

# Self-Perceived Effects of Pornography Consumption

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**Abstract** The self-perceived effects of “hardcore” pornography consumption were studied in a large representative sample of young adult Danish men and women aged 18–30. Using a survey that included the newly developed Pornography Consumption Effect Scale, we assessed participants’ reports of how pornography has affected them personally in various areas, including their sexual knowledge, attitudes toward sex, attitudes toward and perception of the opposite sex, sex life, and general quality of life. Across all areas investigated, participants reported only small, if any, negative effects with men reporting slightly more negative effects than women. In contrast, moderate positive effects were generally reported by both men and women, with men reporting significantly more positive effects than women. For both sexes, sexual background factors were found to significantly predict both positive and negative effects of pornography consumption. Although the proportion of variance in positive effects accounted for by sexual background factors was substantial, it was small for negative effects. We discuss how the findings may be interpreted differently by supporters and opponents of pornography due to the reliance in this study on reported self-perceptions of effects. Nonetheless, we conclude that the overall findings suggest that

many young Danish adults believe that pornography has had primarily a positive effect on various aspects of their lives.

**Keywords** Pornography · Sex differences · Denmark · Sexuality · Sex

## Introduction

The effects of pornography exposure on consumers is a topic that has been highly debated and frequently studied. One methodological approach that has seldom been used in this area consists of studying consumers’ beliefs about how their own reports with pornography may have affected them, if at all. In the popular media, using interviews with selected individuals, a variety of primarily adverse effects have been reported including “wrecking marriages,” negatively changing men’s perceptions of women and women’s perceptions of themselves, and sexual addiction (e.g., Paul, 2005). However, given the methodological approach (i.e., interviews with selected individuals), it is impossible to know how representative these reports are. Rather than relying on such few selected interviewees, the present study used a relatively extensive survey with a representative sample of young Danish women and men.

Survey research that has focused on perceived effects of pornography has often emphasized “third person” effects. This refers to the phenomenon that individuals ascribe greater effect of media (e.g., pornography) to others than to themselves (Davidson, 1983; Lo & Paddon, 2000). According to Gunther (1995), the third person effect entails two main components. The first, the perceptual component, refers to the tendency of people to estimate that media will influence others more than themselves. The second, the behavioral component, refers to the tendency of people to react in accordance with the

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perceptual bias,<sup>1</sup> i.e., the size of the difference between perceived effects on oneself (first person effects) and perceived effects on others (third person effects). The impact of such reactions could be the support of censorship of certain types of media such as pornography. Research has provided support for some, but not all, aspects of this model. For example, Lo and Paddon (2000), in a large scale Taiwanese questionnaire study, found that perceived harm on others actually was a better predictor for support of restrictions on pornography than the magnitude of the perceptual bias.

One of the mechanisms underlying the “third person effect” may well be the phenomenon of biased optimism, whereby people consider themselves less likely to be influenced by negative events than they do others (Weinstein, 1989). Given that people generally consider themselves relatively immune to harmful media effects (Gunther, 1995), limited negative self-reported or first person effects of pornography consumption may be expected. Nevertheless, if the accounts described above based on highly selected interviews are at all representative, we would expect that at least a sizeable proportion of a representative sample would report some negative effects of pornography on themselves, while at the same time possibly believing that others would be harmed even more.

Sex differences in almost all areas of pornography consumption are well documented. Compared to women, men have been found to consume more pornography, be exposed to pornography at a younger age, use pornography more often during masturbation, be more attracted to both a wider range of hardcore pornography and hardcore pornography devoid of relationship context and emotional attachments, and generally, although with some exceptions (e.g., Fisher & Byrne, 1989), be more psychologically aroused by pornography. Furthermore, men more than women have been found to prefer pornography with many different actors as compared to pornography with the same actors performing different acts (Gardos & Mosher, 1999; Hald, 2006; Janghorbani, Lam, & The Youth Sexuality Study Task Force, 2003; Malamuth, 1996; Mosher & MacJan, 1994; Træen et al., 2004). In the area of attitudes toward pornography (ATP), US, Finish, Norwegian, and Swedish studies all indicate sex differences in ATP (e.g., Herman & Border, 1983; Kontula & Haavio-Mannila, 1995; Lewin, 1997; Træen, 1998; Træen, Spitznogle, & Beverfjord, 2004). In these studies, it was found that women more than men favored restrictions on pornography and were more likely to describe pornography as dull, not exciting, or repulsive. Similarly, men more than women expressed more positive ATP and were more likely to view pornography as a means of sexual enhancement (Træen et al., 2004).

Research generally supports the notion that sexual background variables are related to pornography consumption. For example, Lewin (1997), in a Swedish survey study, found a positive relationship between number of sexual partners during the past year and pornography consumption during the same time. This finding was replicated in a large survey study of the Norwegian population where it was found that number of sex partners was associated with use of pornography in all media (Træen, Sørheim-Nilsen, & Stigum, 2006). Also, in this study, it was found that experience with group sex predicted amount of exposure to pornography in all media. Janghorbani et al. (2003), in a large survey study of young adults from Hong Kong, found that number of sexual partners and frequency of masturbation during the past week were associated with sexual media use. Furthermore, Haavio-Mannila and Kontula (2003), using a Finish population sample, found that pornography consumption seemed especially high for highly sexually active individuals and that those with a higher frequency of masturbation also used more pornography. These findings essentially mirror past studies of older data. For example, Wallace (1973), Athanasiou and Shaver (1971), and Coles and Shamp (1984) found that sexual attitudes and sexual experience were key predictors of use of sexual explicit materials. Based on these past and more present findings, we believe that key sexual background variables may also be of relevance in predicting self-reported effects of pornography consumption.

One of the key background variables which has been shown to be important in other areas of media research (e.g., Huesmann & Eron, 1986; Huesmann, Moise, Podolski, & Eron, 2003) but has only been examined to a limited degree in pornography research has been consumers’ perceived realism of the portrayals. Such perceptions are likely to be important mediators of whether consumers may influence their beliefs and attitudes or behaviors in the real world. This has been well illustrated by a recent study in the area of sexually explicit media. Peter and Valkenburg (2006) found among Dutch adolescents that exposure to sexually explicit online material significantly affected adolescents’ attitudes towards sex, with this relationship being largely mediated by the extent to which the adolescents’ perceived the sexual material as realistic. Pornography, while depicting people actually engaging in sexual acts, often portrays an unrealistic picture of sexuality as it is practiced in real life (Paul, 2005). Because this dimension of realism has not been well explored in empirical research in this area, we were particularly interested in whether those who believed pornography had particularly positive effects believed that it portrayed sexuality in an unrealistic or highly fantasized manner or whether they perceived it as more realistic.

Based on the above, the following three hypotheses were tested in the present study:

<sup>1</sup> The perceptual bias has also elsewhere been referred to as the perceptual gap or discrepancy (e.g., Lasorsa, 1989; Rojas, Shah, & Faber, 1996; Tiedge, Silverblatt, Havice, & Rosenfeld, 1991).

**Hypothesis 1:** Men and women will report larger positive than negative effects of hardcore pornography consumption.

**Hypothesis 2:** Men will report more positive and less negative effects of hardcore pornography consumption than women.

**Hypothesis 3:** For both genders, sexual background variables will significantly predict the overall report of both negative and positive effects of hardcore pornography consumption.

To investigate the three hypotheses, we developed the Pornography Consumption Effect Scale (PCES), which is presented in this study. To our knowledge, a scale of this type has not previously been developed and validated using a large representative sample.

## Method

### Participants

Participants were 688 young heterosexual Danish men ( $n = 316$ ) and women ( $n = 372$ ) aged 18–30 years. Mean age of participants was 24.64 years (SD, 3.76) for men and 24.39 (SD, 3.72) for women. Sociodemographic characteristics (age, primary and secondary education, further education, province of residence, and city size of residence) of the participants were checked against the general population of young adults aged 18–30 living in Denmark using Statistics Denmark. This control database contains detailed information on the Danish society. Except for level of education, participants were found to be representative of young Danish adults living in Denmark. Thus, participants in the current sample were found to be slightly higher educated than the general Danish population of young adults aged 18–30. Further details of the participant sample can be found in Hald (2006).

### Procedure

In October 2003, a stratified sample of 1,002 young adult men ( $n = 501$ ) and women ( $n = 501$ ) was randomly selected among all young Danish adults aged 18–30 living in Denmark using The Central Person Register. The Central Person Register contains personal information and addresses of the Danish population ( $N = 5.4$  million). The sample was stratified on the basis of gender (equal male/female ratio), age (18–30 years; equal age distribution), place of birth (Denmark), and citizenship (Danish). From October 2003 to June 2004, all randomly selected young adults were contacted by mail on three separate occasions and invited to participate in an anonymous survey study on sexuality by completing an enclosed questionnaire and returning it in an enclosed

pre-addressed, pre-stamped envelope. A total of 688 out of 959 eligible participants returned the questionnaire. Consequently, the response rate of the final sample was 65.6% for men ( $n = 316$ ) and 78.0% for women ( $n = 372$ ) ( $\chi^2 = 14.55$ ,  $p = .0001$ ). Further details of the sampling procedure can be found in Hald (2006).

### Measures

On the basis of other international studies of sexuality and pornography (e.g., Barak, Fisher, Belfry, & Lashambe, 1999; Frable, Johnson, & Kellman, 1997), the Pornography Consumption Questionnaire (PCQ) was developed. The PCQ consisted of 139 items and was divided into four parts.

Part one, two, and three of the questionnaire consisted of a short instruction, a standardized definition of pornography,<sup>2</sup> and items related to sociodemographic characteristics, pornography exposure patterns, and sexual behavior. More detailed information on the first three parts of the questionnaire and results pertaining to these can be found in Hald (2006).

Part four of the PCQ consisted of the 64 item Pornography Consumption Effect Scale (PCES) (later reduced to 47 items; see below). The PCES was used to measure self-perceived effects of hardcore pornography consumption on participants' sexual behaviors or sex life, attitudes toward sex, sexual knowledge, life in general, and attitudes towards and perceptions of the opposite gender. For each item, participants were asked to indicate the extent to which they personally reported various effects of consumption using a 7-point Likert scale ranging from 1 (not at all) to 7 (to an extremely large extent) (see Appendix).

An overall Positive Effect Dimension (PED) and an overall Negative Effect Dimension (NED) were created on the basis of the following putative constructs<sup>3</sup>:

1. *Sex Life* (SL) (5 items for PED; 8 items for NED). The SL construct was used to explore effects of consumption

<sup>2</sup> Pornography was defined as follows: any kind of material aiming at creating or enhancing sexual feelings or thoughts in the recipient and, at the same time containing explicit exposure and/or descriptions of the genitals, and clear and explicit sexual acts, such as vaginal intercourse, anal intercourse, oral sex, masturbation, bondage, sadomasochism, rape, urine sex, animal sex, etc. It was emphasized that materials containing men and women posing or acting naked such as seen in *Playboy/Playgirl* did not contain clear and explicit sexual acts and were to be disregarded as pornography when completing the questionnaire.

<sup>3</sup> It should be noted that although the constructs were similar for the two effect dimensions, the wording of items within each construct necessarily differs. Construct 5, Sexual Knowledge, was unique to the positive effect dimension. The assessment of self-reported positive and negative effects of pornography consumption was conducted separately in line with research showing that these two effect dimensions essentially are independent, rather than being opposites of the same continuum (e.g., Diener, 1994; Diener & Emmons, 1984). The validation process of the PCES further confirmed this dimensional independence as noted.

**Table 1** Intercorrelations of the positive effect dimension ( $n = 688$ )

	1	2	3	4	5	6
1. Sex life		.80*	.80*	.54*	.69*	.91*
2. Attitudes toward sex			.77*	.66*	.70*	.95*
3. Sexual knowledge				.58*	.62*	.88*
4. Perception of and attitudes towards opposite gender					.60*	.72*
5. Life in general						.80*
6. Positive effect dimension						

\*  $p < .001$ **Table 2** Intercorrelations of the negative effect dimension ( $n = 688$ )

	1	2	3	4	5
1. Sex life		.55*	.44*	.82*	.97*
2. Attitudes toward sex			.53*	.57*	.70*
3. Perception of and attitudes towards opposite gender				.43*	.56*
4. Life in general					.89*
5. Negative effect dimension					

Note: Missing data excluded

\*  $p < .001$ 

on one's sex life and sexual behaviors (e.g., effects on the frequency of sexual activity, sexual experimentation, and sexual performance).

2. *Life in General* (LG) (4 items for PED; 4 items for NED). The LG construct was created to investigate effects of consumption on life in general (e.g., on the quality of life, satisfaction with life, and problems in life).
3. *Perception of and Attitudes Toward the Opposite Gender* (PATOG) (4 items for PED; 3 items for NED). The PATOG construct was used to tap into effects of consumption on the perception of and attitudes towards the opposite gender (e.g., stereotypical perceptions of gender, friendliness toward and respect for the opposite gender).
4. *Attitudes Toward Sex* (ATS) (5 items for PED; 5 items for NED). The ATS construct was created to investigate effects of consumption on Attitudes Toward Sex (e.g., opinions, views, and outlook on sex).
5. *Sexual Knowledge* (SK) (9 items, PED only). The SK construct was used to examine effects of consumption on knowledge of sex and sexual desire (e.g., masturbation, sexual foreplay, oral, vaginal, and anal sex, sexual fantasies, and sexual desires).

## Results

### Validation of the Pornography Consumption Questionnaire (PCQ)

The underlying dimensionality of the 64 item PCES was investigated using a two step procedure. First, the 64 items

were reduced to a total of 47 items. Items were excluded on the basis of redundancy, small factor loadings on common extracted factors (i.e.,  $<.30$ ), very limited or no correlation with other items, and biased or inappropriate wording (see also Field, 2003). Second, correlational-, factorial-, and reliability analyses as reported below were conducted on the remaining 47 items.

### Correlational analyses

Overall, the pattern of intercorrelations between constructs organized within the same effect dimension was high (Tables 1, 2). In addition, correlations between constructs and the overall effect dimension were found to be high. The Positive and the Negative Effect Dimension were found not to significantly correlate ( $r = .07$ ), indicating two separate and distinct effect dimensions.<sup>4</sup>

### Factor analysis

Various factor analyses and solutions were used to test the underlying dimensionality of the PCES. For the final factor solution, a hierarchical principal axis factoring was employed. First, items which, prior to data collection, were considered to belong to each of the constructs constituting the positive (PED) and the negative (NED) effect dimensions were grouped together. Thus, the PED consisted of a total of five constructs and the NED of a total of four

<sup>4</sup> A principal axis factoring with oblimin rotation confirmed this finding ( $r = .12$ ).

constructs. Second, a principal axis factor analysis was conducted for each group of items constituting each of the nine constructs. This was done in order to investigate if items also statistically, and not only theoretically, could meaningfully be combined into a single construct, yielding a better overall estimate of that particular construct. With one exception, both the screeplot and the Kaiser-Guttman rule both suggested that only one common factor should be extracted for each of the nine groups of items<sup>5</sup> i.e., the nine constructs.

Subsequently, for each factor analysis, the factor scores for the first unrotated principal factor were calculated and used as an estimate for that particular construct. Third, for each group of constructs, that is, the five positive and the four negative constructs, a second principal axis factor analysis was conducted using the extracted factor scores of each construct to investigate if the group of construct also statistically, and not only theoretically, could be meaningfully combined into a single underlying effect dimension (factor).

For both factor analyses, the screeplot as well as the Kaiser-Guttman rule suggested that only one common factor should be extracted and thus that constructs could indeed be combined into two underlying unrelated effect dimensions, i.e., a Positive and a Negative Effect Dimension (PED and NED, respectively). Thus, hierarchical principal axis factor analyses supported the theoretical notion of two separate effect dimensions comprised of a number of constructs each measuring various aspects of self-reported effects of pornography consumption.

Results showed that the first extracted factor for the Positive Effect Dimension explained 74.1% of the total variance, with item loadings of .91 for Attitudes Toward Sex, .88 for Sex Life, .85 for Sexual Knowledge, .78 for Daily Life, and .69 for Perception of and Attitudes Towards the Opposite Gender. The first extracted factor for the Negative Effect Dimension was found to explain 65.4% of the total variance with item loadings of .91 for Sex Life, .84 for Daily Life, .66 for Attitudes Toward Sex, and .53 for Perception of and Attitudes Towards the Opposite Gender.

### Reliability analyses

The reliability of the nine constructs and the two effect dimensions were investigated using Cronbach's alpha. For

<sup>5</sup> The one exception concerned the Sex Life construct of the Negative Effect Dimension. Here, discrepancy between the screeplot and the Kaiser-Guttman rule was found. The screeplot indicated that only one common factor should be extracted whereas the Kaiser-Guttman rule indicated that two common factors should be extracted. However, with large samples, Field (2003) and Stevens (1992) suggest that the screeplot is used over the Kaiser-Guttman rule to determine the number of common factors which should be extracted. Thus, we decided to extract only one common factor as suggested by the screeplot.

both the constructs and the effect dimensions, the internal consistency was found to be high. Thus, full scale reliability for the Positive Effect Dimension was .91 with reliability estimates of .91 (SL), .90 (SK), .90 (ATS), .87 (DL), and .73 (PATOG) for each construct. Full scale reliability for the Negative Effect Dimension was .82 with reliability estimates of .83 (DL), .81 (ATS), .79 (SL), and .72 (PATOG) for each construct.

### Hypothesis testing

*Hypothesis 1:* Men and women will report significantly larger positive than negative effects of pornography consumption.

Initially, men and women's use of pornography was compared. Significantly more men than women were found to have ever used pornography ( $p < .001$ ). Furthermore, as compared to women, men were found to spend significantly more time on average per week on pornography consumption ( $p < .001$ ) (Table 3).<sup>6</sup>

With one exception noted below, both overall and at each construct of comparison men and women were found to report significantly larger positive than negative effects of pornography consumption (Table 4). In addition, as indicated by Cohen's  $d$ ,<sup>7</sup> these differences were found to be large (range, .76–2.04). Thus, men were found to report significantly larger positive than negative effect of consumption both overall and at each construct of comparison, that is, sex life, life in general, perception of and attitudes towards the opposite gender, and attitudes toward sex (all  $ps < .001$ ). Likewise, women were also found to report significantly larger positive than negative effects of consumption both overall and at each of the following constructs of comparison: sex life, life in general, and attitudes toward sex (all  $ps < .001$ ). The one exception where no significant difference in effect for women was found concerned women's attitudes toward and perception of the opposite gender.

For both sexes, the relationship between effects and pornography consumption was examined using correlational and trend analyses. For men, we found a significant correlation between greater pornography consumption and positive effects ( $r = .41$ ,  $n = 268$ ,  $p < .001$ ) and a linear trend ( $F [1, 264] = 48.41$ ,  $p < .001$ ) revealing that higher amounts of pornography consumption were significantly associated with greater overall perceived positive effects. However, no significant correlation or trend was found for amount of consumption and overall negative effects

<sup>6</sup> For more detailed information on consumption patterns and behaviors for the current sample, see Hald (2006).

<sup>7</sup> In the calculation of Cohen's  $d$ , means and SDs were used as follows: Cohen's  $d = M_1 - M_2 / \sigma_{\text{pooled}}$  where  $\sigma_{\text{pooled}} = \sqrt{[(\sigma_1^2 + \sigma_2^2) / 2]}$ .

**Table 3** Pornography consumption (in %)

Variables	Men		Women		Tests	Effect size Cohen's <i>d</i>
1. Ever used pornography	%	<i>N</i>	%	<i>N</i>		
Yes	97.8	316	79.5	372	$\chi^2 = 54.46^*$ , <i>df</i> = 1	.59
No	2.2	316	20.5	372		
2. Frequency distribution of average time of use per week during the past 6 months in min <sup>a</sup>					$U = 21,174^*$ , <i>df</i> = 6	.84
0–29	34.9	101	75.7	199		
30–59	15.6	45	9.5	25		
60–89	15.9	46	6.8	18		
90–119	6.2	18	2.3	6		
120–149	6.2	18	1.1	3		
150–179	3.5	10	0.4	1		
181+	17.7	51	4.2	11		
3. Average time of use per week during the past 6 months in min <sup>a</sup>						
<i>M</i>	80.8		21.9		$t = 9.08^*$ , <i>df</i> = 412	.89
SD	98.1		46.3			
<i>N</i>	285		260			

Note: Missing values excluded

<sup>a</sup> Only participants who indicated to having ever used pornography were included in the analyses

\* $p < .001$

**Table 4** Comparison of mean differences in positive and negative effects of pornography consumption by gender

Variables	MD <sub>Positive-Negative</sub>			Tests	Effect size Cohen's <i>d</i> <sup>a</sup>
Men	<i>M</i>	SD	<i>N</i>		
Sex life	2.10	1.47	296	$t = 24.54^*$ , <i>df</i> = 295	2.04
Attitudes towards sex	1.76	1.31	297	$t = 23.13^*$ , <i>df</i> = 296	1.76
Perception & attitudes	.74	1.14	297	$t = 11.13^*$ , <i>df</i> = 296	.84
Life in general	1.15	1.43	299	$t = 13.89^*$ , <i>df</i> = 298	1.11
Over all	1.54	1.10	283	$t = 23.43^*$ , <i>df</i> = 282	1.86
Women					
Sex life	1.68	1.55	274	$t = 17.91^*$ , <i>df</i> = 273	1.54
Attitudes towards sex	1.06	1.55	277	$t = 11.33^*$ , <i>df</i> = 276	.96
Perception & attitudes	.10	.98	274	<i>ns</i>	
Life in general	.58	1.04	278	$t = 9.34^*$ , <i>df</i> = 277	.76
Over all	.93	1.05	269	$t = 14.43^*$ , <i>df</i> = 268	1.21

Note: Missing data excluded. Only participants who indicated to having ever watched pornography were included in the analyses

<sup>a</sup> Means and SDs were used in the calculation of effect sizes.<sup>7</sup>

\* $p < .001$

( $r = .08$ ,  $n = 268$ ,  $p = .22$ ). For women, we also found a significant correlation between greater pornography consumption and positive effects ( $r = .45$ ,  $n = 233$ ,  $p < .001$ ) and a linear trend ( $F [1, 228] = 68.41$ ,  $p < .001$ ) revealing that higher amounts of pornography consumption were significantly associated with greater overall perceived

positive. However again, no significant correlation or trend was found for amount of consumption and overall negative effects ( $r = .10$ ,  $n = 233$ ,  $p = .14$ ). In comparing the magnitude of correlations between pornography consumption and positive effects for men versus women, no sex differences were found ( $p > .05$ , Fisher's  $z$  transformation).

**Hypothesis 2:** Men will report more positive and less negative effects of pornography consumption than women.

For both genders, small to moderate positive effects of pornography consumption were found. However, both overall and at each construct of comparison, moderate to large significant sex differences in positive effects were found. Thus, both overall and at each construct men were found to report significantly more positive effects of consumption than women (all  $ps < .006$ ; effect range ( $d$ ), .42–.66) (Table 5).

For both genders, only small negative effects of pornography consumption were found. In addition, only limited significant sex differences in negative effects were evident. Thus, men were found to report significantly larger negative effects of consumption than were women in relation to sex life and life in general (both  $ps < .006$ ). However, no significant sex differences were found for overall negative effect or the negative constructs of attitudes toward sex and perception and attitudes toward the opposite gender.

Overall, data indicated that men reported significantly larger positive effects of consumption than did women. However, contrary to our hypotheses, the results did not show that men reported less negative effects than women. To the contrary, on two of the four constructs, men were found to report significantly *more* negative effect of consumption. Thus, overall, only partial support for the second hypothesis as described above was found.

**Hypothesis 3:** For both genders, sexual background variables will significantly predict the overall report of both negative and positive effects of hardcore pornography consumption.

In order to examine the third hypotheses, both correlational and multiple regression analyses were employed. Analyses were conducted separately for the two dependent variables of self-reported positive and negative effects of pornography consumption.

As shown in Table 6, simple zero-order correlation analyses among the sexual background variables including gender showed that perceived positive effects of pornography were moderately to strongly correlated with greater pornography consumption, perception of pornography as portraying a realistic picture of sex, and greater frequency of masturbation, a lower age of first exposure to pornography, and with being male. Interestingly, the only variable that did not significantly correlate with perceived positive effects was frequency of sexual intercourse. Perceived negative effects showed significant correlations with being male, lower age at first exposure, less masturbation, lower frequency of intercourse and with greater amount of pornography consumption. Although statistically significant, these correlations were of considerably lower magnitude than those found with positive reported effects.

The variables that correlated significantly with the dependent variable were entered into two regression analyses for each of the self-reported effects of pornography. Using the procedures recommended by Cohen, Cohen, West, and Aiken (2003) and by Aiken and West (1991), these variables were first force entered into the regression and then all two way interactions were allowed free stepwise entry using an  $F$  probability criteria of .05 and .10 for removal. Results of these two multiple regression analyses are presented in Table 7. Overall, these analyses showed a high degree of association between the background

**Table 5** Gender differences in self-perceived effects of pornography consumption

Variables	Men			Women			T-test for independent samples	Effect size Cohen's $d^a$
	$M$	SD	$N$	$M$	SD	$N$		
Positive effect on								
Sex life	3.41	1.34	302	2.81	1.50	278	$t = 5.04^*$ , $df = 557$	.42
Attitudes towards sex	3.03	1.31	299	2.36	1.37	277	$t = 6.06^*$ , $df = 574$	.50
Sexual knowledge	3.27	1.17	298	2.48	1.21	277	$t = 7.94^*$ , $df = 573$	.66
Perception & attitudes	2.07	1.07	298	1.50	0.73	274	$t = 7.32^*$ , $df = 527$	.62
Life in general	2.43	1.29	300	1.69	1.00	278	$t = 7.76^*$ , $df = 558$	.64
Overall positive effect	2.84	1.06	290	2.15	1.06	273	$t = 8.00^*$ , $df = 561$	.65
Negative effect on								
Sex life	1.32	.57	297	1.16	.37	274	$t = 4.06^*$ , $df = 516$	.33
Attitudes towards sex	1.27	.54	301	1.39	.74	278	<i>ns</i>	
Perception & attitudes	1.32	.63	301	1.40	.80	277	<i>ns</i>	
Life in general	1.29	.65	302	1.11	.40	278	$t = 3.98^*$ , $df = 508$	.33
Overall negative effect	1.30	.49	292	1.23	.42	273	<i>ns</i>	

Note: Missing data excluded. Only participants who indicated to having ever watched pornography were included in the analyses

<sup>a</sup> Means and SDs were used in the calculation of effect sizes<sup>7</sup>

\*  $p < .006$

**Table 6** Zero-order correlations among background factors and reported positive and negative effects of pornography consumption ( $n = 688$ )

	1	2	3	4	5	6	7	8
1. Positive reported effects		.07	-.31**	-.20**	.36**	-.01	-.25**	.51**
2. Negative reported effects			-.12*	-.07	-.10*	-.13**	.05	.10*
3. Gender				.30**	-.54**	.09*	.05	-.58
4. Age of first exposure					-.22**	.00	-.03	-.32
5. Frequency of masturbation						-.13**	.03	.60**
6. Frequency of sexual intercourse							-.10**	-.10*
7. Degree of realism in pornography								-.10
8. Pornography consumption								

Note: Missing data excluded

\*  $p < .05$

\*\*  $p < .001$

**Table 7** Multiple regression analyses on overall positive and negative effects of pornography consumption using sexual background variables including gender as predictors

Models	Overall prediction equation						
Variable	<i>b</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>p</i>	$R^2$	<i>F</i>
Positive effects of consumption							
Gender	.036	.047	.037	.76	.449		
Age of first exposure	-.039	.040	-.040	-.98	.326		
Frequency of masturbation	.102	.051	.099	2.01	.045		
Degree of realism in pornography	-.217	.038	-.220	-5.76	.000		
Pornography consumption	.420	.051	.432	8.31	.000		
Total						.301	42.99
Negative effects of consumption							
Gender	-.094	.051	-.103	-1.83	.067		
Frequency of masturbation	.013	.057	.013	.23	.819		
Frequency of sexual intercourse	-.110	.043	-.118	-2.56	.010		
Pornography consumption	.020	.056	.022	.37	.715		
Total						.026	4.25

variables and positive effects of pornography but only a low, although significant, degree of association with negative effects. No significant two-way interactions were found to enter significantly into either of the final regression models.

As shown in Table 7, the final regression model for positive self-reported effects of pornography was able to account for 30.1% of the total variance ( $R = .55$ ; adjusted  $R^2 = .30$ ;  $p < .001$ ). After all the variables were entered in the equation, three sexual background variables made statistically significant contributions: Greater pornography consumption, more perceived realism of pornography and higher frequency of masturbation. The final regression model for negative self-reported effects of pornography was able to account for 2.6% of the total variance ( $R = .18$ ; adjusted  $R^2 = .026$ ;  $p = .002$ ). After all the variables were entered in the equation, only one sexual background variable made a statistically significant contribution namely lower frequency of sexual intercourse.

## Discussion

This study of self-perceived effects of hardcore pornography consumption found that both men and women generally reported small to moderate positive effects of hardcore pornography consumption and little, if any, negative effects of such consumption. For both genders, the report of overall positive effect of consumption generally was found to be strongly and positively correlated in a linear fashion with amount of hardcore pornography consumption.

As described in the Introduction, one reason why consumers reported very little negative effect of consumption could be the phenomenon of biased optimism. Similarly, it may also be due to a response and attention bias whereby participants' desire for and arousal by pornography leads to negative effects of consumption being minimized or overlooked and positive effects maximized or emphasized. Also, a cultural component may be at play. Participants included in

the current study were all from a very liberal cultural background where pornography is widely available and where attitudes toward pornography traditionally have not been negative. On an individual level, this would likely further reduce the awareness of negative effects and leave more room open for, and acceptance of, any reported positive effects. However, with all of these potential biases in mind, it may also be that participants' reports are veridical and that, at least in the context of a highly liberal and sex educated society, pornography's impact is relatively positive and that media and popular books' reports of highly negative effects on consumers are exaggerated or unfounded.

As proposed in Hypothesis 2, men were found to report significantly more positive effects from consumption than were women. However, Hypothesis 2 also proposed that men would report significantly less negative effects of such consumption than would women. This was not supported. In fact, in the areas of negative effects on sex life and life in general men were found to report significantly *more* negative effect than were women, although the absolute levels of negative effects reported were generally low. This indicates that, although previous studies have found that women more than men described pornography as dull, not entertaining, not exciting, or even repulsive, this did not, at least in our study, translate into significant sex differences in self-perceived negative effects of such consumption neither overall nor in any of the specific areas investigated.

The fact that individuals' self-perceived effects of pornography were generally found to be positive may be interpreted in several ways. The proponents of pornography would argue that the individuals themselves are in the best position to judge such effects (e.g., Abramson & Pinkerton, 1995; Wilson, 1978) and that results from studies such as the current one therefore should be taken at face value.

The critics of pornography have actually described such "desensitization" and gradual greater acceptance of pornography as a result of exposure as one of the most insidious effects of consumption. Consequently, such critics would argue that results from studies such as the current one should be interpreted with great caution. For example, Paul (2005) argued that "the dissemination and availability of pornography inevitably brings about increased individual and societal acceptance" (p. 274). Thus, we recognize that the systematic documentation of self-perceived effects of hardcore pornography does not, in and of itself, provide support for any particular political or policy issue in this area.

Hypothesis 3 predicted that for both genders sexual background factors would predict overall positive and negative effects of pornography consumption. Multivariate regression analyses supported this hypothesis although the proportion of variance accounted for by the predictors in relation to self-reported negative effects were relatively limited although statistically significant. For positive

effects, it was found that consumers with higher pornography consumption who believed that pornography was more realistic and who masturbated more perceived more positive effects of pornography. In contrast to the other analyses performed, in this multiple regression analysis, gender did not enter significantly, most likely because of its high overlap with some of the other independent predictors used in this equation (i.e., pornography consumption and masturbation). Of particular interest is the fact that those consumers who believed that pornography is more realistic were more likely to perceive positive effects on the self. Many proponents of pornography have argued that its users recognize that it is "pure fantasy" and consequently the purported potential adverse effects of some materials, such as violent pornography, are very unlikely (for a review, see Malamuth & Billings, 1986). Taken together with recent research suggesting that perceptions of realism of online sexuality mediate the relationship between exposure and changes in attitudes about appropriate sexual behavior (Peter & Valkenburg, 2006) the data highlight the need for research specifically examining the perceived realism, reactions to and effects of pornography that portrays acts that in real life would be considered abhorrent and/or illegal (e.g., rape pornography). In other settings, this issue may also be of concern with other types of pornography. For example, in countries such as Cambodia where, in contrast to Denmark, children have little sex education and often get much of their information about sexuality from pornography. As noted by (Fordham, 2006), "Pornography creates unreal and unrealistic expectations in the minds of boys and men in regard to their sex lives, frequency of sexual activity, the kinds of acts performed, responsibility and the role of wives in fulfilling men's expectations" (p. 66).

We believe that it is important to include in the assessment of effects of pornography consumption peoples' self-perceived report of these effects. However, based on the findings of the "third person effect," the concept of biased optimism, and a likely response, attention, and cultural bias, we also believe that these perceptions only constitute part of the understanding of what the effects of pornography may be. Consequently, the results of the current study should be considered in conjunction with the results from other non-experimental and experimental studies of pornography (for an overview, see Allen, d'Alessio, & Brezgel, 1995; Bauserman, 1996; Malamuth, Addison, & Koss, 2000).

At first glance, the findings reported herein may appear to contradict some of our other research findings and conclusions, but, as noted below, we believe that the findings are actually supportive of our previous conclusions and overall theoretical approach. In a series of previous studies (e.g., Hald, Malamuth, Pipitan, Yuen, & Koss, 2007; Malamuth et al., 2000; Vega & Malamuth, 2007), we have found that for a small segment of the American male population,

namely those who score relatively high on various risk factors of sexual aggression, there is evidence of an association between pornography consumption and increased likelihood of accepting rape myths and of behaving in a sexually aggressive way. However, the same studies have also revealed that, for the majority of men, similar significant associations have not been found. Furthermore, such research is consistent with the findings of experimental studies that can identify cause and effect under controlled conditions (for a review, see Malamuth & Huppert, 2005). In contrast, however, the present study did not generally find evidence of any negative effects.

This difference might be explained by the fact that in the current study we did not specifically examine individual differences in risk for sexual aggression. They might also be accounted for by the reliance on self-reported effects in the current research versus more “objective” indices of effects in the earlier studies. Yet, another explanation is based on cultural differences and, in fact, it provides support for the overall theoretical framework we have suggested elsewhere.

Indeed, Malamuth et al. (2000) specifically used the example of Denmark to explain likely differences in the effects of pornography across different cultures and suggested that in countries such as Denmark there are relatively few men who would be considered at high risk for sexual aggression. These investigators argued, therefore, that it is likely that in such a culture there would be the same negative effects of pornography as may be found for a small, but significant part of the American population but due to the relative lack of high risk individuals these effects may not easily be identified unless using very large or ‘targeted’ samples of individuals. In support of this argument, Malamuth et al. (2000) noted that there was evidence (e.g., Knack & Keefer, 1997; Zak & Knack, 2001) that Denmark and other countries, such as Sweden, Norway, and the Netherlands, have among the very highest levels of trust between people and considerably higher than in the United States. Malamuth et al. (2000) suggested that this argument could be strengthened if there was more direct evidence of such high trust and lack of hostility between men and women in such countries. A recent study has provided such evidence. Dutton, Straus, and Medeiros (2006) compared gender hostility in samples from 27 nations. Although they did not specifically include Denmark, they did include similar countries, such as the Netherlands and Sweden. These countries were consistently found to have among the very lowest levels of hostility between men and women, with the United States scoring much higher. In keeping with these findings and the theoretical model described elsewhere (e.g., Hald et al., 2006; Malamuth et al., 2000; Malamuth & Pitpitan, 2007), we would consequently predict that even when using self-perceived effects of hardcore pornography consumption, greater perceived negative effects of pornography consumption

would be found in countries where the levels of hostility between men and women and other indices of risk for sexual aggression are higher than in countries such as Denmark.

It would be desirable in such future research to particularly include some men who are considered to be at relatively high risk for sexual aggression. Ideally, such a high risk sub-group would be “over-sampled” in order to include a sufficient number of these men to test the assertion that they are the ones more likely to report negative self-perceived impact of heavy levels of hardcore pornography consumption. Nonetheless, on the basis of the current sample and data, the conclusion that is most clearly supported is that many young Danish adults believe that pornography has had a largely positive role in their lives.

## Appendix

### The Pornography Consumption Effect Scale (PCES)

Below is a series of questions. Please indicate your answer to each question using the following scale: 1 = not at all; 2 = to a very small extent; 3 = to a small extent; 4 = to a moderate extent; 5 = to a large extent; 6 = to a very large extent; 7 = to an extremely large extent.

Please write your answer on the line \_\_\_\_ before each question. Please answer all questions.

To what extent do you believe that your consumption of pornography:

- |     |           |   |
|-----|-----------|---|
| 1.  | SK (P)    | Has taught you new sexual techniques?                         |
| 2.  | ATS (N)   | Has made you less tolerant towards sex?                       |
| 3.  | ATS (P)   | Has influenced positively your outlook on sex?                |
| 4.  | PATOG (N) | Has adversely affected your views of the opposite gender?     |
| 5.  | LG (N)    | Overall, has had a harmful effect on your life?               |
| 6.  | SL (N)    | Overall, has been a negative supplement to your sex life?     |
| 7.  | PATOG (N) | Has led you to view the opposite gender more stereotypically? |
| 8.  | SK (P)    | Has added to your knowledge of vaginal sexual intercourse?    |
| 9.  | SK (P)    | Has taught you something new about your sexual desires?       |
| 10. | LG (N)    | Has made you less satisfied with your life?                   |
| 11. | LG (P)    | Overall, has made a valuable contribution to your life?       |
| 12. | SL (P)    | Overall, has improved your sex life?                          |
| 13. | SL (N)    | Has reduced your sexual activities?                           |
| 14. | SK (P)    | Has added to your knowledge of anal sex?                      |
| 15. | PATOG (P) | Has positively affected your view of the opposite gender?     |
| 16. | SK (P)    | Has added to your knowledge of sexual foreplay?               |
| 17. | LG (N)    | Has made your life more problematic?                          |
| 18. | ATS (P)   | Has made you more tolerant in relation to sex?                |

19. ATS (N) Has made you less sexually liberal?
20. PATOG (P) Has made you more respectful towards the opposite gender?
21. SL (P) Has made you experiment more in your sex life?
21. SL (N) Overall, has made your sex life worse?
23. SK (P) Has added to your knowledge of masturbation?
24. LG (P) Has made you more content with your life?
25. LG (N) Has reduced your quality of life?
26. ATS (N) Has had a negative influence on your attitudes toward sex?
27. SL (P) Has increased your sexual activity?
28. SL (P) Overall, has been a positive supplement to your sex life?
29. SK (P) Has improved your knowledge of sex?
30. LG (P) Has improved your quality of life?
31. ATS (P) Has had a positive influence on your attitudes toward sex?
32. ATS (N) Has adversely affected your outlook on sex?
33. SL (P) Has added something positive to your sex life?
34. SL (N) Has made you experiment less in your sex life?
35. PATOG (N) Has made you less respectful towards the opposite gender?
36. PATOG (P) Has made you friendlier towards the opposite gender?
37. ATS (N) Has adversely influenced your opinions of sex?
38. PATOG (P) Has led you to view the opposite gender less stereotypically?
39. SK (P) Has improved your knowledge of oral sex?
40. SL (N) Has led to problems in your sex life?
41. SK (P) Has given you more insight into your sexual fantasies?
42. LG (P) Has made your life less problematic?
43. ATS (P) Has positively influenced your opinions of sex?
44. SL (N) Has added something negative to your sex life?
45. ATS (P) Has made you more sexually liberal?
46. SL (N) Generally, has given you performance anxiety when you are sexually active on your own (e.g., during masturbation)?
47. SL (N) Generally, has given you performance anxiety when you are sexually active with others (e.g., during intercourse, oral sex, etc.)?

*Note:* Use of this scale requires permission of the corresponding author. SL = Sex life; LG = Life in General; ATS = Attitudes toward sex; PATOG = Perception of and attitudes toward the opposite gender; SK = Sexual knowledge. (P) indicates that the item belongs to the positive effect dimension. (N) indicates that the item belongs to the negative effect dimension.

### Scoring instructions

The PCES is intended to be used as a measure of self-perceived overall positive and/or negative effects of pornography consumption by averaging the score for the positive and negative effect dimensions, respectively. Alternatively, specific areas of interest may be targeted by

averaging the score for items constituting these areas. For example, if one wishes to investigate only self-perceived positive effects of pornography consumption on sex life, this could be done by averaging the scores for item 12, 21, 27, 28, 33, constituting the SL (P) construct.

Overall Positive Effect = average of the following items: 1, 3, 8, 9, 11, 12, 14, 15, 16, 18, 20, 21, 23, 24, 27, 28, 29, 30, 31, 33, 36, 38, 39, 41, 42, 43, 45.

Overall Negative Effect = average of the following items: 2, 4, 5, 6, 7, 10, 13, 17, 19, 22, 25, 26, 32, 34, 35, 37, 40, 44, 46, 47.

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