sup>, who indicated being in romantic relationships; subsequently, our study sample (for the current manuscript) focuses on the responses from 7,139 people.

Table 1 provides a breakdown of the demographic make-up of the sample by country, as well as overall. In general, the sample had a mean age of 44 years, and roughly half the sample was female and of shorter education. The majority of participants reported identifying as heterosexual and living with their partner. Most of the sample reported having children and that they were still living at home. Only a minority (1.8%) reported not having ever had a sexual partner (see Table 1)<sup>2</sup>.

## Measures

The questions in the survey were developed specifically for this study, but some questions were inspired by previous research in the field, specifically, the large Danish Population survey study on sexuality conducted in 2018-19 called “Project Sexus” (see <https://www.projektsexus.dk/>). The survey, called the Sindex, was developed by a working group with representatives from Sinful ApS (their Head of Brand Management, Marketing Director, Art Director, and a Co-founder), and representatives from Radius (a Danish market research firm). The representatives from Radius wrote the first draft of the items, and these were then edited in working group meetings with all representatives. Items were written in English and then translated to the other languages by members of staff at Sinful ApS (Norwegian and French) and by freelance translators (Danish [but proofread by a native speaking employee at Sinful ApS], Finnish, and Swedish). Back-translation techniques were not employed. The data has also been used by Hald et al. (2024) and Pavan, Øverup, and Hald (2024) to answer other research questions, with analyses conducted on different sub-samples of this dataset.

**Gender** was assessed with an item that asked participants to indicate whether they identified as “man”, “woman”, or “other”. For descriptive purposes, we retained all response options; for analytic purposes, we recoded the responses, such that those that responded “woman” were coded as 1, those that responded “men” were coded as 0, and those that responded “other” were coded as missing (0.38% of the study sample).

**Age** was assessed with an item that asked participants to indicate their age in years with a whole number.

<sup>1</sup> We elected to cap the age at 80 years, in part because we observed what we judged to be ‘unbelievable’ values. For instance, 29 people reported being 99 or 100 years old, accounting for 0.24% of the data (those reporting an age between 81 and 98 accounted for only 0.08% of the data). In total, by capping the age at 80, we removed only 38 participants, corresponding to 0.32% of the data.

<sup>2</sup> We elected to retain those with 0 lifetime sexual partners, because they may still communicate about sex with their partner.

**Table 1** Demographics breakdown (in percent) of the sample, by country and for the full sample

	DK	FI	FR	NO	SW	UK	Overall Sample
	<i>N</i> =1162	<i>N</i> =1171	<i>N</i> =1202	<i>N</i> =1183	<i>N</i> =1106	<i>N</i> =1315	<i>N</i> =7139
Age (M(SD))	45.66 (14.45)	44.61 (14.40)	44.73 (13.84)	43.86 (14.43)	43.77 (13.82)	44.08 (14.30)	44.45 (14.22)
Gender							
Men	48.62	46.46	43.59	49.87	44.85	48.21	46.97
Women	50.86	52.78	56.41	49.62	54.70	51.71	52.65
Other	0.52	0.77	0.00	0.51	0.45	0.08	0.38
Educational level							
Short	48.36	56.19	54.49	44.46	45.48	55.13	50.83
Medium	38.98	27.41	34.03	44.46	42.13	34.45	36.81
Long	12.65	16.40	11.48	11.07	12.39	10.42	12.35
Sexual orientation							
Heterosexual	81.41	83.69	83.28	78.53	76.22	85.55	81.58
Homosexual	4.22	3.50	4.08	4.90	4.61	4.26	4.26
Bisexual	6.37	7.51	5.57	9.47	8.14	6.77	7.28
Asexual	1.12	1.02	1.41	1.10	1.99	0.46	1.16
Other	1.81	1.54	1.08	1.52	2.44	0.53	1.46
N/A	5.08	2.73	4.58	4.48	6.60	2.43	4.26
Cohabitation status							
Not living together	15.15	18.19	18.05	17.16	19.35	12.40	16.61
Living together	84.85	81.81	81.95	82.84	80.65	87.60	83.39
Open Relationship							
No	82.19	77.20	63.48	72.87	70.80	85.55	75.53
Yes	15.40	19.30	33.44	23.25	25.23	13.23	21.50
N/A	2.41	3.50	3.08	3.89	3.98	1.22	2.97
Relationship length							
Less than one year	4.65	4.01	4.16	4.65	5.52	3.12	4.31
1–3 years	11.79	13.75	13.23	14.54	16.82	11.63	13.56
4–6 years	14.37	12.04	12.73	14.03	14.38	13.92	13.57
7–9 years	10.24	11.02	9.57	10.14	9.76	11.10	10.32
10–12 years	10.50	10.67	9.82	11.92	8.77	11.79	10.62
13–15 years	6.20	8.11	8.57	8.11	7.23	7.45	7.62
16–18 years	4.91	6.23	5.99	6.09	5.79	7.00	6.02
19–20 years	3.53	3.50	4.16	4.40	3.89	4.03	3.92
More than 20 years	32.44	29.04	30.20	24.43	25.50	28.82	28.44
N/A	1.38	1.62	1.58	1.69	2.35	1.14	1.61
Parental Status							
Yes, they still live at home	41.39	36.21	51.33	43.03	46.20	53.00	45.37
Yes, but they have moved out/ grown up	33.30	32.45	28.45	27.81	29.20	22.59	28.83
No	25.30	31.34	20.22	29.16	24.59	24.41	25.80
No. of sexual partners							



**Table 1** (continued)

	DK	FI	FR	NO	SW	UK	Overall Sample
	<i>N</i> =1162	<i>N</i> =1171	<i>N</i> =1202	<i>N</i> =1183	<i>N</i> =1106	<i>N</i> =1315	<i>N</i> =7139
0	1.03	0.43	1.83	1.61	1.72	0.53	1.18
1–5	34.51	37.15	45.76	33.64	30.56	39.85	37.06
6–10	20.05	19.21	19.47	19.19	19.98	21.44	19.92
11–15	13.43	9.74	9.73	11.50	11.48	11.03	11.14
16–20	6.71	6.58	6.07	7.10	7.05	8.14	6.96
21–25	3.87	4.27	2.66	5.41	4.70	3.35	4.02
26–30	3.36	3.16	2.41	3.30	4.52	3.12	3.29
31–40	2.75	2.48	1.58	2.70	3.07	2.74	2.55
40–50	1.72	1.62	0.92	1.52	1.81	1.67	1.54
More than 50	4.73	7.77	3.83	5.49	5.15	3.27	5.00
N/A	7.83	7.60	5.74	8.54	9.95	4.87	7.34

*Note* N/A=do not know/want to answer. Relationship length was only assessed for those reporting that they were in a relationship. All figures are in percent, except for age, for which we provide mean and standard deviation

**Educational level** was assessed with a single question that asked participants what their highest level of completed education was. Response options were country-specific and were therefore recoded to represent “short education” (e.g., primary school, high school, business high school, vocational education; coded as 0), “medium-length education” (e.g., medium-cycle tertiary education, bachelor’s degree; coded as 1) and “long educations” (e.g., Master’s and PhD degrees; coded as 2). We elected to categorize the variable to allow for comparisons across the different countries.

**Sexual orientation** was assessed with an item that asked participants to indicate their sexual orientation, with the following response options: “Heterosexual”, “Homosexual”, “Bisexual”, “Asexual”, “Other”, and “I do not know / I do not want to answer.” For descriptive purposes, we retained all response options; for analytic purposes, we recoded the responses, such that those that responded “other” or “I do not know / I do not want to answer” were coded as missing (5.72% of the study sample).

**Cohabitation status** was assessed with a single item that asked about current relationship status, with the following response options: “Single (not dating)”, “Single (dating)”, “In a relationship (not living together)”, “In a relationship (living together)”, “Other”, and “I do not know / I do not want to answer.” Given our focus on sexual communication within romantic relationships, people who endorsed “Single (not dating)”, “Single (dating)”, “other” or “I do not know / I do not want to answer” were removed from the sample (40.23% of the original 12,044 respondents). Thus, the resultant response options differentiated cohabitation status as “not living together” and “living together”.

**Open relationship** was assessed with a single item that asked participants whether they were in an open relationship, with the following response option: “Yes”, “No”, and “I do not know / I do not want to answer”. For descriptive purposes, we retained all response options; for analytic purposes, we recoded the responses, such that those

**Table 2** Frequencies (in Percent) of Frequency of Sexual Communication, Reasons for Sexual Communication, Difficulty of Sexual Communication, and Reasons for Difficulty of Sexual Communication, by Country

	DK	FI	FR	NO	SW	UK	Chi-square	Overall Sample
	<i>N</i> =1162	<i>N</i> =1171	<i>N</i> =1202	<i>N</i> =1183	<i>N</i> =1106	<i>N</i> =1315	<i>p</i> -value	<i>N</i> =7139
How easy or difficult do you generally think it is to talk about sex, fantasies, and desires with your partner?							<i>p</i> <.001	
N/A	5.68	4.01	4.33	7.02	6.69	4.03		5.25
Very Difficult	9.90	7.69	4.66	7.95	5.61	10.49		7.77
Quite Difficult	14.11	14.43	9.98	14.96	13.29	13.99		13.46
Neither	25.82	22.72	20.05	23.08	21.43	18.10		21.78
Quite Easy	25.13	32.96	33.94	27.81	29.66	29.66		29.88
Very Easy	19.36	18.19	27.04	19.19	23.33	23.73		21.85
	DK	FI	FR	NO	SW	UK	Chi-square	Overall Sample
Reasons for difficulty	<i>N</i> =279	<i>N</i> =259	<i>N</i> =176	<i>N</i> =271	<i>N</i> =209	<i>N</i> =322	<i>p</i> -value	<i>N</i> =1516
I find it awkward	46.24	45.56	16.48	39.48	35.41	54.35	<i>p</i> <.001	41.69
My partner finds it awkward	22.58	23.94	26.70	19.56	22.01	34.78	<i>p</i> <.001	25.26
I am nervous about how my partner will react	30.47	23.94	22.73	23.62	24.88	35.40	<i>p</i> =.003	27.51
I am nervous about how I will react	11.11	8.49	12.50	8.12	11.96	11.80	<i>p</i> =.462	10.55
Because we never talk about sex	34.77	30.12	28.98	33.58	31.58	35.71	<i>p</i> =.556	32.85
Because we have bad experiences talking about sex	10.75	8.49	6.25	15.13	12.44	4.97	<i>p</i> <.001	9.63
Because it is difficult to find the right occasion	25.81	22.39	27.84	25.46	23.44	20.19	<i>p</i> =.390	23.88
Other	4.30	5.41	5.11	5.17	4.78	3.42	<i>p</i> =.879	4.62
N/A	4.30	6.95	5.11	4.06	6.22	2.17	<i>p</i> =.104	4.62
	DK	FI	FR	NO	SW	UK	Chi-square	Overall Sample
	<i>N</i> =1162	<i>N</i> =1171	<i>N</i> =1202	<i>N</i> =1183	<i>N</i> =1106	<i>N</i> =1315	<i>p</i> -value	<i>N</i> =7139
How often do you and your partner talk about sex, desires, and fantasies?							<i>p</i> <.001	
N/A	11.53	8.37	7.90	11.07	11.93	5.78		9.33
Never	14.97	8.45	10.73	11.58	10.58	18.56		12.61
Less than once a month	20.05	27.16	11.73	21.89	19.26	21.14		20.20
Once a month	5.85	5.72	3.99	4.90	6.69	5.78		5.48
A few times a month	17.64	17.34	21.05	18.68	14.83	18.63		18.08
Once a week	10.41	13.66	12.56	17.33	11.12	11.71		12.80
Several times a week	13.68	15.20	22.80	7.52	17.72	13.38		15.02

**Table 2** (continued)

	DK	FI	FR	NO	SW	UK	Chi-square	Overall
	<i>N</i> =1162	<i>N</i> =1171	<i>N</i> =1202	<i>N</i> =1183	<i>N</i> =1106	<i>N</i> =1315	<i>p</i> -value	Sample
How often do you and your partner talk about sex, desires, and fantasies?							<i>p</i> <.001	
Daily	5.85	4.10	9.23	7.02	7.87	5.02		6.49
	DK	FI	FR	NO	SW	UK	Chi-square	Overall
	<i>N</i> =854	<i>N</i> =974	<i>N</i> =978	<i>N</i> =915	<i>N</i> =857	<i>N</i> =995	<i>p</i> -value	Sample
Reasons for sexual communication								
When there is something new, we want to try	25.06	31.52	30.37	26.23	28.82	28.34	<i>p</i> =.020	28.48
When there is something, we wish to do differently	31.50	27.62	32.72	28.42	29.40	30.15	<i>p</i> =.143	29.97
When we have just had sex	31.38	34.09	36.20	36.39	34.19	42.31	<i>p</i> <.001	35.91
When one of us thinks about sex	44.38	49.90	43.87	48.74	48.07	51.26	<i>P</i> =.005	47.77
When we have read or watched TV about sex	17.10	26.80	24.23	21.53	20.65	24.02	<i>p</i> <.001	22.56
When we are on vacation	16.04	18.07	18.71	20.55	21.24	20.80	<i>p</i> <.044	19.25
When we are on dates	9.60	9.24	19.02	13.55	14.12	20.40	<i>p</i> <.001	14.46
Other	8.55	9.14	4.50	6.99	6.88	3.52	<i>p</i> <.001	6.53
N/A	6.79	5.44	4.19	6.78	7.23	5.63	<i>p</i> =.057	5.96
	DK	FI	FR	NO	SW	UK	Chi-square	Overall
	<i>N</i> =1162	<i>N</i> =1171	<i>N</i> =1202	<i>N</i> =1183	<i>N</i> =1106	<i>N</i> =1315	<i>p</i> -value	Sample
How much do you agree or disagree with the following statement: I dream about my partner and I becoming better at communicating about sex, desires, and fantasies							<i>p</i> <.001	
N/A	7.31	5.72	5.07	7.61	7.78	4.56		6.29
Strongly disagree	6.80	4.87	8.99	6.26	6.33	8.21		6.95
Disagree	11.79	10.59	11.31	10.65	13.20	16.05		12.33
Neither	32.79	32.88	25.04	34.57	29.11	34.14		31.47
Agree	26.76	32.54	30.62	26.88	28.84	27.68		28.87
Strongly agree	14.54	13.41	18.97	14.03	14.74	9.35		14.09

Note N/A = Do not know/want to answer

that responded “other” or “I do not know / I do not want to answer” were coded as missing (2.97% of the study sample).

**Length of the relationship** was assessed with a single item that asked how long they had been in their current relationship, with the following response options: “Less than one year”, “1–3 years”, “4–6 years”, “7–9 years”, “10–12 years”, “13–15 years”, “16–18 years”, “19–20 years”, “More than 20 years”, and “I do not know / I

do not want to answer". For descriptive purposes, we retained all response options; for analytic purposes, we recoded the responses, such that those that responded "I do not know / I do not want to answer" were coded as missing (1.61% of the study sample). Higher scores indicate greater length of the relationship.

**Parental status** was assessed with a single item asking if the participant had any children, with the following response options: "Yes, they still live at home", "Yes, but they have moved out/grown up", and "No".

**Number of lifetime sexual partners** was assessed with a single item that asked how many sexual partners the participant would estimate that they have had in total in their life, with the following response options: "0", "1–5", "6–10", "11–15", "16–20", "21–25", "26–30", "31–40", "40–50", "More than 50", and "I do not know / I do not want to answer." Responses were binned for ease of responding, as it was assumed that participants may not easily recall their exact number of partners. We note a small error with the response options (i.e., that there is an overlap between the response options "31–40" and "40–50"). However, given the small percentage of endorsement of those response categories (see Table 1), we do not believe that the error has notable implications for the results. For descriptive purposes, we retained all response options; for analytic purposes, we recoded the responses, such that those that responded "I do not know / I do not want to answer" were coded as missing (7.34% of the study sample). Higher scores indicate a higher number of lifetime sexual partners.

**Frequency of sex** was assessed by a single item that asked participants how often, on average, they had had sex in the past year. The response options were "One to several times a day", "3–6 times a week", "1–2 times a week", "1–3 times a month", "3–5 times every 6 months", "Less than 6 times in the past year", "I have not had sex at all within the past year", and "I do not know / I do not want to answer.". Those that responded that they did not know or want to answer were coded as missing (7.52% of the study sample). Higher scores indicate greater frequency of sex.

**Dissatisfaction with low frequency of sex** was assessed with a single item that asked participants whether they would like to have sex with their partner more often than they currently had. Response options were "Yes", "No", and "I do not know / I do not want to answer". Those that responded that they did not know or want to answer were coded as missing (12.41% of the study sample). We coded the responses, such that those that responded "yes" were coded as 1, and those that responded "no" were coded as 0.

**Sexual Communication** was assessed by the following three items: *Sexual self-disclosure* was assessed by a single item that asked participants how easy or difficult they thought it was to talk about sex, fantasies, and desires with their partner. Participants responded with the following response options: "Very easy", "Quite easy", "Neither easy nor difficult", "Quite difficult", "Very difficult", and "I do not know / I do not want to answer." Those that responded that they did not know or want to answer were coded as missing (5.25% of the study sample). The item was coded such that higher scored indicated greater ease of sexual self-disclosure.

Those who indicated that they find it difficult to talk about sex (response options "quite difficult" and "very difficult" from the above question) were presented with a question that asked why they find it difficult to talk to their partner about sex, fanta-

sies, and desires. They were able to choose several responses from the following: “I find it awkward”, “My partner finds it awkward”, “I am nervous about how my partner will react”, “I am nervous about how I will react”, “Because we never talk about sex”, “Because we have bad experiences talking about sex”, “Because it is difficult to find the right occasion”, “Other”, and “I do not know / I do not want to answer”. The response options represented some of the reasons found in previous research, including worry about own and partner’s perceptions and reactions (Anderson et al., 2011; Faulkner & Mansfield, 2002; Merwin & Rosen, 2020; Metts & Cupach, 1989), and difficulties in getting the timing wrong (Faulkner & Lannutti, 2010). This item is included for descriptive purposes.

*Frequency of sexual communication* was assessed by a single item that asked participants how often they talked about sex, fantasies, and desires with their partner. Participants responded with the following response options: “Daily”, “Several times a week”, “Once a week”, “A couple of times a month”, “Once a month”, “Less than once a month”, “We never talk about sex”, and “I do not know / I do not want to answer”. Those that responded that they did not know or want to answer were coded as missing (9.33% of the study sample). The item was coded such that higher scores indicated greater frequency of sexual communication.

Those that responded that they communicated “Daily”, “Several times a week”, “Once a week”, “A couple of times a month”, “Once a month”, or “Less than once a month” were asked to indicate the reasons for sexual communication. This was assessed with a single item that asked participants in which contexts they talk with their partner about sex. Participants were able to endorse multiple answers from the following: “When there is something new, we want to try”, “When there is something, we wish to do differently”, “When we have just had sex”, “When one of us thinks about sex”, “When we have read or watched TV about sex”, “When we are on vacation”, “When we are on dates”, “Other”, and “I do not know / I do not want to answer”. The response options represented some of the contexts found in previous research, such as when wanting to try new things during sex or when watching TV with sexual content (Faulkner & Lannutti, 2010; Faulkner & Mansfield, 2002). This item is used for descriptive purposes only.

*Quality of the sexual communication* was assessed by a single item that asked participants how much they agreed with the statement “I dream about my partner and I becoming better at communicating about sex, desires, and fantasies.” Participants responded with the following response options: “Strongly agree”, “Agree”, “Neither agree nor disagree”, “Disagree”, “Strongly disagree”, and “I do not know / I do not want to answer.” Those that responded that they did not know or want to answer were coded as missing (6.29% of the study sample). The item was coded such that higher scores indicate stronger agreement with wishing for better communication (that is, higher scores indicate poorer quality of communication).

**Sexual Satisfaction** is generally conceptualized as the subjective appraisal of the quality of one’s sexual relationship(s) or experiences (Pascoal et al., 2014). In this study, it was assessed with a single item that asked participants to indicate how satisfied they are with their current sex life in general, with the following response options: “Very satisfied”, “Mostly satisfied”, “Neither satisfied nor dissatisfied”, “Mostly dissatisfied”, “Very dissatisfied”, and “I do not know / I do not want to answer.” Those

that responded that they did not know or want to answer were coded as missing (3.1% of the study sample). Higher scores indicate greater sexual satisfaction.

**Relationship satisfaction** is generally conceptualized as the subjective appraisal of the quality of one's romantic relationship (Freihart et al., 2023). In this study, it was assessed with a single item that asked participants to indicate how satisfied they are overall with their current relationship, with the following response options: "Extremely satisfied", "Satisfied", "Neither satisfied nor dissatisfied", "Dissatisfied", "Extremely dissatisfied", and "I do not know / I do not want to answer." Those that responded that they did not know or want to answer were coded as missing (2.1% of the study sample). Higher scores indicate greater relationship satisfaction.

**Life satisfaction** is generally conceptualized as the subjective appraisal of the quality of quality of life as a whole (Diener et al., 2002). In this study, it was assessed with a single item that asked participants to indicate how satisfied they are with their life in general at the moment, with the following response options: "Very satisfied", "Satisfied", "Neither satisfied nor dissatisfied", "Dissatisfied", "Very dissatisfied", and "I do not know / I do now want to answer." Those that responded that they did not know or want to answer were coded as missing (1.7% of the study sample). Higher scores indicate greater life satisfaction.

## Plan of Analysis

All analyses were performed in SAS, version 9.4, using list wise deletion; the raw data was used and no weights were applied. We began by conducting a series of chi-square analyses, to see if there were country differences in the three facets of sexual communication; we also examined whether the reasons for sexual communications and reasons for difficulty communicating about sex differed by country.

These analyses were followed by a series of ordinary least squares regressions which sought to examine whether socio-demographics factors (RQ1) and sex frequency variables (RQ2) predicted sexual communication. We conducted the regressions in two steps: in step 1, socio-demographics predictors (gender, age, educational level, parent status, sexual orientation, cohabitation status, relationship status (open or not), relationship length, number of sexual partners, and country of assessment) were included as predictors, and in step 2, we added frequency of sex and dissatisfaction with low frequency of sex as predictors.

And then lastly, we conducted another series of ordinary least squares regressions to examine whether sexual communication predicted satisfaction variables (sexual, relationship, and life satisfaction; RQ3), again employing a stepwise approach. In step 1, the sociodemographic predictors were entered, and in step 2, we added the two sex frequency variables. In step 3, we then added the three facets of sexual communication as predictors, and finally, in step 4, we entered interactions between country of assessment and the three facets of sexual communication.

In all regression analyses, age, lifetime number of sexual partners, and relationship length were entered as continuous variables, while gender, sexual orientation, educational level, parent status, cohabitation status, relationship status, and country of assessment were entered as categorical predictors. Initial assessment of significance was done via Type 3 tests of effect (a type of variable-specific omnibus test,

similar to Type 3 sums of squares in ANOVA), and we provide effect size estimates in the form of  $\eta^2$ . In the case of statistically significant categorical variables, we conducted follow-up tests to examine between which categories there were significant differences. This was accomplished using the LSMEANS statement in SAS; as there were numerous comparisons made, we elected to employ a Tukey adjustment to the  $p$ -values for each follow-up comparison.

## Results

### Sexual Communication

Table 2 illustrates country differences in responses to questions about the three facets of sexual communication, as well as the reasons related to sexual communication. As seen from the table, although many between-country similarities emerged, there were also some noticeable differences. For instance, it appears that participants from France found it notably easier to talk about sex, fantasies, and desires with their partner (higher proportion of respondents choosing “quite easy” and “very easy”; 60.98%), as compared with those from other countries (ranged from 44.49 – 53.39% for the other countries), and did so relatively more frequently (e.g., 22.80% endorsed “several times a week”, compared to 7.52-17.72% for the other countries). Interestingly, of those from France that found sexual communication difficult, it was not because it was awkward (only 16.48% endorsed this response option), though that was a commonly endorsed reason across the other countries (endorsement ranged from 35.41 to 54.35%). For participants from the UK, concerns about the partner also dominated (i.e., “my partner finds it awkward” [34.78%] and “I am nervous about how my partner will react” [35.40%]) – endorsement of those response options was lower for all other countries (see Table 2).

Correlations among the study variables can be found in Table 3, along with means and standard deviations. Among others, these correlations suggested that sexual self-disclosure and frequency of sexual communication was moderately correlated, suggesting that frequent communication may provide opportunities for self-disclosure, though they do not represent redundant variables. Similarly, the three satisfaction variables (sexual, relationship, and life satisfaction) also represent distinct but related concepts ( $r_s=0.473-0.603$ ). Interestingly, quality of sexual communication only weakly correlated with sexual self-disclosure ( $r=.053$ ) and frequency of sexual communication ( $r=.187$ ).

### Predictors of Sexual Communication

A series of ordinary least squares regressions were conducted to examine whether sociodemographic factors predicted sexual communication (RQ1). The pattern of findings was consistent across the three facets of sexual communication. Table 4 provides the Type 3 analysis of effects and Table 5 provides the follow-up tests for each of the categorical predictors, with  $p$ -values based on a Tukey-adjustment. The sociodemographic predictors (Step 1 in Table 3) accounted for some amount of vari-

Table 3 Correlations between all study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	M	SD
1 Age	--														44.448	14.224
2 Gender	-0.096***	--													0.529	0.499
3 Education	-0.043***	-0.041***	--												0.615	0.696
4 Cohabitation	0.176***	0.000	0.031**	--											0.834	0.372
5 Open Relationship	-0.106***	-0.178***	0.045***	-0.100***	--										1.222	0.415
6 Relationship length	0.662***	0.002	-0.048***	0.337***	-0.150***	--									5.506	2.766
7 No. of sex partners	0.093***	-0.079***	0.004	-0.067***	-0.013	-0.068***	--								2.732	2.286
8 Freq. of sex	-0.325***	-0.002	0.022	-0.083***	0.155***	-0.327***	0.021	--							4.384	1.543
9 Dissatisfaction with low frequency of sex	-0.141***	-0.150***	0.019	0.019	0.052***	-0.118***	0.025*	-0.106***	--						1.590	0.492
10 Sex self-disclosure	-0.175***	-0.042***	0.001	-0.053***	0.124***	-0.236***	0.055***	0.459***	-0.035**	--					3.470	1.219
11 Freq. of sex comm.	-0.339***	-0.101***	0.042***	-0.159***	0.282***	-0.383***	0.008	0.565***	0.035**	0.607***	--				3.764	1.896
12 Quality of sex comm.	-0.160***	-0.129***	0.001	-0.012	0.129***	-0.161***	-0.002	0.120***	0.338***	0.053***	0.187***	--			3.329	1.109
13 Sexual satisfaction	-0.205***	0.035**	0.006	-0.070***	0.127***	-0.220***	-0.059***	0.589***	-0.231***	0.468***	0.491***	-0.032**	--		3.796	1.096
14 Life satisfaction	-0.027*	0.021	0.038**	0.072***	0.015	-0.055***	-0.045***	0.313***	-0.100***	0.355***	0.264***	0.017	0.473***	--	3.919	0.992
15 Relationship satisfaction	-0.127***	0.032**	0.001	0.025*	-0.007	-0.129***	-0.056***	0.381***	-0.113***	0.394***	0.329***	-0.021	0.603***	0.553***	4.117	0.890

Note Sexual orientation and parental status were not included in the table, as these are categorical variables.  $N = 6108$  to 7139, depending on missing data



ance in the three facets of sexual communication ( $\eta^2=0.08-0.24$ ). Results suggested that men reported greater sexual self-disclosure ( $M=3.40$ ), more frequent sexual communication ( $M=4.241$ ), but poorer quality of communication ( $M=3.302$ ) than women ( $M_{\text{self-disclosure}} = 3.27$ ;  $M_{\text{freq}} = 3.875$ ;  $M_{\text{qual}} = 3.022$ ). Higher age was associated with less sexual self-disclosure ( $b = -0.006$ ), less frequent sexual communication ( $b = -0.026$ ), but better quality of communication ( $b = -0.008$ ). Educational level was not associated with sexual self-disclosure nor with the frequency of sexual communication. Although there was a significant main effect of education for quality of sexual communication, none of the follow-up pairwise comparisons were statistically significant. Parental status was associated with all three facets of sexual communication, and the follow-up tests suggested that those that did not have children reported less sexual self-disclosure ( $M=3.171$ ) and less frequent sexual communication ( $M=3.819$ ) than those with children at home ( $M_{\text{self-disclosure}} = 3.315$ ;  $M_{\text{freq}} = 4.139$ ) and those with children not at home ( $M_{\text{self-disclosure}} = 3.337$ ;  $M_{\text{freq}} = 4.216$ ). Moreover, those that had children at home endorsed poorer quality of sexual communication ( $M=3.251$ ) than did those without children ( $M=3.131$ ) and those with children not at home ( $M=3.105$ ).

Sexual orientation was associated with all three facets of sexual communication such that those self-identified as a-sexual endorse less sexual self-disclosure ( $M=2.6629$ ), less frequent sexual communication ( $M=3.572$ ), but better quality of sexual communication ( $M=2.613$ ) than those who self-identified as bisexual ( $M_{\text{self-disclosure}} = 3.458$ ;  $M_{\text{freq}} = 4.324$ ;  $M_{\text{quality}} = 3.309$ ) and homosexual ( $M_{\text{self-disclosure}} = 3.491$ ;  $M_{\text{freq}} = 4.311$ ;  $M_{\text{quality}} = 3.367$ ), and less self-disclosure but better quality than those who self-identify as heterosexual ( $M_{\text{self-disclosure}} = 3.520$ ;  $M_{\text{quality}} = 3.359$ ). There were no significant differences between people identifying as bi-, homo-, or heterosexual in terms of sexual self-disclosure or quality of sexual communication, but those that self-identified as heterosexual reported less frequent sexual communication ( $M=4.026$ ) than those who self-identify as bisexual and homosexual.

Cohabitation status was not associated with sexual self-disclosure, but those that did not cohabit reported more frequent sexual communication ( $M=4.166$ ) and better quality of communication ( $M=3.104$ ) than those who cohabit with their partner ( $M_{\text{freq}} = 3.951$ ;  $M_{\text{quality}} = 3.221$ ). Those that were in open relationships indicated greater sexual self-disclosure ( $M=3.392$ ), more frequent sexual communication ( $M=4.468$ ), but poorer quality of sexual communication ( $M=3.278$ ) than those who were not in open relationships ( $M_{\text{self-disclosure}} = 3.158$ ;  $M_{\text{freq}} = 3.648$ ;  $M_{\text{quality}} = 3.047$ ). Greater relationship length was associated with less sexual self-disclosure ( $b = -0.094$ ), less frequent sexual communication ( $b = -0.163$ ), but better quality of sexual communication ( $b = -0.036$ ). A greater number of lifetime sexual partners was associated with more sexual self-disclosure ( $b = -0.031$ ) but was not associated with frequency of sexual communication ( $b=0.008$ ), nor with quality of sexual communication ( $b = -0.002$ ).

Lastly, there were main effects for country for all three facets of communication. Those from France endorsed greater sexual self-disclosure ( $M=3.530$ ) as compared to those from the other countries ( $M_{\text{DK}} = 3.155$ ,  $M_{\text{FI}} = 3.211$ ,  $M_{\text{NO}} = 3.170$ ,  $M_{\text{SW}} = 3.323$ ,  $M_{\text{UK}} = 3.258$ ). Similarly, those from France endorsed communicating more frequently about sex with their partner ( $M=4.523$ ) than those from the other coun-

**Table 4** Predictors of the facets of sexual communication: type 3 analysis of effects

Effect	Sexual self-disclosure			Frequency of sexual communication			Quality of sexual communication		
	<i>F</i>	<i>p</i>	$\eta_p^2$	<i>F</i>	<i>p</i>	$\eta_p^2$	<i>F</i>	<i>p</i>	$\eta_p^2$
Step 1	$\eta^2=0.09, N=6038$			$\eta^2=0.24, N=5826$			$\eta^2=0.08, N=5980$		
Gender	10.38	0.001	0.002	66.73	<0.001	0.011	96.22	<0.001	0.016
Age	14.12	<0.001	0.002	115.70	<0.001	0.020	27.05	<0.001	0.005
Education level	1.75	0.174	<0.001	1.85	0.158	<0.001	3.59	0.028	0.001
Parental status	8.09	<0.001	0.003	20.38	<0.001	0.007	10.17	<0.001	0.003
Sexual orientation	14.09	<0.001	0.007	8.61	<0.001	0.004	11.71	<0.001	0.006
Cohabitation status	1.67	0.197	<0.001	11.58	<0.001	0.002	8.41	0.004	0.001
Open relationship	36.26	<0.001	0.006	215.80	<0.001	0.036	42.12	<0.001	0.007
Relationship length	145.08	<0.001	0.024	209.58	<0.001	0.035	25.53	<0.001	0.004
No. of sex partners	20.50	<0.001	0.003	0.65	0.421	<0.001	0.10	0.750	<0.001
Country	14.07	<0.001	0.012	20.83	<0.001	0.018	12.14	<0.001	0.010
Step 2	$\eta^2=0.25, N=5417$			$\eta^2=0.42, N=5285$			$\eta^2=0.17, N=5388$		
Frequency of sex	1029.45	<0.001	0.160	1624.03	<0.001	0.236	53.98	<0.001	0.010
Dissatisfaction with low frequency of sex	1.48	0.223	<0.001	12.70	<0.001	0.002	617.16	<0.001	0.103

$Not\eta^2$  is a measure of variance explained in the outcome by all predictors (and interaction effects) included in the model.  $\eta_p^2$ =partial eta squared, which measures the proportion of the variance in a dependent variable explained by an independent variable, partialling out other independent variables from the outcome. We use the following guidelines for interpreting  $\eta^2$  and  $\eta_p^2$ : 0.01 indicates a small effect, 0.06 indicates a medium effect, 0.14 indicates a large effect (Maher et al., 2013; Richardson, 2011)

tries ( $M_{DK} = 3.992$ ;  $M_{FI} = 4.008$ ;  $M_{NO} = 3.879$ ;  $M_{SW} = 4.073$ ;  $M_{UK} = 3.873$ ). Interestingly, those from the UK reported better quality of sexual communication ( $M=2.954$ ) as compared to those from the other countries ( $M_{DK} = 3.169$ ;  $M_{FI} = 3.285$ ,  $M_{FR} = 3.229$ ;  $M_{NO} = 3.168$ ,  $M_{SW} = 3.169$ ).

To examine whether frequency of sex and the dissatisfaction with low frequency of sex was associated with sexual communication (RQ2), we added these variables as predictors of the three facets of sexual communication (Step 2 in Table 4). The variance accounted for in the outcome by the predictors increased substantially ( $\eta^2=0.17-0.42$ ). There was a large and significant main effect of frequency of sex, such that those that had sex more frequently reported more sexual self-disclosure ( $b=0.337$ ), more frequent sexual communication ( $b=0.581$ ), but poorer quality of sexual communication ( $b=0.073$ ). Interesting, dissatisfaction with the low frequency of sex was not associated with sexual self-disclosure, but those that wished to have more sex than their current levels reported more frequent sexual communication ( $M=4.161$ ) and poorer quality of sexual communication ( $M=3.545$ ) than those who did not wish for more frequent sex ( $M_{freq} = 4.008$ ;  $M_{quality} = 2.813$ ). The effect of dissatisfaction with low frequency of sex as a predictor was small for frequency of sexual commu-

**Table 5** Tukey-Adjusted Follow-Up tests for each of the categorical predictors

		Sexual self-disclosure		Freq. of sexual communication		Quality of sexual communication	
		<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>
<i>Gender</i>							
Men	Women	3.220	0.001	8.170	<0.001	9.810	<0.001
<i>Educational level</i>							
Long	Medium	0.320	0.945	-1.910	0.136	0.902	0.639
Long	Short	1.416	0.333	-1.608	0.242	2.297	0.056
Medium	Short	1.585	0.252	0.532	0.856	0.9915	0.114
<i>Parental status</i>							
No children	At home	3.727	<0.001	5.720	<0.001	3.384	0.002
No children	Not at home	3.347	0.002	5.561	<0.001	-0.559	0.842
At home	Not at home	0.507	0.868	1.276	0.409	-3.744	<0.001
<i>Sexual orientation</i>							
A-sexual	Bi-sexual	5.669	<0.001	3.616	0.002	5.175	<0.001
A-sexual	Hetero-sexual	6.460	<0.001	2.314	0.095	5.875	<0.001
A-sexual	Homo-sexual	5.634	<0.001	3.394	0.004	5.360	<0.001
Bi-sexual	Hetero-sexual	1.088	0.697	-3.662	0.001	0.960	0.772
Bi-sexual	Homo-sexual	0.375	0.982	-0.100	1.000	0.724	0.887
Hetero-sexual	Homo-sexual	-0.397	0.979	2.722	0.033	0.124	0.999
<i>Cohabitation status</i>							
No	Yes	-1.290	0.197	3.400	<0.001	-2.900	0.004
<i>Open relationship</i>							
No	Yes	-6.020	<0.001	-14.690	<0.001	-6.490	<0.001
<i>Country</i>							
Denmark	Finland	1.066	0.895	0.208	1.000	2.407	0.154
Denmark	France	7.114	<0.001	6.948	<0.001	1.241	0.816
Denmark	Norway	0.289	1.000	-1.467	0.685	-0.015	1.000
Denmark	Sweden	3.088	0.025	1.022	0.911	0.001	1.000
Denmark	The UK	2.032	0.324	-1.626	0.581	-4.612	<0.001
Finland	France	6.099	<0.001	6.832	<0.001	-1.176	0.848
Finland	Norway	-0.775	0.972	-1.691	0.538	-2.417	0.150
Finland	Sweden	2.062	0.307	0.828	0.962	-2.343	0.177
Finland	The UK	0.924	0.941	-1.860	0.428	-7.129	<0.001
France	Norway	-6.850	<0.001	-8.486	<0.001	-1.260	0.807
France	Sweden	-3.859	0.001	-5.766	<0.001	-1.218	0.828
France	The UK	-5.430	<0.001	-9.012	<0.001	-5.957	<0.001
Norway	Sweden	2.816	0.055	2.4625	0.136	0.015	1.000
Norway	The UK	1.725	0.515	-0.085	1.000	-4.581	<0.001
Sweden	The UK	-1.245	0.814	-2.645	0.087	-4.476	<0.001
<i>Dissatisfaction with frequency of sex</i>							
No	Yes	1.220	0.223	-3.560	<0.001	-24.84	<0.001

nication as the outcome, but medium to large for quality of sexual communication as outcome.

### **Sexual Communication as a Predictor of Sexual Satisfaction, Life Satisfaction, and Relationship Satisfaction**

A series of ordinary least squares regressions were conducted to examine whether sexual communication predicted the three satisfaction variables. The pattern of findings was consistent across the three facets of sexual communication. Table 6 provides the Type 3 analysis of effects and Table 1s (in the supplementary materials) provides the follow-up tests for each of the categorical predictors from Step 1 and 2, with  $p$ -values based on a Tukey-adjustment.

There were several notable main effects of the sociodemographic, sex frequency and sexual communication variables. The proportion of variance explained by inclusion of the sociodemographic variable (Step 1) was 8% for sexual satisfaction and 5% for relationship satisfaction and life satisfaction. This proportion of variance explained increased substantially, when variables related to frequency of sex and dissatisfaction with frequency of sex were included (sexual satisfaction: 41%, relationship satisfaction: 19%, and life satisfaction: 15%; see Table 6, step 2) and increased additionally upon inclusion of the sexual communication variables (sexual satisfaction: 48%; relationship satisfaction: 26%, and life satisfaction: 21%; see Table 6, step 3). As the results for the demographic variables are extensive, we elect to focus here on frequency of sex and sexual communication predictors. Please see the supplementary materials for a breakdown of the effects of the sociodemographic variables, as entered in Step 1, as well as Table 1s, which provides the follow-up tests for each of the categorical predictors, with  $p$ -values based on a Tukey-adjustment.

Across the three satisfaction variables, frequency of sex was a stronger predictor, with medium to large effect size. The results suggest that as people reported higher frequency of sex, they reported higher sexual satisfaction ( $b=0.408$ ), higher relationship satisfaction ( $b=0.231$ ), and higher life satisfaction ( $b=0.217$ ). Moreover, dissatisfaction with low frequency of sex (i.e., wanted sex more frequently) was significant for all three satisfaction variables, though the effect was small. Those that were dissatisfied with their low frequency of sex reported lower sexual satisfaction ( $M=3.619$ ), lower relationship satisfaction ( $M=3.891$ ), and lower life satisfaction ( $M=3.513$ ), relative to those who were not dissatisfied ( $M_{\text{sexual}} = 4.015$ ;  $M_{\text{relationship}} = 4.013$ ;  $M_{\text{life}} = 3.628$ ).

The results (step 3) suggested the three facets of sexual communication generally predicted the three satisfaction outcomes, although the effects were very small in size. The analysis suggested that people who reported greater sexual self-disclosure had higher sexual satisfaction ( $b=0.181$ ), greater relationship satisfaction ( $b=0.187$ ), and greater life satisfaction ( $b=0.198$ ). Similarly, people who endorsed a greater frequency of communication about sex endorsed higher sexual satisfaction ( $b=0.096$ ), greater relationship satisfaction ( $b=0.046$ ), and greater life satisfaction ( $b=0.034$ ). However, while poorer quality of sexual communication was associated with lower sexual satisfaction ( $b=-0.061$ ), it was associated with greater relationship satisfaction ( $b=0.011$ ) and unrelated to life satisfaction ( $b=0.002$ ). We also examined whether

**Table 6** Predictors of sexual satisfaction, life satisfaction and relationship satisfaction: type 3 analysis of effects

Source	Sexual satisfaction			Relationship satisfaction			Life satisfaction		
	F	p	$\eta_p^2$	F	p	$\eta_p^2$	F	p	$\eta_p^2$
Step 1	$\eta^2=0.08, N=6085$			$\eta^2=0.05, N=6142$			$\eta^2=0.05, N=6163$		
Gender	5.26	0.022	0.001	2.72	0.099	<0.001	2.54	0.111	<0.001
Age	37.33	<0.001	0.006	20.55	<0.001	0.003	0.19	0.666	<0.001
Education level	0.10	0.904	<0.001	1.38	0.252	<0.001	2.27	0.104	0.001
Parental status	4.06	0.017	0.001	8.62	<0.001	0.003	5.27	0.005	0.002
Sexual orientation	2.19	0.087	0.001	10.16	<0.001	0.005	46.77	<0.001	0.022
Cohabitation status	0.23	0.629	<0.001	19.72	<0.001	0.003	42.41	<0.001	0.007
Open relationship	50.55	<0.001	0.008	0.22	0.638	<0.001	6.61	0.010	0.001
Relationship length	86.12	<0.001	0.014	44.13	<0.001	0.007	48.12	<0.001	0.008
No. of sex partners	15.24	<0.001	0.003	9.91	0.002	0.002	6.06	0.014	0.001
Country	11.86	<0.001	0.010	12.44	<0.001	0.010	6.33	<0.001	0.005
Step 2	$\eta^2=0.41, N=5448$			$\eta^2=0.19, N=5473$			$\eta^2=0.15, N=5478$		
Freq. of sex	2304.76	<0.001	0.298	845.71	<0.001	0.134	587.42	<0.001	0.097
Dissatisfaction with low frequency of sex	249.30	<0.001	0.044	26.66	<0.001	0.005	18.75	<0.001	0.003
Step 3	$\eta^2=0.48, N=5163$			$\eta^2=0.26, N=5185$			$\eta^2=0.21, N=5184$		
Sexual self-disclosure	221.86	<0.001	0.041	259.97	<0.001	0.048	224.53	<0.001	0.042
Freq. of sexual communication	116.87	<0.001	0.022	28.89	<0.001	0.006	12.15	<0.001	0.002
Quality of sexual communication	29.12	<0.001	0.006	7.71	0.006	0.002	0.02	0.903	<0.001
Step 4	$\eta^2=0.48, N=5163$			$\eta^2=0.28, N=5185$			$\eta^2=0.21, N=5184$		
Sexual self-disclosure*Country	3.73	0.002	0.004	5.32	<0.001	0.004	2.85	0.014	0.002
Freq. of sexual communication*Country	0.23	0.951	<0.001	6.94	<0.001	0.005	2.63	0.022	0.002
Quality of sexual communication*Country	4.61	<0.001	0.005	3.48	0.004	0.003	1.91	0.089	0.002

*Note*  $\eta^2$  is a measure of variance explained in the outcome by all predictors (and interaction effects) included in the model.  $\eta_p^2$ =partial eta squared, which measures the proportion of the variance in a dependent variable explained by an independent variable, partialling out other independent variables (and interactions, if entered) from the outcome. We use the following guidelines for interpreting  $\eta^2$  and  $\eta_p^2$ : 0.01 indicates a small effect, 0.06 indicates a medium effect, 0.14 indicates a large effect (Maier et al., 2013; Richardson, 2011)

the association between communication factors and the satisfaction variables varied by country (step 4), and although there were significant interactive effects, these did not contribute to the explanation of the outcome variable (i.e., no change in eta squared) for sexual satisfaction and life satisfaction. For relationship satisfaction, the interactive effects accounted for an additional 2% of the variance, but their individual effects were very small. This suggests that the interactions may not meaningfully explain the satisfaction variables, and thus, we elect not to interpret these further.

## Discussion

The present study investigated various socio-demographic predictors of different facets of sexual communication (i.e., sexual self-disclosure, frequency of sexual communication, and quality of sexual communication) in romantic relationships, and whether these facets of sexual communication were predictive of sexual, relationship, and life satisfaction.

We found that in five of the six European countries surveyed (Denmark, Finland, Norway, Sweden, and the UK), about 20–25% of the sample experienced difficulties in talking about sex, fantasies, and desires with their partner. Of those experiencing difficulties, across countries, the most prevailing reason for feeling so were because it felt awkward; other dominant reasons included that there was not an existing habit of talking (we never talk about sex), the partner found it awkward, being nervous about the partner's reaction, and issues related to timing (difficult to find the right occasion). Moreover, 37–50% of samples indicated dreaming about becoming better at communicating with their partner about sex, desires, and fantasies.

Interestingly, the results also revealed that people from France found it notably easier to talk about sex with their partner and did so relatively more frequently, than participants from the other (Nordic) countries. This is interesting in light of previous research that suggests that there may be distinct differences in the approach to sex life between people from Northern versus Southern European countries (e.g., Bajos & Marquet, 2000; Træen et al., 2011). The Nordic countries are regarded as “sexually liberated” and more tolerant of different sexual orientations, desires, and practices, whereas Southern European countries are considered more traditional and patriarchal (Lewin et al., 2000; Ongaro, 2004). Research suggests that Southern European countries hold gender-based double standard (Bozon & Kontula, 1998; Træen et al., 2011), such that Mediterranean men report more sexual partners and more condom use than Mediterranean women (Bajos & Marquet, 2000). Other research demonstrated that Norwegian women and Croatian men reported coital debut at an earlier age than their gender counterparts (Træen et al., 2011), supporting a difference in gendered norms related to sexuality. Thus, contrary to what we found, one might expect people from the Nordic countries to find it easier to talk about sex and to do so more frequently, relative to those from central or Southern European countries. We are unsure why we might have found that French people found it easier to communicate with their partner about sex. Future research would benefit from including more countries from across the European mainland to see whether this is a consistent pattern of findings in terms of sexual communication.

Moreover, the findings on sexual communication are interesting in light of the results pertaining to our third research question. That is, we found that the three facets of sexual communication generally predicted sexual, relationship, and life satisfaction, adding 6–7% to the total explained variance of when controlling for socio-demographic variables and frequency of sex and dissatisfaction with low frequency of sex. Specifically, we found that sexual self-disclosure was the strongest predictor of all satisfaction variables, albeit the effect sizes were still small in size. That is, more sexual self-disclosure was associated with higher levels of sexual, relationship, and life satisfaction. According to the Interpersonal Exchange Model of Sexual Satisfaction (IEMSS; Byers & MacNeil, 2006; Lawrance & Byers, 1995; MacNeil & Byers, 2005, 2009) and the Interpersonal Process Model of Intimacy (Laurenceau et al., 1998, 2004; Reis, 2017; Reis & Shaver, 1988), disclosure of sexual preferences, desires, and fantasies can lead to greater opportunity for partner responsiveness and increase couples' experiences of intimacy, which can allow for more rewarding and satisfactory sexual interactions as well as greater general sexual and relational satisfaction (MacNeil & Byers, 2005). Thus, the positive associations between sexual self-disclosure and sexual and relationship satisfaction are unsurprising and corroborate existing findings that have found the same associations (e.g., Byers, 2005; Fallis et al., 2016; Mallory, 2022; Merwin & Rosen, 2020; Montesi et al., 2011). Moreover, the results add to existing research by showing that sexual communication (i.e., more sexual disclosure and higher frequency of sexual communication) is directly associated with greater life satisfaction and not only indirectly associated with life satisfaction through higher levels of sexual and relationship satisfaction (e.g., Schmiedeberg et al., 2017; Woloski-Wruble et al., 2010). Indeed, WHO defines (sexual) health and well-being as “a state of physical, emotional, mental and social well-being (in relation to sexuality); it is not merely the absence of disease, dysfunction or infirmity” (World Health Organization, 2024a, 2024b). Moreover, with respect to sexual health, the WHO says that “Sexual health requires a positive and respectful approach to sexuality and sexual relationships...” (World Health Organization, 2024b). That is, having a positive orientation to sexuality, as evidenced by more sexual disclosure and higher frequency of sexual communication, may directly facilitate “a state of physical, emotional, mental and social well-being”, resulting in well-being and life satisfaction. Given the large share of people who indicate that they struggle with sexual communication, and that better sexual communication is associated with sexual, relationship, and life satisfaction, it is likely that many couples may benefit from learning how to create opportunities for sexual communication and for lowering the barriers to sexual communication identified in this study.

In relation to our first and second research question, we found that while each socio-demographic factor surveyed (e.g., gender, age, education) generally showed only small significant associations with the three facets of sexual communication, their combined association with sexual communication was of a magnitude that was medium to large in size. Further, when adding the effect of frequency of sex and dissatisfaction with low sexual frequency to the socio-demographic predictors of sexual communication, the variance accounted for in sexual communication increased substantially. Here, by far, frequency of sex explained the most variance in two of the three facets of sexual communication, namely sexual self-disclosure and frequency

of sexual communication, while being only modestly associated with the quality of sexual communication. To the contrary, dissatisfaction with low sexual frequency explained the most variance in quality of sexual communication while only showing modest or no association with sexual self-disclosure and frequency of sexual communication.

These findings tentatively suggest two possible modifications to the interpretation of previous research on associations between socio-demographic factors, frequency of sex, dissatisfaction with sex frequency, and sexual communication. First, it may be that it is not the specific individual socio-demographic factor that is decisive in the prediction of sexual communication but rather the confluence of these factors. That is, it may be more fruitful to look at the 'sociodemographic profile' rather than the individual sociodemographic factor per se. Second, while both frequency of sex and dissatisfaction with low sexual frequency have been found to be associated broadly with sexual communication in previous research (Heiman et al., 2011; Lucero Jones et al., 2022; McNulty et al., 2016; Schoenfeld et al., 2017; Valvano et al., 2018), they may each only be associated with specific facets of sexual communication. For example, in this study, dissatisfaction with low frequency of sex was more strongly associated with quality of sexual communication while frequency of sex was more strongly associated with sexual self-disclosure and frequency of sexual communication. This suggests that future research may wish to take a nuanced approach to investigating sexual communication and predictors thereof.

### Limitations and Future Directions

The present study has many strengths, including the large and demographically diverse sample, collected across different European countries, and expands on previous literature in numerous ways, including examining a broader range of sociodemographic factors and a new outcome (i.e., life satisfaction). However, the results should be considered in light of the limitations.

A key limitation is the cross-sectional nature of the study, which precludes causal conclusions. Consequently, while it may be that sexual communication leads to increased sexual, relationship, and life satisfaction, it is equally possible that sexual, relationship, and life satisfaction leads to increased sexual communication. Indeed, it is likely a bidirectional (causal) association. Future studies should employ longitudinal and event-contingent designs to better parse this out. Another study limitation includes the nature of the sample. While we obtained large samples in all countries and the survey was distributed to a representative sample of people based on gender, age, and region of country, previous research also consistently show that opt-in panels are not really representative of the population (Görizt, 2007; Sohlberg et al., 2017). For example, opt-in panels tend to prioritize individuals who have an interest in the research at hand and digital opt-in panels tend to exclude people who lack access to the Internet and/or a connecting device (Sohlberg et al., 2017). Moreover, when measurement is completed online, it is not possible to verify the veracity of responses (e.g., are people correctly reporting their gender or age). Therefore, caution against generalizing the results beyond internet-using populations should be taken. Future research may wish to employ alternative recruitment strategies, such



as partnering with large (inter)national research firms or agencies, such as Gallup or (in Denmark) Statistics Denmark, who may be able to employ probability sampling techniques to recruit participants.

A third key limitation concerns the measurement of some of the key constructs. For one, single items were used, rather than comprehensive scales, to assess all constructs (e.g., relationship satisfaction, sexual satisfaction, sexual communication); this was done to keep the survey short (to reduce participant burden) while assessing numerous constructs. Several modern and well-validated scales exist for the concepts assessed in this study, including the Couple Satisfaction Index (Funk & Rogge, 2007) and the New Sexual Satisfaction Scale (Stulhofer et al., 2010). None the less, previous research in the field has found single item measures to be reliable and valid (Cheung & Lucas, 2014; Löp et al., 2022; Jovanović, 2016; Jovanović & Lazić, 2020; Mark et al., 2014) even if the results provided by these scales are crude and often lack the ability to offer detailed insights into the dimensions measured. Similarly, our measurement of dissatisfaction with low sexual frequency only asked people about the extent to which they desired sex more frequently. Other research has applied measurement that allowed participants to indicate that they desired sex less often, as well as the degree of discrepancy (Smith et al., 2011; Willoughby et al., 2014). However, past research has tended to demonstrate that the discrepancy is in the positive direction (i.e., people, particularly men, tend to want sex more frequently; Willoughby et al., 2014). Thus, our single item measurement likely captures most people who experience dissatisfaction with their frequency of sex. Of particular concern may be our measure of the quality of sexual communication, as this measure may not represent a standard conceptualization of the construct. This may also explain some of the findings that were unexpected or inconsistent with literature, such as the weak correlations between quality of sexual communication and the other two facets of sexual communication (sexual self-disclosure and frequency of sexual communication), as well as the finding that those from the UK reported relatively better quality of communication, and that quality of communication was related to greater relationship satisfaction. We do think that this was an item for which the wording resonated with the participants, but we suggest future research to pilot-test nontraditional items prior to use in large-scale surveys.

Moreover, although we were able to examine a comprehensive set of socio-demographic predictors, two factors were not assessed: (1) income and (2) race/ethnicity. Income and educational level are often used as proxy variables for socio-economic status; it is unclear how income should be related to sexual communication, although other research suggests that income (and feelings about income) is associated with greater relationship and life satisfaction (e.g., Salinas-Jiménez et al., 2010; Totenhagen et al., 2018). Future research should seek to examine whether income is uniquely associated with sexual communication. We suspect that an association (if it exists) would suggest that those with lower income experience poorer sexual communication and poorer satisfaction outcomes, because stressors associated with less income (e.g., worries about paying for housing, utilities, and food, less time spent together on leisurely activities) may cause distress within the relationship and thereby poorer communication, both globally and in the sexual domain. Indeed, research suggests that low-income couples may spend less time together, as they often work non-stan-

dard hours (i.e., evenings and weekends), which limits their ability be intimate, share leisure activities, and to communicate about these (Presser, 1995; Presser & Cain, 1983). Interestingly, we found that those having children at home (vs. children not at home) and cohabitation (vs. not) was associated with less frequent and quality of poorer sexual communication. It is conceivable and likely that a majority of the people who cohabit with their partner, also share children with their partner. Thus, while these results do not speak to the association between income and sexual communication, they do suggest that “busy lives” (i.e., middle adulthood, with full-time jobs and household and children to manage) might provide fewer opportunities to talk about sex and lower quality communication about sex, leading to lower sexual and relationship satisfaction. Future research should also seek to examine whether there are racial/ethnic differences in terms of sexual communication.

Finally, within our study, we found minimal indications of cultural differences in sexual communication, as indicated by small or non-significant differences between the countries examined in this study. However, as these countries are all (Northern) European, it could be argued that they are relatively more similar than dissimilar in culture, and therefore research should also focus on comparing more European countries (e.g., countries that might represent both north, central, and south Europe) as well as countries that are historically and geographically more distant (e.g., Asian, Arabic, African, and South American countries, relative to European countries).

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**Data Availability** The data is available upon reasonable request to Camilla S. Øverup.

**Code Availability** The code is available from Camilla S. Øverup.

## Declarations

**Compliance with Ethical Standards** The Danish data protections agency provided approval for data processing by the researchers at the University of Copenhagen, Denmark. Cint collected the data through panel partners. All panel partners must comply with industry standards and codes of ethics and practice (e.g., codes of conduct, quality standards, data protection, privacy) set forth by ESOMAR (<https://esomar.org/>), Insights Association (<https://www.insightsassociation.org/>) and others (i.e., MRS, ARF, MRIA, AMA, AMSRO), plus adhere to requirements such as ISO 20252 and ISO 26362. This includes 45 CFR Part 46 - Protection of Human Subjects (Common Rule; US Health and Human Services) and 20 CFR Part 50 - Protection of Human Subjects (US FDA). For more info, please see <https://www.cint.com/quality>. Panelists from hosted panels received an email invitation that uses the “brand” of the specific panel of which they are a member. In the email the respondents were informed about the details for the survey, including access to full disclosure of incentive terms and conditions applying to the project, the opportunity to unsubscribe or opt-out and the appropriate privacy policy or statement.

**Conflict of Interest** The authors have no relevant financial or non-financial interests to disclose.

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