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## **Religiosity, sexual myths, sex taboos, and pornography use: A cross-national comparison of Polish and German university students**

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### **Abstract**

*The study aimed to compare pornography use of students in two culturally different European countries – Poland and Germany, and to investigate associations with religiosity, sexual myths, and sex taboos. Data were collected in an online survey among German (n = 1303) and Polish (n = 1135) university students aged 18-26 years. Polish students were more religious, showed a greater acceptance of sexual myths, and reported a higher level of sex taboos in their origin families. Polish students were younger at their first contact with pornography, while German students used pornographic materials more often. Results suggested a link between sociocultural background, especially religiosity, and pornography engagement. The relationship between pornography use and religiosity was ambiguous. On the one hand, attending church was negatively associated with age at first contact and pornography use. On the other hand, the association of intrinsic religiosity with pornography use proved to be contradictory: it was correlated with a lower frequency of pornography use for females and with a higher frequency for males. The agreement with common sexual myths was related to a higher frequency of pornography use. There was no association between the level of sex taboos and pornography use.*

**Keywords:** Pornography, Sexually explicit materials, Sexual socialization, Religiosity, Young adults

### **Introduction**

Although for a young generation of "Digital Natives" (Palfrey & Gasser, 2008) the Internet has become an evident part of everyday life (Lenhart, Rainie, & Lewis, 2001; Livingstone & Bober, 2004) and although the Internet has made pornography easily accessible and affordable (Cooper, 1998), the widespread use of porn and its individual and societal differences (Matthiesen, Martyniuk, & Dekker, 2011; Peter & Valkenburg, 2011; Schmidt & Matthiesen, 2011; Wright, Bae, & Funk, 2013; Wright, 2013; Ybarra & Mitchell, 2005) cannot be explained by mere technological development alone. Previous studies that tried to find an explanation for differences in pornography use concentrated primarily on psychological factors such as personality traits (e.g. level of sensation seeking – Peter & Valkenburg, 2006) or individual motivation (e.g. sexual excitement, looking for information about sex – Löfgren-Mårtenson & Månsson, 2010; Sabina, Wolak, & Finkelhor, 2008). Sociocultural factors have not been investigated as thoroughly, which is a major shortcoming since "culture provides a significant framework for understanding sexuality", as Agocha Asencio, and Decena (2014, p. 183) put it. Additionally, "[t]he values, beliefs, and behaviors associated with the sexuality of individuals also reveal a great deal about the larger beliefs and values of the society they inhabit or from which they originate" (Agocha et al., 2014, p. 183). Against this background, with the present study we aimed to explore the role of cultural context of sexual socialization for pornography use. Our study is important because it provides a novel approach: we not only explored different sociocultural factors, but also compared two groups with different cultural backgrounds. The aim

of the present study was to investigate *whether* and *how* religiosity, sexual myths, and sex taboos are associated with pornography use of students from two large European countries with mutually distinct social, political, and cultural heritage – Poland and Germany.

## Previous Research

### Pornography Use and Religious Beliefs

Religiosity, as a primary facet of culture, influences sexual attitudes, fantasy, and behaviour (Ahrold, Farmer, Trapnell, & Meston, 2011; Hernandez, Mahoney, & Pargament, 2014; Lefkowitz, Gillen, Shearer, & Boone, 2004). The most traditional religious teachings delay or inhibit sexual expression (cf. Hernandez et al., 2014). These teachings seem to be internalized by individuals and provide them with a set of beliefs that they incorporate into their motivations and accept as their own (Vasilenko, Duntzee, Zheng, & Lefkowitz, 2013). Previous studies on the impact of religiosity on pornography use proved its prohibitive nature. Religious individuals tend to lower acceptance and stronger negative attitudes against pornography and, consequently, they support pornography censorship (Carroll et al., 2008; Patterson & Price, 2012; Thomas, 2013). Being religious and watching pornography may be accompanied by personal conflicts. For some users, their pornography consumption may interfere with their relationship with God and spirituality (Baltazar, Helm, McBride, Hopkins, & Stevens, 2010; Short, Kasper, & Wetterneck, 2015). Pornography users who attend a religious denomination with strong attitudes towards pornography reported lower levels of happiness than individuals with no religious affiliation or those from religious groups with not such strong attitudes (Patterson & Price, 2012). Moreover, individuals with higher levels of religiosity experienced more problems and struggled more with their own pornography use (Abell, Steenbergh, & Boivin, 2006). In addition, religiosity and moral disapproval of pornography were positively associated with perceived addiction to Internet pornography, even when controlling for actual use (Grubbs, Exline, Pargament, Hook, & Carlisle, 2015). There is a number of studies that found an inverse relationship between religiosity and pornography use (Baltazar et al., 2010; Hardy, Steelman, Coyne, & Ridge, 2013; Mesch, 2009; Nelson, Padilla-Walker, & Carroll, 2010; Patterson & Price, 2012; Short et al., 2015; Stack, Wasserman, & Kern, 2004; Visser, Smith, Richters, & Rissel, 2007; Wright, 2013; Wright et al., 2013). However, the results were not homogeneous. Not all measures of religiosity were significantly associated with all measures of pornography use (Short et al., 2015), religiosity was associated with the current pornography use, but not with ever viewing pornography (Baltazar et al., 2010), or religious individuals were less likely to report currently viewing pornography, but, among those that did, religiosity was unrelated to actual levels of use (Grubbs et al., 2015). To make things even more complicated, market analyses revealed that individuals from areas with more conservative positions on religion, gender roles, and sexuality, tend to buy more pornography online than those from less religious areas (Edelman, 2009). Furthermore, among American states, greater proportions of state-level religiosity (meaning a greater proportion of residents considering themselves very religious and deeming religion an important factor in life) was associated with more general web searching for sexual content. Additionally, there was a positive association between greater proportions of state-level conservatism and image-specific searching for sex (MacInnis & Hodson, 2015). These results emphasize the complexity of the relationship between religious beliefs and pornography use. To our knowledge, so far only one study on this relationship made a cross-national comparison. Velezmoro, Negy, and Livia (2012) compared college students from the United States and Peru with respect to their online pornography consumption as well as their level of intrinsic religiosity. They found that Peruvians reported viewing more pornography on the Internet than U.S. students. In both samples, participants with lower religious engagement were more likely to use Internet pornography than individuals with higher religiosity.

### Pornography Use and Other Sociocultural Factors

Research on the relationship between pornography and other sociocultural factors is still surprisingly rare. The existing studies focused mainly on social bonds, (sexual) beliefs and attitudes. Mesch (2009) concentrated on social bonds in terms of religiosity, commitment to family, and pro-social attitudes. In his study, lower commitment to the family and lower support of pro-social attitudes was associated with a higher likelihood of seeking pornography online. A recent study by Doornwaard, van den Eijnden, Overbeek, and ter Bogt (2015) found some connections between communication with parents about sexuality, adolescents' disclosure to parents about their whereabouts and pornography use patterns, but only for boys (not for girls). Boys in the occasional use trajectory were found to communicate more frequently with their parents about sexual matters than boys in the nonuse/infrequent use trajectory. The authors interpreted this as a possible impact of open communication within the family on boys' acceptance of sexual feelings and interests. Moreover, compared to boys who do not use or infrequently use pornography, boys in the decreasing use trajectory were found to disclose less to their parents, which may be understood as a sign of autonomy and self-control with rising age. Štulhofer, Buško, and

Landripet (2010) found that users of paraphilic pornographic materials showed a greater acceptance of common myths about sexuality, such as "Men are always ready for sex", than mainstream pornography users. Carroll and colleagues (2008) explored associations between pornography and family formation values. In their study, pornography users were found to be more accepting of non-marital cohabitation than non-users. At the same time there were no differences between the groups regarding the goals for marriage and parenthood. Similarly, pornography use also seems to be associated with more permissive sexual norms (Braun-Courville & Rojas, 2009; Brown & L'Engle, 2009) and more positive attitudes toward uncommitted sexual exploration (Peter & Valkenburg, 2008). These associations could be interpreted in both ways: either liberal young people are more likely to watch pornography, or watching pornographic materials precedes more liberal attitudes toward sexuality.

## **Differences between Poland and Germany**

In the light of the previous research the sociocultural factors seem to be intertwined with the consumption of pornographic materials. For that reason pornography use can be expected to vary in different cultural contexts of sexual socialization. Germany being the most populous Western European country and Poland being by far the most populous among post-transitional Eastern European member states of the European Union (EU) are two large neighboring countries. However, they have distinct cultures and histories that shaped the ways civil liberties and attitudes toward sexuality are manifested.

Given the fact that 93% of Polish citizens consider themselves Roman Catholic and more than half of adult Poles report at least weekly participation in religious services (CBOS Poland, 2012), Polish culture is strongly influenced by traditional Catholic values that prohibit sexual contacts before marriage, homosexuality, contraception, and abortion. The pornographic depiction of the naked body is also rejected by the Catholic religious community (Zwoliński, 2003). These conservative views toward sexuality reach into the families: although about half of the teenagers talk about sexuality with their parents, in most cases parents prefer to talk about puberty and body development rather than about first sexual intercourse, contraception, pregnancy, sexual orientation, or relationships (Ponton, 2011). Furthermore, sex education does not regularly take place at Polish schools (Izdebski & Waż, 2011) – and if so, the subject is called "Education for family life" and is taught by religion teachers in 25% of the cases (Ponton, 2009). Parents are required to sign an agreement form before their children may attend sex education classes. The agreement can be withdrawn at any time (Sexuality Education in Europe, 2006).

Against the background of such a possibly restrictive sexual-political paradigm, the conditions in Germany appear different. Although 61% of the German citizens are Christians (29% belong to the Protestant and 30% to the Roman Catholic Church; EKD, 2012), the impact of religion on the general sexual-political climate is considerably weaker. Since 1969 sex education is integrated into the curriculum of elementary school. Pupils usually receive it from the age of nine. In higher grades aspects of sexuality and contraception are added to the basic knowledge acquired earlier. In Germany, sex education in schools is mandatory (Sexuality Education in Europe, 2006). Furthermore, adolescents reported that not only teachers, but also parents (primarily mothers) are a source of information about body changes, which come with puberty, and contraception for both boys and girls (Bravo, 2009). Additionally, there is an extensive network of low-threshold counseling, where young adults have easy access to information on contraception, sexual health, pregnancy, and abortion.

Although the European integration is proceeding, the national political and cultural agendas, as well as national identities, remain salient both in the "old" and the "new" EU member states (Fligstein, Polyakova, & Sandholtz, 2012). Nevertheless, the cultural boundaries between Eastern and Western Europe are becoming increasingly blurred, not least because of technological advancement and Internet access. At this point, it is important to note that Poland and Germany are equally advanced technologically and have quite equal access to the Internet: In the year 2014, 75 percent of Polish households (GUS, 2014) and 84 percent of German households (Statistisches Bundesamt, 2014) had access to the Internet.

## **Present Study**

The goal of this study was to investigate two cultural groups' potentially discrepant pornography experience as well as the role of sociocultural factors for the pornography use of students from Poland and Germany. We chose three factors that regarding the previous research could be linked with sexual socialization and (individual and societal) beliefs about sexuality: religiosity, sexual myths and sex taboos in the origin family. We defined religiosity as religious beliefs and involvement, under sexual myths we understand common false opinions about sexuality, and sex taboos were defined as intimacy rules and a lack of openness in talking about sexuality in the origin family.

Firstly, we assumed that there would be differences in religiosity, sexual myths, and sex taboos between students from Poland and Germany. Polish students would be more religious, accept stronger sexual myths than German young adults and report a higher level of sex taboos in their families. Secondly, we expected that German students would have their first contact with pornographic materials earlier than Polish students. This assumption was based on the expected more liberal attitudes toward sexuality in the German society. We also expected a relationship between religiosity, acceptance of common sexual myths and the level of sex taboos in the origin family with the age of the first exposure to pornographic materials. Finally, we assumed that German students would use pornography more frequently than Polish students and that religiosity, acceptance of sexual myths, and level of sex taboos would be linked with the current pornography engagement.

## **Method**

### **Procedure and Participants**

An online study on pornography use and sociocultural factors was carried out among university students aged 18-26 in Poland and Germany. Participants were recruited via a generic e-mail message that was sent to student representatives at different departments of ten universities in each country. The universities were selected by city size: For the ten largest cities in Poland ten German cities of similar size were assigned.<sup>1</sup> The message contained a brief description of the study, the link to an online questionnaire, and a request to forward the message to friends and fellow students.

In Germany, data were collected from March until July 2010. There were 2.414 link activations, 1.984 (82%) individuals agreed to participate and 1.341 (56%) completed the questionnaire. After excluding participants of ineligible age (under 18 and over 26), those who were not students, those whose answers were not plausible (e.g. the reported age of the sexual debut was higher than the reported current age of the person), and those who did not live in Germany – the sample was reduced to 1.303 (632 females, 671 males) participants.

In Poland, data were obtained from February until June 2011. 1.902 individuals visited the site, 1.579 (83%) agreed to participate in the study and 1.079 (57%) completed the questionnaire. Due to a lack of male students in the Polish sample (29% males vs. 71% females), particularly from technical faculties, we decided to conduct an additional sampling. In contrast to Germany, in Poland technical studies are mainly provided by technical universities. For this reason, the same survey procedure was carried out at technical universities in the ten selected Polish cities. The second data collection in Poland lasted from July to October 2011. There were 594 link activations, 396 (67%) individuals agreed to participate in the study and 224 (38%) completed the questionnaire. After data cleaning and excluding female participants from the second wave, the final Polish sample was reduced to 1.135 (744 females, 391 males) participants.

### **Questionnaire**

We used a flexible questionnaire containing 165 items of which – depending on the participants' sexual biography and experiences – at least 36 were shown. The questionnaire included questions about sociodemographic characteristics, sexual experience, religiosity, sexual myths and taboos, and experience with pornography. Filling in the questionnaire, which included additional measures relevant to other research questions, took about 15 minutes. In the introductory part to the pornography section, we defined pornography as "any kind of depiction directly showing the genitals during sexual activity and aiming at achieving or enhancing sexual arousal, feelings, thoughts, or fantasies. Images containing men or women posing naked – as in Playgirl/Playboy or on nude photos – should not be considered when completing the questionnaire."

The questionnaire was developed in German language and in a second step translated into Polish by a Polish native speaker. To improve the accuracy and validity of our research we used a back translation process: The Polish version was translated back into the German language by a German native speaker who was blinded to the original questionnaire. Original and back translated documents were compared. Discrepancies in the translation were identified and resolved.

The online questionnaire was implemented using the professional online survey software package Unipark. To ensure anonymity and confidentiality, no IP addresses were saved and session cookies stayed valid for only two hours. As a result of this procedure, multiple submissions cannot be ruled out. Given the fact that no incentives were offered for participation, they were however very unlikely. On the first page respondents were informed about the study, their anonymous and voluntary participation, and their right

to stop at any time they wished. To access the survey, participants had to click a button confirming consent and age eligibility (18-26).

## Measures

**Pornography use.** Two variables were used as indicators of pornography use: age at first exposure to pornography and frequency of use in the last six months (1 = did not use at all, 2 = once a month or less, 3 = several times a month, 4 = several times a week, 5 = daily). For reasons of clarity and accessibility, for a regression analysis current pornography use was transformed into three categories: never (1; 0), sometimes (2+3; 1) and often (4+5; 2).

**Religiosity.** Religious beliefs and involvement were measured using the "Duke Religion Index (DUREL)" (Koenig, Parkerson, & Meador, 1997). The scale is organized in three "subscales" describing different dimensions of religiosity such as religious activities performed in public and in private, and the degree of personal religious commitment or motivation. Organizational religious activity (ORA) was assessed by a single-item: "How often do you attend church, mosque or other religious meetings?" The following answers were offered: Never (1), Once a year or less (2), A few times a year (3), A few times a month (4), Once a week (5), More than once a week (6). Also non-organizational religious activity (NORA) was measured using a single-item: "How often do you spend time in private religious activities, such as prayer, meditation, or Bible study?" There were six response possibilities: Rarely or never (1), Once a month or less (2), A few times a month (3), A few times a week (4), Daily (5), More than once a day (6). Finally, intrinsic religiosity (IR) was assessed using the following three items: "In my life, I experience the presence of the Divine"; "My religious beliefs are what really lie behind my whole approach to life"; "I try hard to carry my religion over into all other dealings in life." The items were measured on a Likert-type acceptance scale ranging from 1 (Definitely not true) to 5 (Definitely true of me). Item scores were added. Cronbach's  $\alpha$  for the IR subscale for the whole sample was .86 (.84 for the German and .85 for the Polish sample) and Cronbach's  $\alpha$  for the whole DUREL (all five items) .88 (.88 for the German and .87 for the Polish sample). As recommended by the authors (Koenig & Büssing, 2010), we analysed three "subscales" separately.

**Myths about sexuality.** The agreement with common myths about sexuality was assessed using the "Myths about Sexuality Scale" (Stulhofer et al., 2010), which consists of eight items such as "Men are always ready for sex", "Good sex can save even the most problematic relationship" or "Simultaneous orgasm is an important sign of love." The items were measured on a Likert-type scale, ranging from 1 (Completely disagree) to 5 (Completely agree). Item scores were added. Cronbach's  $\alpha$  for the scale for the whole sample was .67 (.67 for the German and .67 for the Polish sample). Despite some weaker items, we decided to use the entire instrument as proposed by Stulhofer and colleagues (2010) because the internal consistency of the scale with an alpha of 0.7 was sufficiently acceptable. Higher scores reflected stronger acceptance of sexual myths.

**Sex taboos in the family.** The tool for measuring the level of sex taboos in participant's families was constructed based on the work of Beisert (1991). The measure was composed of six items asking about intimacy rules and openness in talking about sexuality in the family, such as: "In my family, we did not talk about sexuality", "In my family, we did not show ourselves naked (while bathing, changing clothes etc.)" and "My parents did not cuddle or kiss in my presence." Responses were coded on a 4-point scale (1 = strongly disagree to 4 = strongly agree). Item scores were added. Internal consistency of the scale was acceptable (Cronbach's  $\alpha$  = .75, .79 for the German and .67 for the Polish sample). The larger the score, the higher the level of sex taboos in the family.

While exploring the relationships between these three constructs, we found a weak association ( $r = .11, p < .001$ ) between "Myths about Sexuality Scale" and "Sex Taboos in the Family" and weak associations between "Sex Taboos in the Family" and two "subscales" of the "Duke Religion Index (DUREL)": "Organizational religious activity" ( $r = .13, p < .001$ ) and "Intrinsic religiosity" ( $r = .10, p < .001$ ). There were no relationships between "Sex Taboos in the Family" and "Non-Organizational religious activity", and between "Myths about Sexuality Scale" and the three "subscales" of the "DUREL".

## Data Analysis

In a first step, we explored differences between the Polish and the German samples in sociodemographic, sociosexual and sociocultural variables and pornography use. The continuous data were tested using  $t$ -tests and the categorical data using Chi-square tests. Effect sizes were calculated using Cohen's  $d$  and Cramer's  $V$ . In a second step, we used two regression models to analyse the associations between organizational religious activity, non-organizational religious activity, intrinsic religiosity, sex taboos,

sexual myths, and pornography use. In both models we explored the possible moderation of country and gender by including interactions of these variables with the sociocultural factors. For example, we analysed the main effect of sexual myths on pornography use, the interaction effect of sexual myths and gender, the effect of the interaction between sexual myths and country and the double interaction effect of sexual myths, gender, and country on pornography use (sexual myths, sexual myths x gender, sexual myths x country, sexual myths x gender x country). The relationship between sociocultural factors and the age of first pornography contact was explored in a linear regression carried out using mixed model analysis. The link between sociocultural factors and the frequency of pornography use was analysed in an ordinal logistic regression carried out using the Genlin procedure. Both models were constructed using a backward elimination based on p-values < .05. Marginal means were calculated for pairwise comparisons in case of a linear regression. For all statistical analyzes we used the IBM SPSS Statistics 20.

## **Results**

### **Sample**

We found significant differences in almost all sociodemographic and sociosexual characteristics between the samples (Table 1). On average, Polish participants were almost one year younger than German students. In both samples, most of the individuals were living in cities above 100.000 inhabitants, however, Polish students were living twice as often with their parents compared with the German students. In contrast to Polish participants, who almost all had grown up in the Catholic faith, the German students had mixed religious backgrounds with three main groups: Protestants, Catholics and a large (one-fourth) undenominational group. About two thirds of the individuals in both samples were a member of some religious community at the time of the survey, whereas one third did not belong to any church. Interestingly, many participants, especially in the Polish sample, have left the religious community in which they grew up. About 60% of German and Polish participants were currently in a relationship, women more often than men. Polish participants were almost one year older at their first sexual intercourse than German individuals and had less sexual partners in their lifetime.

### **Sociocultural Differences between the National Groups**

As shown in table 2, significant differences between Polish and German participants were found for all three sociocultural factors: religiosity, acceptance of sexual myths and level of sex taboos in the family of origin. Polish students were more religious: they attended church or other religious meetings more often, spent more time in private religious activities and reported a higher degree of personal religious commitment than German participants. Polish students accepted sexual myths more often than German individuals. In both samples men showed a greater acceptance of sexual myths than women. Also participants in the Polish sample reported a higher level of sex taboos in their families than students in the German sample.

### **Pornography Use**

Table 3 shows data on pornography use by country and gender. Polish students were significantly younger at their first exposure to pornography than German students. In both samples men were 1.3 years younger than women. Polish men reported the youngest age at first contact and German women the oldest age at first contact with pornography. As expected, German students used pornographic materials significantly more often than Polish individuals. Considering that almost half of the Polish students in our sample were currently living with their parents, what may be associated with less privacy and more social control, we conducted an additional analysis. We compared the user groups with regard to their living situation. Among Polish users who lived with their parents one third (34 percent) had never watched pornography in the last six months and almost a quarter (23 percent) had used it often. The proportions among Polish users who had their own apartment (32 vs. 18 percent) and who lived in a dormitory or shared apartment (28 vs. 19 percent) were quite similar. As a result, this additional hypothesis found no support. In both samples male students watched pornography more often than female participants. More than half of the male participants in both samples used pornographic materials at least several times a week, while three quarters of the women in both groups used pornography once a month or less. The main source of pornography in both samples was the Internet.

Table 1. Sociodemographic and Sociosexual Characteristics of the German and Polish Samples by Gender (in %).

Variables	German sample			Polish sample			Differences between the samples (German – Polish)																																																																																																																																																																																																																																															
	Women (n=632)	Men (n=671)	All (n=1303)	Women (n=744)	Men (n=391)	All (n=1135)	Women (n=1376)	Men (n=1062)	All (N=2438)																																																																																																																																																																																																																																													
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SD	1.99	1.92	1.96	1.86	1.90	1.88				<b>Place of residence (size of the settlement)</b>										<20.000	14.1	16.5	15.3	18.1	17.4	17.9	$p < .01, V = .09$	ns	ns	20.000-100.000	12.7	12.1	12.4	14.4	13.3	14.0	100.000-1.000.000	54.0	63.2	58.7	54.0	59.8	56.0	>1.000.000	19.3	8.2	13.6	13.4	9.5	12.1	<b>Living situation</b>										Own apartment	38.6	31.7	35.1	15.2	11.8	14.0	$p < .001, V = .31$	$p < .001, V = .26$	$p < .001, V = .29$	With parents	18.7	24.6	21.7	42.9	45.5	43.8	Dormitory/shared apartment	42.7	43.7	43.2	41.9	42.7	42.2	<b>Growing up in religious background*</b>										Protestant	44.6	43.2	43.9	0.3	1.3	0.6	$p < .001, V = .55$	$p < .001, V = .45$	$p < .001, V = .51$	Catholic	36.4	39.3	37.9	97.3	93.1	95.9	$p < .001, V = .66$	$p < .001, V = .53$	$p < .001, V = .61$	Other	5.4	2.5	3.9	0.4	1.5	0.8	$p < .001, V = .15$	ns	$p < .001, V = .10$	None	23.6	25.0	24.3	4.4	5.4	4.8	$p < .001, V = .28$	$p < .001, V = .25$	$p < .001, V = .27$	<b>Current religious denomination</b>										Protestant	33.7	34.0	33.8	0.1	1.0	0.4	$p < .001, V = .51$	$p < .001, V = .41$	$p < .001, V = .46$	Catholic	28.2	31.4	29.9	64.7	62.4	63.9	Other	2.7	0.6	1.6	0.7	1.5	1.0	None	35.4	34.0	34.7	34.5	35.0	34.7	<b>Currently in a relationship</b>										Yes	66.3	55.9	60.9	60.2	51.4	57.2	$p < .05, V = .06$	ns	ns	<b>Age at first sexual intercourse</b>										M	17.05	17.81	17.42	18.25	18.48	18.32	$p < .001, d = .58$	$p < .001, d = .30$	$p < .001, d = .43$	SD	2.19	2.19	2.22	1.91	1.90	1.91	<b>Lifetime number of sexual partners</b>										M	4.78	4.46	4.62	2.79	3.13	2.90	$p < .001, d = .43$	$p < .01, d = .20$	$p < .001, d = .32$	SD	5.19	6.77	6.06
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Dormitory/shared apartment	42.7	43.7	43.2	41.9	42.7	42.2																																																																																																																																																																																																																																																
<b>Growing up in religious background*</b>																																																																																																																																																																																																																																																						
Protestant	44.6	43.2	43.9	0.3	1.3	0.6	$p < .001, V = .55$	$p < .001, V = .45$	$p < .001, V = .51$																																																																																																																																																																																																																																													
Catholic	36.4	39.3	37.9	97.3	93.1	95.9	$p < .001, V = .66$	$p < .001, V = .53$	$p < .001, V = .61$																																																																																																																																																																																																																																													
Other	5.4	2.5	3.9	0.4	1.5	0.8	$p < .001, V = .15$	ns	$p < .001, V = .10$																																																																																																																																																																																																																																													
None	23.6	25.0	24.3	4.4	5.4	4.8	$p < .001, V = .28$	$p < .001, V = .25$	$p < .001, V = .27$																																																																																																																																																																																																																																													
<b>Current religious denomination</b>																																																																																																																																																																																																																																																						
Protestant	33.7	34.0	33.8	0.1	1.0	0.4	$p < .001, V = .51$	$p < .001, V = .41$	$p < .001, V = .46$																																																																																																																																																																																																																																													
Catholic	28.2	31.4	29.9	64.7	62.4	63.9																																																																																																																																																																																																																																																
Other	2.7	0.6	1.6	0.7	1.5	1.0																																																																																																																																																																																																																																																
None	35.4	34.0	34.7	34.5	35.0	34.7																																																																																																																																																																																																																																																
<b>Currently in a relationship</b>																																																																																																																																																																																																																																																						
Yes	66.3	55.9	60.9	60.2	51.4	57.2	$p < .05, V = .06$	ns	ns																																																																																																																																																																																																																																													
<b>Age at first sexual intercourse</b>																																																																																																																																																																																																																																																						
M	17.05	17.81	17.42	18.25	18.48	18.32	$p < .001, d = .58$	$p < .001, d = .30$	$p < .001, d = .43$																																																																																																																																																																																																																																													
SD	2.19	2.19	2.22	1.91	1.90	1.91																																																																																																																																																																																																																																																
<b>Lifetime number of sexual partners</b>																																																																																																																																																																																																																																																						
M	4.78	4.46	4.62	2.79	3.13	2.90	$p < .001, d = .43$	$p < .01, d = .20$	$p < .001, d = .32$																																																																																																																																																																																																																																													
SD	5.19	6.77	6.06	4.28	5.46	4.72																																																																																																																																																																																																																																																

Note: \*Multiple answers were possible.

## Sociocultural Factors and the Age at the first Pornography Contact

In the linear regression model, we investigated the relationship of sociocultural factors with the age at the first pornography exposure and the moderation effect of country and gender. Gender, country, and organizational religious activity were significantly associated with the age at the first contact with pornographic materials. However, ORA, or more precisely never attending religious meetings, was the weakest predictor (Table 4). Participants who never take part in any organizational religious activity, like attending church or other religious meetings, were on an average 13.56 [13.34; 13.77] years old when experiencing their first pornography contact. In both samples, they differ significantly from individuals attending religious meetings more frequently (from once a year to more than once a week): these students were distinctly older at their first exposure to pornographic materials (age difference 0.74 [0.44; 1.04] – 1.38 [0.91; 1.84]). No relationships between non-organizational religious activity, the agreement with common sexual myths, intrinsic religiosity, level of sex taboos, and the age at the first pornography contact were found.

Table 2. Differences in Sociocultural Factors between the German and Polish Samples.

Variables	German sample			Polish sample			Differences between the samples		
	Women	Men	All	Women	Men	All	Women	Men	All
<b>Organizational religious activity</b>									
<i>M</i>	2.18	2.10	2.14	2.92	2.84	2.89	$p < .001,$	$p < .001,$	$p < .001,$
<i>SD</i>	1.05	1.06	1.06	1.41	1.50	1.44	$d = .58$	$d = .58$	$d = .61$
<b>Non-organizational religious activity</b>									
<i>M</i>	1.70	1.55	1.62	1.91	1.98	1.93	$p < .01,$	$p < .001,$	$p < .001,$
<i>SD</i>	1.21	1.14	1.18	1.44	1.62	1.51	$d = .16$	$d = .30$	$d = .24$
<b>Intrinsic religiosity</b>									
<i>M</i>	6.45	5.83	6.13	7.82	7.48	7.70	$p < .001,$	$p < .001,$	$p < .001,$
<i>SD</i>	2.93	3.09	3.03	3.21	3.39	3.27	$d = .45$	$d = .49$	$d = .49$
<b>Myths about sexuality</b>									
<i>M</i>	18.06	20.18	19.15	19.72	21.30	20.27	$p < .001,$	$p < .001,$	$p < .001,$
<i>SD</i>	4.24	4.54	4.52	4.52	4.96	4.73	$d = .39$	$d = .22$	$d = .24$
<b>Sex taboos in the family</b>									
<i>M</i>	13.82	13.88	13.85	16.42	17.33	16.73	$p < .001,$	$p < .001,$	$p < .001,$
<i>SD</i>	4.10	4.05	4.07	3.97	3.92	3.98	$d = .65$	$d = .82$	$d = .72$

Table 3. Pornography Use in the German and Polish Samples by Gender (in %).

Variables	German sample			Polish sample			Differences between the samples		
	Women	Men	All	Women	Men	All	Women	Men	All
<b>Age at first exposure to pornography</b>									
<i>M</i>	15.34	13.98	14.60	14.41	13.05	13.92	$p < .001,$	$p < .001,$	$p < .001,$
<i>SD</i>	3.03	2.13	2.67	3.23	2.32	3.01	$d = .30$	$d = .41$	$d = .24$
<b>Frequency of pornography use (last 6 months)</b>									
Daily	0.8	10.7	5.9	0.3	7.9	2.9			
Several times a week	2.5	44.9	24.3	3.6	43.5	17.4			
Several times a month	15.5	27.4	21.6	19.9	27.6	22.6	$p < .05,$	ns	$p < .001,$
Once a month or less	30.5	9.5	19.7	33.1	12.3	25.9	$V = .09$		$V = .13$
Did not use at all	50.6	7.5	28.4	43.1	8.7	31.3			
<b>Main source of pornography</b>									
Internet	74.4	96.5	89.1	90.5	99.4	94.6			
TV	15.4	0.6	5.6	7.1	0.6	4.1	$p < .001,$	$p < .01,$	$p < .001,$
Other	10.3	2.9	5.4	2.4	0.0	1.3	$V = .22$	$V = .10$	$V = .12$

Table 4. Final Results for the Linear Regression Model Predicting Age at the First Pornography Contact.

Variables	<i>b</i>	<i>SEb</i>	<i>t</i>	$\beta$	<i>p</i>
<b>Gender</b>	1.34	0.12	11.44	.23	< .001
<b>Country</b>	1.12	0.12	9.13	.20	< .001
<b>Organizational religious activity</b>					
Never	-0.97	0.45	-2.14	-.15	< .05
Once a year or less	-0.23	0.45	-0.51	-.04	ns
A few times a year	-0.17	0.45	-0.39	-.03	ns
A few times a month	0.09	0.49	0.20	.01	ns
Once a week	0.41	0.48	0.85	.04	ns
More than once a week (Referent)	-	-	-	-	-



## Sociocultural Factors and the Frequency of Pornography Use

In the ordinal regression model, we explored the associations between sociocultural factors and the current pornography engagement as well as the moderation effect of country and gender. The interaction of gender, country, and intrinsic religiosity, organizational religious activity, non-organizational religious activity, and sexual myths were all significantly associated with the frequency of pornography use during the six months prior to the investigation (Table 5). The relationship of personal religious involvement and the current pornography engagement varied between genders. For women in both samples intrinsic religiosity was linked with lower frequency of pornography use. For men, however, in both samples intrinsic religiosity was associated with higher pornography engagement. In other words, for females the higher the intrinsic religiosity the lower was the probability of using pornography. Contrariwise, for men the higher the intrinsic religiosity the higher was the probability of pornography use.

Organizational religious activity was linked with lower frequency of pornography use: the higher ORA scores the lower was the likelihood of watching pornography. There was also a similar (but weaker) relationship between non-organizational religious activity and pornography use: spending time in private religious activities, such as prayer, was negatively associated with the frequency of pornography use. The agreement with common sexual myths was related to higher frequency of pornography use: the higher the level of the agreement the greater was the frequency of using pornographic materials. There was no relationship between sex taboos and the current pornography engagement.

*Table 5. Final Results for the Ordinal Logistic Regression Model Predicting Frequency of Pornography Use.*

<b>Variables</b>	<b>b</b>	<b>SEb</b>	<b>OR [95% CI]</b>	<b>p</b>
<b>Intrinsic religiosity</b>				
German women	-0.21	0.02	0.81 [0.78; 0.85]	< .001
Polish women	-0.16	0.02	0.85 [0.82; 0.89]	< .001
German men	0.15	0.02	1.16 [1.11; 1.21]	< .001
Polish men	0.13	0.02	1.14 [1.09; 1.19]	< .001
<b>Organizational religious activity</b>				
Never	2.01	0.46	7.48 [3.02; 18.53]	< .001
Once a year or less	1.96	0.46	7.09 [2.89; 17.38]	< .001
A few times a year	1.85	0.45	6.35 [2.63; 15.35]	< .001
A few times a month	1.63	0.46	5.08 [2.06; 12.51]	< .001
Once a week	1.78	0.44	5.92 [2.49; 14.06]	< .001
More than once a week (Referent)	-	-	-	-
<b>Non-organizational religious activity</b>				
Rarely or never	1.14	0.38	3.13 [1.47; 6.63]	< .01
Once a month or less	1.11	0.39	3.04 [1.42; 6.50]	< .01
A few times a month	1.24	0.40	3.46 [1.59; 7.50]	< .01
A few times a week	0.93	0.40	2.54 [1.16; 5.58]	< .05
Daily	0.76	0.39	2.15 [1.00; 4.64]	.052
More than once a day (Referent)	-	-	-	-
<b>Myths about sexuality</b>	0.05	0.01	1.05 [1.03; 1.07]	< .001

## Discussion

In the current study we examined differences in sociocultural backgrounds and pornography use of Polish and German university students. Additionally, we examined possible associations between pornography use and sociocultural factors, such as religiosity, agreement with sexual myths, and sex taboos. As expected, cross-country differences in all three sociocultural factors were found: Polish students were more religious than German students, they showed a greater acceptance of sexual myths and reported a higher level of sex taboos in their origin families. Nonetheless, most effects were small to medium, with sex taboos showing the strongest effect (medium to large). Contrary to the expectations, Polish students

were younger at their first contact with pornographic materials (although being older at their first sexual intercourse), but again, the effect was small. The reciprocal relation between age at first contact with porn and age at first intercourse could indicate a different meaning or function of pornography for young adults in Poland and Germany. While for Polish individuals looking for pornography in early adolescence may be more pronounced a way of breaking taboos, or even a way to get otherwise restricted information about sexuality (Simon & Daneback, 2013), for German young people it may be rather a part of their sexual practice to be used, for example, for sexual excitement and masturbation (cf. Sabina et al., 2008). As expected, German students used pornography more frequently than Polish students in the six months prior to the investigation, however the association was weak. This may be – as assumed – due to more liberal attitudes toward sexuality in the German society.

The relationship between pornography use and (current) religiosity of the participants was ambiguous. On the one hand, *organizational* religious activity was negatively associated with pornography use. Participants attending church or other religious meetings on a regular basis were older at their first exposure (weak association) and used pornography less often (strong association). This result confirmed findings from previous research on associations between religiosity and sexual behaviour: frequent attendance of religious services is generally related to greater sexual abstinence, fewer lifetime sexual partners, delayed age of sexual debut and lesser likelihood of premarital sex (Barkan, 2006; Lefkowitz et al., 2004; Rostosky, Wilcox, Comer Wright, & Randall, 2004; Visser et al., 2007). We also found a negative relationship between *non-organizational* religious activity and current pornography engagement (relatively large effect). Spending time in private religious activities, such as prayer, meditation, or Bible study, was associated with lower frequency of pornography use in the last six months. On the other hand, both *non-organizational* religious activity and *intrinsic* religiosity were not related to the age at first pornography contact. Furthermore, the association of *intrinsic* religiosity with the current pornography engagement proved to be contradictory: it was correlated with a lower frequency of pornography use for females and with a higher frequency for males.

Our findings differ or even contradict for different aspects of religiosity. In agreement with the findings in several previous studies (cf. Wright et al., 2013; Wright, 2013), we found that religious attendance was negatively associated with pornography use. However, there are several limitations that challenge the assumption that religious attendance reliably reflects religiosity per se. As members of different religious denominations differ in the expectations of participation at religious meetings, it may be not an accurate indicator across religious (and cultural) groups. Moreover, religious attendance does not provide information about religious attitudes and motivations, nor about external influences that may determine attendance (e.g. social influence of peers and/or family). Nevertheless, in both samples, spending time in public and private religious activities was related to current pornography consumption. The positive association between the degree of personal religious commitment and pornography use for male students in our sample was somewhat unexpected. One possible explanation offered Abell et al. (2006) who hypothesised that religious individuals may consider pornography use as more permissible or at least less objectionable than premarital sex. Alternatively, these findings may be interpreted in terms of the paradoxical or preoccupation hypothesis that a greater religiosity (and/or conservatism) is associated with a greater underlying attraction to sexual content (MacInnis & Hodson, 2015). Thomas (2013, p. 471) speculated that “the technological and social change that has taken place around evangelicals over the last several decades—especially including the development of the Internet—has, in effect, created new secular “decisions areas,” which have led evangelicals to increase their absolute use of the secular narratives of both public-performer harm and personal-viewer harm, even as their absolute use of the religious narrative of traditional values remains roughly the same.” This secularisation hypothesis found support in the study by Farmer, Trapnell, and Meston (2009) on the relation between religiosity and sexual behaviour. Their results suggested a lack of concordance between religious affiliation and a broad range of sexual behaviour. Overall, our results underlined the complexity of the relationship between religious beliefs and pornography use. Further studies on a dissonance between religious beliefs and sexual practice, differences in the role of religiosity for pornography use for genders and studies on different religious and cultural groups are needed.

No relationship between sexual myths and the age at first pornography exposure was found. The agreement with common sexual myths was positively (however weak) associated with the frequency of pornography use: the higher the level of agreement, the greater the frequency of using pornographic materials. This association could be interpreted in both ways: either pornography consumption leads to greater agreement with common sexual myths, or individuals with a higher level of sexual myths are more likely to watch pornography.

Possibly the most surprising result was the complete lack of association between the level of sex taboos in the family and pornography use. The significant difference in the level of sex taboos between the national

groups (and also genders) with a medium to large effect complied with our expectations. Regnerus (2005) showed that parents regularly attending church service tend to talk to their children less frequently about sexuality and contraception than other parents – and if they do, they place the focus mostly on moral issues. Considering this and the fact that a large proportion of Polish students were growing up within a Catholic religious background (96 percent), the reported higher level of sex taboos in the Polish sample appears to be coherent. However, a plausible answer to the question why sexuality-related primary socialization did play no role for the first pornography contact and the current frequency of pornography use is difficult to give. Perhaps contact with pornography during puberty can be seen as a phenomenon relatively independent of the family of origin. The contact may be facilitated by factors stronger than parental influence, like the influence of peer groups (and also peer pressure). Nevertheless, perhaps for some individuals their pornography use may be an important move of detaching themselves from the family of origin and its restrictive rules, while for other individuals from less restrictive familial environments the same behaviour may just be a mundane part of their everyday sex life. However, these suggestions for interpretation need further research to be evaluated.

Several limitations of the study should be noted. It is difficult to generalize our findings to all university students in either country, given the fact that we did not use a probabilistic sampling technique. Our convenience samples probably over-represent sexually open-minded individuals and under-represent conservative and/or very religious students. In addition, like other research relying on self-report measures, our study has to consider potential reporting bias due to the effects of social desirability. However, it may be possible that online research offers more anonymity and prompts respondents to be more honest than paper-pencil surveys. The scope of measures used in the study may also contribute to the possible limitations. No measure of distress or personal value conflicts that may stem from pornography use was applied in the study. This information could shed additional light on the main findings, e.g. intrinsic religiosity may increase the odds of pornography use among males, but also of inner conflicts and feelings of guilt associated with pornography engagement. Finally, given their high level of education and assumed more liberal attitudes toward sexuality, students constitute a specific group and the findings cannot necessarily be generalized for groups of other young adults. For example, the sexual climate in the family may play a different role for pornography engagement of young adults not attending university. Despite these weaknesses, our study is an important contribution to the currently sparse literature on sociocultural factors and pornography use. This is particularly true in the light of our cross-cultural comparisons providing insights into practices and experiences of young adults from two countries with mutually different cultural backgrounds – Poland and Germany.

In conclusion, our findings showed that, on average, university students in both samples appear to have had their first contact with pornography not extraordinarily early and do not use it unusually frequently (cf. Hald, Seaman, & Linz, 2014). However, differences between the national groups were observed. As the acceptance of sexual myths was related to pornography use, the importance of comprehensive sex education that not only provides information about sexuality in general, but also focusses on pornography, should not be underestimated. Furthermore, our study suggests that there are important connections between sociocultural backgrounds, especially religiosity, and pornography engagement, although they are inconsistent. Our findings are important because they provide new ideas about the link between sociocultural factors and pornography use. In the first place, we observed similar relationships in both groups, although the levels of the variables were different e.g. though Polish students accepted sexual myths more often than German individuals, in both groups the agreement with sexual myths was positively associated with the frequency of pornography use. In the second place, our results suggest that there may be several different types of the link between pornography use and religiosity. While for some individuals, religious beliefs and rules may be deciding by abstaining from watching pornography, for others it may paradoxically be associated with preoccupation with sexual content. There may be also a third group of religious individuals who perceive their pornography use as a private and intimate area (new secular “decision area”, see Thomas [2013]) and handle it separately from their religiosity. This emphasizes the complexity of the topic (for more on challenges in the research on social and cultural dimensions of sexuality see, e.g., Parker [2009]). Moreover, we might suppose extending cultural boundaries to be a part of the nature of pornography use itself. Perhaps pornography has similar effects regardless of cultural background. And, as the Internet was the main source of pornography in both national groups in our study, the role of this access to sexual content should not be underestimated. The Internet makes it possible, in affordable and anonymous way, to get sexual information, inspiration, and excitation within seconds, and maybe it contributes to extension of (individual and cultural) sexual horizons. Besides, the role of sociocultural factors for other online sexual behaviours (e.g. sexting) needs also to be explored in further studies. To provide a better understanding of these associations, the aspects of sexual culture need to be particularly focused in future Internet and pornography research. At the same time, since Internet and pornography use is very common among young adults, it should find an

increased consideration in further research on sexual socialization. Despite its limited explanatory reach, our survey offers empirically founded directions valuable for future studies.

## Note

1. Polish cities: Warsaw, Kraków, Łódź, Wrocław, Poznań, Gdańsk, Szczecin, Bydgoszcz, Lublin, and Katowice; German cities: Hamburg, Cologne, Frankfurt on the Main, Stuttgart, Bremen, Dresden, Nuremberg, Wuppertal, Mannheim, and Augsburg.

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