Treatment seeking for problematic pornography use among women

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Background and aims: Previous studies examined psychological factors related to treatment seeking for problematic pornography use (PU) among males. In this study, we focused on females who seek treatment for problematic PU and compared them with non-problematic pornography users with regard to variables related to problematic PU. Second, we investigated the relationships between critical constructs related to problematic PU with the path analysis method, emphasizing the predictors for treatment seeking among women. We also compared our results with previous studies on males. *Methods:* A survey study was conducted on 719 Polish-speaking Caucasian females, 14–63 years old, including 39 treatment seekers for problematic PU. *Results:* The positive relationship between the mere amount of PU and treatment seeking loses its significance after introducing two other predictors of treatment-seeking: religiosity and negative symptoms associated with PU. This pattern is different from the results obtained in previous studies on males. *Discussion:* Different from previous studies on male samples, our analysis showed that in the case of women, mere amount of PU may be related to treatment-seeking behavior even after accounting for negative symptoms associated with PU. Moreover, religiousness is a significant predictor of treatment seeking among women, which may indicate that in the case of women, treatment seeking for problematic PU is motivated not only by experienced negative symptoms of PU but also by personal beliefs about PU and social norms. *Conclusion:* For females, negative symptoms associated with PU, the amount of PU and religiosity is associated with treatment seeking. Those factors should be considered in treatment.

Keywords: hypersexual behavior, treatment seeking, pornography, problematic sexual behavior, gender differences, psychotherapy

INTRODUCTION

Human sexual behavior depends on a variety of biological, psychological, social, and cultural factors. Perhaps the most important is gender. Males and females differ in terms of their physiology and psychology of sexual reactivity (Ciocca et al., 2015; Levin, 2005), preferences, and activity (Hsu et al., 1994; Wilson, 1987; Wilson & Lang, 1981; Wood, McKay, Komarnicky, & Milhausen, 2016). For example, let us take the classical four consecutive stages, such as excitation, plateau, orgasm, and resolution (Georgiadis & Kringelbach, 2012; Gola, Kowalewska, Wierzba, Wordecha, & Marchewka, 2015). These describe the male sexual response cycle quite accurately but had to be expanded to describe the female sexual response cycle with similar accuracy (Basson, 2000, 2005). Moreover, male sexual arousal is *gender-specific,* whereas the female sexual arousal seems to be more *gender-non-specific* (women are more likely to experience arousal to sexual stimuli from both sexes) (Huberman & Chivers, 2015; Huberman, Maracle, & Chivers, 2015). In addition, there is a growing body of research showing the differences between males and females in terms of pornography use (PU). According to data from a representative Danish sample, there are about 3.7 times fewer regular (weekly basis) pornography users among females than males (18.3% vs. 67.6%) (Hald, 2006). More recent data collected from a sample of Scandinavian adults (Kvalem, Træen, Lewin, & Štulhofer, 2014) show similar results: 81% of men and 18% of women reported using Internet pornography on a weekly basis. A very similar proportion can be observed among individuals seeking treatment for compulsive sexual behaviors (CSBs): 19.6% of women and 80.4% of men (as reported by 47 therapists from the German Society for Sex Research; Klein, Rettenberger, & Briken, 2014). In addition, lifetime exposure to pornography is about 30% lower, 67% versus 94% in a Norwegian sample (Træen & Daneback, 2013), and 62.1%

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versus 93.2% in the US citizens sample (Sabina, Wolak, & Finkelhor, 2008). Recent research also showed that only 11.8% of PU episodes were accompanied by masturbation among heterosexual females (23.9% among gays and lesbians), whereas it was 42.2% among heterosexual males (51.4% among gays and lesbians) (Træen & Daneback, 2013). In addition, there are also sex differences in the valence of emotional reaction to erotic visual stimuli of a certain type (Wierzba et al., 2015).

Researchers show that pornography can be beneficial for women in as many ways (Leiblum, 2001) as it is for males (Häggström-Nordin, Tydén, Hanson, & Larsson, 2009; Rothman, Kaczmarsky, Burke, Jansen, & Baughman, 2015), although there is a growing body of evidence showing that PU can be a problematic behavior for some individuals (Gola, Lewczuk, & Skorko, 2016; Gola & Potenza, 2016; Gola, Wordecha, et al., 2017; Kraus, Martino, & Potenza, 2016; Kraus, Voon, & Potenza, 2016; Park et al., 2016; Potenza, Gola, Voon, Kor, & Kraus, 2017). Recent studies identified the key characteristics of sexual behavior that differentiate individuals seeking treatment for problematic PU from non-treatment seekers (Gola et al., 2016; Kraus, Martino, et al., 2016). These studies provided important information about problematic PU (we elaborate on this further in this section), but their limitation is that they focused solely on male samples. We argue that the results of these studies cannot be generalized to females because of the clear differences in sexual behavior and PU between sexes and as a consequence we need separate analyses on female samples that would consider the specificity of their sexual

behavior. Simultaneously, because of the lack of previous research investigating predictors of treatment seeking for females, similar studies on male samples that are available constitute a useful reference point for new analyses for females. We intend to use them exactly in this way, and to do this, we will provide a brief description of our previous study on a male sample that will serve as a starting point for investigating problematic PU in women.

In the study mentioned above (Gola et al., 2016), we assessed 132 heterosexual males seeking treatment for problematic PU. Comparing them with 437 pornography users who did not seek treatment, we aimed to address if the mere amount of PU (measured in number of hours/ week) is predictive for treatment seeking, or if this relation is mediated by the negative symptoms associated with PU [measured by the Sexual Addiction Screening Test – Revised (SAST-R)] (Carnes, Green, & Carnes, 2010; Gola, Skorko, et al., 2017). Our analysis showed that the mere amount of PU is only weakly related to treatment seeking, and that this relation is fully mediated by the amount of negative symptoms associated with PU. The latter variable was much more strongly related to treatment seeking than the mere amount of PU, and explained 42% of the variance in treatment seeking. We also explored other variables that were hypothesized to be important for problematic PU in previous studies, including onset and number of years of PU, religiosity, age, dyadic sexual activity, and relationship status (see Figure 1 for initial recreation of the shape of this model to reflect female problematic PU) (Gola et al., 2016).
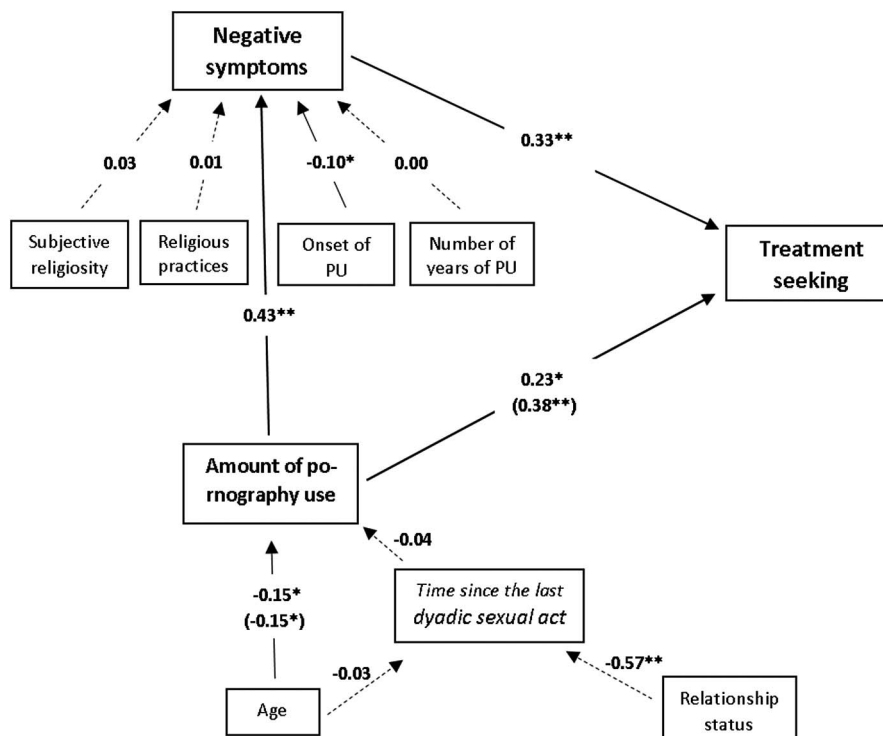

Figure 1. Path analysis of the extended model showing standardized path coefficients tested with the use of 95% bias-corrected confidence intervals (**$p \leq .001$; *$p < .05$). Values in brackets are standardized coefficients for the direct effects before accounting for indirect pathways. Bolded arrows represent the relationships related to our main hypothesis. The rest of the paths represents secondary hypotheses. *PU* in the name of the variable stands for pornography use. Dashed lines indicate paths that were excluded from the final version of the model for females. Sample sizes for each variable are listed in Table 1

Considering the large sex-related differences in PU, we hypothesize that the picture of relations will look differently for the female sample. First, we think that the mere amount of PU may be more strongly related to treatment-seeking behavior in women than in men, even after accounting for negative symptoms of PU. As only 18% of women (between ages 18 and 30) view pornography regularly on a weekly basis (Hald, 2006), it can be perceived as a deviant behavior in contrast to males, among whom such behavior can be perceived as normative. The majority of males (67.6%–81% in ages 18–30) use pornography on a weekly basis (Hald, 2006; Kvalem et al., 2014). Thus, this is the main sex-related difference we can expect. A second important difference may be related to the impact of religiosity on treatment seeking. In their recent study, Martyniuk, Dekker, Sehner, Richter-Appelt, and Briken (2015) showed an interesting interaction between religiosity and gender when predicting the amount of PU. Among females, high religiosity was negatively related to the amount of PU. Surprisingly, self-declared religiosity was positively related to PU among males (Martyniuk et al., 2015) as was also observed in our previous study (Gola et al., 2016). Grubbs, Exline, Pargament, Volk, and Lindberg (2016) showed that the amount of PU (however comparable among religious and non-religious people) in the general population of men and women is related to higher spiritual struggles among religious individuals and may lead to self-perceived addiction to pornography. Therefore, we hypothesize that both the negative symptoms related to PU and also religiosity may be significant predictors of treatment seeking for problematic PU in females.

In summation, we have two main aims in this article. The first is to compare treatment-seeking and non-treatment-seeking groups of women with regard to variables related to problematic PU. The second is to create and evaluate a model of relationships between the critical variables related to problematic PU, especially focusing on potential predictors of treatment seeking among females. To achieve this goal, we could not rely on simple comparisons of mean values for treatment and non-treatment seekers – this method does not allow for testing the complex mediations that were postulated in the literature and need to be verified. Instead, we used path analysis modeling and created a model where treatment seeking is our main dependent variable (see "Methods" and "Results" sections for further explanation). In this part of the analysis, we treated our previous model for males as a starting point (Gola et al., 2016). In the next step, we made important changes in this model to make it reflect female problematic PU. Moreover, in "Discussion" section, we highlighted key differences between this study on a female sample and previous analyses on males.

METHODS

Data acquisition and subjects

The data were collected in the period between March 2014 and September 2015 from a sample of Caucasian, Polish citizens through an online-based survey. It took almost 18 months to acquire a sufficient number of women seeking treatment for problematic PU ($N = 39$). To do this, we asked 23 professional therapists (17 psychologists/psychotherapists, 4 psychiatrists, and 2 sexologists) to refer new clients declaring problematic PU to our survey. Similarly as in our previous study (Gola et al., 2016), the main inclusion criteria were seeking treatment for problematic PU and meeting 4 out of 5 criteria for hypersexual disorder (according to Kafka, 2010). Exclusion criteria were comorbid bipolar disorder or mania, as assessed by the following question: Have you ever been diagnosed with bipolar disorder? Non-treatment-seeking females ($N = 676$) were recruited through social media advertisements. Upon entering the survey, respondents received informed consent information. The mean age of participants was 26.5 ($SD = 5.93$), 462 of them were heterosexual, 86 bisexual, and 19 were lesbian (152 did not provide information on sexual orientation). Sexual orientation was measured by the Polish adaptation of Kinsey's Sexual Orientation Scale (Wierzba et al., 2015). Observations with missing data were excluded pairwise (overall response rate = 70%), providing a slightly different final number of participants for each variable, varying from 39 to 15 participants in the group of treatment seekers (Table 1). With regard to sexual orientation, in our sample of treatment seekers, we had 17 women declaring as heterosexual, 6 as bisexual, and 1 as lesbian (a further 15 women did not respond). In the group of non-treatment seekers, 444 women declared as heterosexual, 80 as bisexual, and 18 as lesbian.

Outcome measures

All outcome measures were exactly the same as in our previous study (Gola et al., 2016), where a more detailed description can be found. The main measure – *Treatment seeking* – was the actual behavior of treatment seeking for problematic PU (contact with psychologist, psychiatrist, or sexologist who screened and directed the patient to the survey). For control purposes, within the survey for non-treatment seekers, we asked if subjects ever used any kind of help because of sexual behavior. There were no such cases.

Amount of PU was measured as the declared average number of minutes/week spent on PU during the past month. Negative symptoms were assessed by a Polish adaptation of the SAST-R [20 items with yes/no response (Gola, Skorko, et al., 2017)], measuring (a) preoccupation, (b) affect and (c) relationship disturbance by sexual behaviors, and (d) feeling of losing control over sexual behavior. Because analysis of the latent structure of pornography addiction symptoms was not our direct aim, we treated the overall score in the SAST-R questionnaire as an observed variable. The internal consistency of the questionnaire in this study was very high (Cronbach's α = .82).

Age of respondents was expressed in years, *Onset of PU* was measured as the declared age at which respondents started viewing explicit sexual pictures or videos, and *Number of years of PU* was calculated from the onset of PU and the actual age of the respondent. *Subjective religiosity* was measured on a Likert-type scale with anchors at 0 (definitely no) and 4 (definitely yes) through the following question: Do you consider yourself a religious person?

Table 1. Descriptive statistics and mean rank comparisons (Mann–Whitney *U* test, with corresponding effect sizes) for variables used in our models, depending on treatment seeking (yes/no) for women

Variable name	*N*		Mean		*SD*		Range		η^2 effect size
	Yes	No	Yes	No	Yes	No	Yes	No	
1. Negative symptoms (0–20)	29	589	11.34	3.99	4.71	3.15	18	20	0.081**
2. Frequency of pornography consumption (minutes/week)	13	265	639.92	103.02	857.85	218.19	2,384	2,398	0.031**
3. Subjective religiosity (0–4)	21	461	2.19	1.05	1.44	1.33	4	4	0.027**
4. Religious practices (minutes/week)	15	185	339.93	87.70	298.31	95.73	1,140	540	0.115**
5. Number of years of pornography consumption	22	420	10.36	9.20	6.32	6.15	25	37	0.002
6.Onset of pornography consumption (years)	21	412	17.00	17.52	8.59	5.56	35	36	0.005
7. Age	39	651	27.38	26.43	8.72	5.57	27	49	0.000
8. Time elapsed since the last dyadic sexual activity (0–7)	28	549	2.96	3.80	2.59	1.98	7	7	0.006
9. Greatest number of masturbations during 1 day	20	433	7.15	3.72	5.74	3.00	20	20	0.021*
10. Longest period of watching pornography non-stop	20	433	197.05	75.40	258.75	99.15	1,199	1,199	0.088**

Note. Significant difference in the mean score between groups, as assessed by Mann–Whitney *U* test. With regard to treatment seeking (0: no; 1: yes). Relationship status (0: not in a relationship; 1: in a relationship) did not differed depending on treatment seeking (yes/no) as assessed by χ^2 test. $\chi^2(1) = 1.87$; $p = .172$; effect size: $\varphi = 0.07$.
*$p < .05$. **$p < .001$.

People who declared values greater than 0 on this scale were asked additional questions about their *Religious practices*, measured by the declared average amount of time spent (minutes/week) on religious or spiritual practices, such as prayers, participation in services/rituals, spiritual books reading, mediations, etc. We also asked for *Time elapsed since the last dyadic sexual activity*, using an ordinal scale from 0 to 7 (0 – today; 1 – yesterday; 2 – last 3 days; 3 – last 7 days; 4 – last 30 days; 5 – last 3 months; 6 – more than 90 days ago; and 7 – I have never had sex with another person). Subjects were asked to select the most accurate response. *Relationship status* was measured as a declaration of being in a relationship (formal or informal = 1 or not = 0). The variable *Greatest number of masturbations during one day* is a self-reported greatest number of masturbation within the course of 1 day, and the variable *Longest period of watching pornography non-stop* denotes the self-reported longest, uninterrupted episode of pornography watching (in minutes).

Statistical analysis

In the first step, we compared the mean values of variables related to problematic PU and treatment seeking with the use of the Mann–Whitney *U* test. We used this test because of unequal sample size between compared groups: treatment seekers and non-treatment seekers, and heterogeneous variance in both groups. Next, we used a path analysis to test the significance of our hypothesized relationships between the variables related to problematic PU. We chose the path analysis method because it allows us to test complex, hierarchical relationships between multiple exogenous and endogenous variables within one model. In this part of the analysis, we did not compare treatment-seeking and non-treatment-seeking groups, but considered treatment seeking as the main dependent variable and tested other critical variables related to problematic PU as its predictors. IBM

SPSS Amos (Arbuckle, 2013) with maximum likelihood estimation was used to perform our analysis. As some of our variables were non-normally distributed, we estimated the significance of standardized coefficients with 5,000 bootstrap iterations and used the correlation matrix as an input. The significance of the indirect effects was tested with the use of 95% bias-corrected bootstrapped confidence intervals (MacKinnon, 2008). We tested the goodness of fit of our models with several well-established statistics. A good fit was indicated by a non-significant result of the χ^2 test, a comparative fit index (CFI) value greater than 0.95, root mean square error of approximation (RMSEA) lower than 0.06, and standardized root mean square residual (SRMR) lower than 0.08 (Hu & Bentler, 1999).

Ethics

Study materials and protocol were approved by the Ethical Committee of the Institute of Psychology, Polish Academy of Sciences. All subjects were informed about the study and all provided informed consent.

RESULTS

Problematic PU

We began our analysis by comparing female treatment seekers and non-treatment seekers in terms of variables related to problematic PU. Table 1 shows the results of corresponding Mann–Whitney *U* tests along with effect sizes indicated by eta squared (η^2) coefficient and basic descriptive statistics for both groups. Treatment seekers, when compared with non-treatment seekers, scored higher in terms of the amount of negative symptoms associated with PU and amount of PU. In addition, treatment seekers declared a higher maximal number of masturbations during

the course of 1 day and longer episodes of binge pornography watching. Interestingly, the group of treatment seekers achieved higher scores on religious practices and subjective religiosity.

Finally, our results indicate that treatment-seeking and non-treatment-seeking groups did not differ in terms of time elapsed since the last dyadic sexual activity, age, onset, and years of pornography consumption.

Factors associated with treatment seeking

Next, we examined the relationships between variables related to problematic PU and treatment seeking for women, with the use of path analysis models. The hypotheses we tested within these models were determined based on available literature (Kraus, Martino, et al., 2016; Kraus, Voon, et al., 2016) and the results of a similar analysis that we conducted previously on a male sample (Gola et al., 2016). In other words, this section is not focused on comparing mean values of particular variables in the groups of treatment and non-treatment seekers. Instead, in this part of the analysis, we investigated the strength of relationships between critical constructs related to problematic PU, with a special emphasis on potential predictors of treatment seeking.

Correlation coefficients for all the variables used in our path models are presented in Table 2. We used a point-biserial correlation coefficient for dummy-coded variables (treatment seeking and relationship status) and Pearson's correlation coefficient for the rest.

We began this part of our statistical analysis with an examination of our main hypothesis, stating that the amount of PU among women may be significantly related to treatment seeking for problematic PU. Our analysis showed that this relationship was indeed significant (estimate = 0.38, $p < .001$).

After introducing the hypothesized mediator (severity of negative symptoms associated with PU), the strength of the direct relationship between the amount of PU and treatment seeking decreased, but remained positive and significant [estimate = 0.23 (95% bias-corrected interval = 0.15–0.31); $p < .001$]. The discussed mediation pathway also turned out to be significant [0.15 (0.11–0.19)], with a medium effect size: $\kappa^2 = 0.130$ (kappa squared, as proposed by Preacher & Kelley, 2011). In conclusion, our results indicate that the severity of negative symptoms associated with PU is partially mediating the direct relationship between the amount of PU and treatment seeking (Figure 1).

In the next step, we introduced four potential predictors of negative symptoms associated with PU (Figure 1): (a) onset and (b) number of years of PU, (c) subjective religiosity, and (d) religious practices. Our analysis revealed that only onset of PU significantly predicts the severity of negative symptoms associated with PU [estimate = −0.10, (95% bias-corrected interval = −0.18 to −0.02); $p = .002$].

Our analysis also showed that age was significantly, negatively related to the amount of PU [−0.15 (−0.23 to −0.07)]. Younger females used more pornography than older females. In addition, women who were currently in a relationship declared a shorter time elapsed since the last

Table 2. Descriptive statistics and correlation coefficients for all variables included in the analysis for women

Variable name	1	2	3	4	5	6	7	8	9	10	11
1. Negative symptoms (0–20)	1										
2. Frequency of pornography consumption (minutes/week)	0.45**	1									
3. Subjective religiosity (0–4)	0.09*	0.17*	1								
4. Religious practices (minutes/week)[a]	0.25**	0.55**	0.28**	1							
5. Number of years of pornography consumption	0.06	0.04	−0.16*	−0.06	1						
6. Onset of pornography consumption (years)	−0.14*	−0.12	0.17*	0.07	−0.53**	1					
7. Age	−0.01	−0.15*	−0.03	−0.06	0.46**	0.45**	1				
8. Time elapsed since the last dyadic sexual activity (0–7)	−0.09*	0.04	0.14*	0.10	−0.14*	0.09	−0.01	1			
9. Treatment seeking (1: yes; 0: no)	0.43**	0.38**	0.17**	0.49**	0.04	−0.02	0.03	0.09*	1		
10. Relationship status (1: in a relationship; 0: not in a relationship)	−0.10*	−0.08	−0.01	−0.12	0.16**	−0.02	0.07	−0.57**	−0.05	1	
9. Greatest number of masturbations during 1 day	0.39**	0.44**	−0.06	0.28*	0.14*	−0.07	0.02	−0.06	0.22**	0.01	1
10. Longest period of watching pornography non-stop	0.39**	0.67**	0.03	0.37**	0.17*	−0.18**	−0.05	0.01	0.22**	−0.06	0.48**

Note. [a]Question about religious practices was asked only to those participants, who stated that they are religious in the previous question (subjective religiosity).
*$p < .05$. **$p < .001$.

dyadic sexual activity; estimate = −0.57 (Figure 1). However, time elapsed since the last dyadic sexual activity did not mediate the relationship between age and amount of PU (estimate = 0.001, $p = .259$; effect size: $\kappa^2 = 0.001$).

In the next step, we compared unconstrained and constrained versions of our model. The unconstrained version was comprised of all analyzed paths. In the constrained version, we fixed all the non-significant paths to 0 (all the non-significant paths are visible in Figure 1). By comparing these two models, we were able to check if these paths provided a significant amount of informational value to the model (Byrne, 2009). At this point, fit indices for the unconstrained version of the model were: $\chi^2(34) = 2,424.45$, $p < .001$; CFI = 0.215, RMSEA = 0.313, SRMR = 0.1733. For the constrained version: $\chi^2(39) = 2,427.63$, $p < .001$; CFI = 0.215, RMSEA = 0.292, SRMR = 0.1749. These two versions of the discussed model did not differ significantly, $\chi^2(5) = 3.179$, $p = .672$. Following this result, we deleted all non-significant paths from the model. In the next step, we also deleted a path between relationship status and time elapsed since the last dyadic sexual activity. This path became redundant because it was connected to the rest of the model only through one of the non-significant pathways that were removed in the previous step. All deleted paths are marked with dashed arrows in Figure 1.

At this point, the fit indices were: $\chi^2(6) = 174.20$, $p < .001$; CFI = 0.687, RMSEA = 0.217, SRMR = 0.1231. We added covariance between the error terms of age and onset of PU. Our analysis revealed that age was positively related to the onset of PU ($r = .45$): older women started using pornography later in their life. After inclusion of this relationship our model was fairly well fitted: $\chi^2(4) = 11.87$, $p = .018$; CFI = 0.985, RMSEA = 0.052, SRMR = 0.0317.

This version of the model explained 23% of the variance in treatment seeking in the female group. Our previous analysis of a similar model for males resulted in 43% of explained variance, which is a much higher value (Gola et al., 2016). Thus, according to our a priori formulated hypothesis and recent studies (Grubbs et al., 2016; Martyniuk et al., 2015; Štulhofer, Jurin, & Briken, 2016), we decided to check if religiosity can be an important predictor of treatment seeking (which makes it a third predictor of treatment seeking in our model, as presented in Figure 2). We also checked what the relationship between religiosity and amount of PU is.

The conducted analysis showed that religious practices appeared to be a significant predictor of treatment seeking for women (estimate = 0.40, $p < .001$). Moreover, it was the strongest of treatment-seeking predictors (although the difference between the strength of prediction between religious practices and negative symptoms was not significant). After introducing the discussed predictor into the model, the relationship between the amount of PU and treatment seeking became non-significant (estimate = 0.01, ns). As a consequence of these changes, the predictive power of our model improved, explaining 34% of the variance in treatment seeking among females. We also included the correlation among religious practices and the amount of PU into the model (estimate = 0.55); this is further elaborated below. Furthermore, we added the covariance term between the onset of PU and amount of PU. This relationship was weak (estimate = 0.10) but significant ($p = .006$) – earlier exposure to pornography is connected to a higher amount of PU. Our final version of the model for women (Figure 2) had a good fit: $\chi^2(6) = 22.387$, $p < .001$; CFI = 0.982, RMSEA = 0.062, SRMR = 0.0283.

In addition, we examined the positive relationship (estimate = 0.55; $N = 89$) between the amount of PU and religious practices. We discovered that the strength of this relationship was created almost solely by a small sub group ($n = 6$) of treatment seekers with a very high amount of pornography usage ($M = 1,091$ min/week) and high amount of religious practices ($M = 480.83$ min/week). The
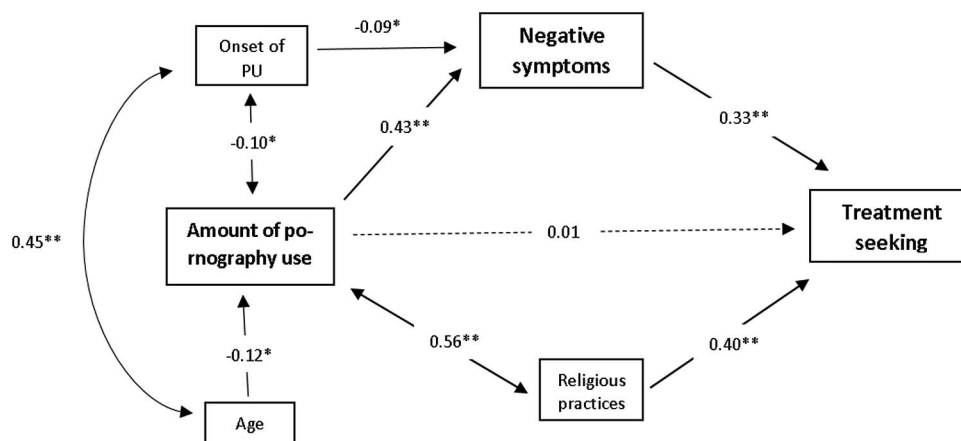

Figure 2. Path analysis of the final model for women showing standardized path coefficients tested with the use of 95% bias-corrected confidence intervals (**$p \leq .001$; *$p < .05$). Values in brackets are standardized coefficients for the direct effects before accounting for indirect pathways. Bolded arrows represent the relationship between amount of pornography use and treatment seeking, and its mediation through negative symptoms (the subject of our main hypothesis). The rest of the paths (non-bold arrows) represents our secondary hypothesis. Dashed arrows indicate the paths that became significant after inclusion of a mediator or additional predictor. Sample sizes for each variable are listed in Table 1

discussed relationship did not reach significance when treatment seekers were excluded from the analysis (estimate = 0.15, p = .165, N = 83). In conclusion, this relationship is not significant among non-treatment seekers but is fairly strong in the treatment-seeking group.

DISCUSSION

To the best of our knowledge, this is one of the very limited number of studies on females seeking treatment for problematic PU and the first one investigating factors related to treatment-seeking behaviors. Because of the lack of such studies on females, we used our previous studies on male samples as the reference point for our analysis. The results of this study show both similarities and clear differences between results for female problematic PU and previous studies on this subject for males (Gola et al., 2016; Kraus, Martino, et al., 2016). First, our analysis showed that females seeking treatment for problematic PU have higher levels of negative symptoms associated with PU and higher amounts of pornography consumption than non-treatment seekers. This particular result is not surprising, considering the results obtained in previous studies (Gola et al., 2016; Kraus, Martino, et al., 2016). However, more interestingly, our analysis showed that treatment-seeking women may be prone to periods of disinhibition (decidedly higher maximum number of masturbations during 1 day and longer episodes of non-stop pornography watching). In the available literature, we can find evidence that rigid social norms in some cases may contribute to problematic PU, because they promote periods of abstaining from pornography, followed by a period of disinhibition and excessive PU (Carnes, 1983; Kraus, Martino, et al., 2016; Wordecha, Wilk, Kowalewska, Skorko, & Gola, 2017). Initial evidence confirming this interpretation can be found in the differences in religiosity between women seeking and not seeking treatment. The treatment-seeking group reported higher values for both subjective religiosity and the average amount of religious practices during a week. We elaborate on the possible role of social norms and religiosity in female problematic PU below, discussing it together with the results of other recent studies.

The second part of our analysis was based on a statistical model of relations among variables related to treatment seeking and problematic PU. In line with many previous results showing sex-related differences in sexual functioning, the results obtained in this study on a female sample differ from previous studies on male samples. Before summarizing our findings from the current analysis on a female sample, we would like to remind the main conclusion from our previous study on males (Gola et al., 2016). We showed that: (a) the mere amount of PU is a very weak predictor of treatment seeking but (b) it is related to the severity of negative symptoms (measured by the SAST-R), and this factor explains treatment-seeking behavior. Besides that, (c) among males, age is not related to the amount of PU and (d) the onset of PU does not predict the severity of negative symptoms associated with PU. Similarly, (e) the amount of religious practices neither predict treatment seeking nor the

severity of negative symptoms associated with PU (Gola et al., 2016).

As we hypothesized, for females, the mere amount of PU was more strongly related to the treatment seeking for problematic PU. The amount of PU was also related to the severity of associated negative symptoms (Figure 1), and the severity of associated symptoms was related to treatment seeking. The latter relation was much weaker among males (ad. b). Moreover, differently from our analysis for males, the relationship between the amount of PU and treatment seeking among females remained significant, even when accounting for mediation through the severity of negative symptoms. This interesting result shows that women with problematic PU perhaps seek treatment not only because of the negative impact of PU on their life but also because of the sheer amount of PU (while in previous studies focusing on male samples, the latter factor is non-significant). This raises a question about the possible explanation of why the mere fact of frequent PU can be perceived as a problem among females. The most probable reason is that regular PU may be perceived by the majority of females as less normative behavior than it is among males. Among males, weekly PU seems to be a normative behavior (about 70%–80% of males between ages of 18–30), whereas among females, less than 20% use pornography on a weekly basis (as shown in large Danish and Scandinavian studies: Hald, 2006; Kvalem et al., 2014). This difference may shape the belief (among women) that frequent PU is some kind of deviant behavior in contrast to males, among whom the same behavior can be perceived as normative. Thus, the mere fact of regular PU may cause a subjective impression that certain women differ from the majority of women, which can result in the interpretation of regular PU as a problematic behavior that needs treatment. If this interpretation is correct, the subjective sense of experiencing problems connected with PU among females could be amplified by moral or religious beliefs about pornography and masturbation. Recent studies on general populations showed that religiosity may be related to higher tendency for self-perceived "pornography addiction" (Grubbs et al., 2016) or reported negative consequences of frequent sexual activity (Štulhofer et al., 2016). We tested if religiosity can also be related to treatment seeking (Figure 2) (ad. e) by including the amount of religious practices as a predictor of treatment seeking, while also investigating its relation to the amount of PU. Indeed, the amount of religious practices is the strongest predictor of treatment-seeking behavior among females with problematic PU (while it was non-significant in a corresponding analysis for men; Gola et al., 2016). Moreover, our analysis showed that after introducing religious practices into the model, the relationship between the mere amount of PU and treatment seeking lost its significance (Figure 2). Such a finding is in line with numerous studies showing that female sexuality is usually more related to cultural and social aspects than among males (Adams & Turner, 1985; Barry & Schlegel, 1984; Baumeister, 2000; Christensen & Carpenter, 1962; Earle & Perricone, 1986; Ford & Norris, 1993). Here, we could perhaps say that these cultural aspects contribute to the subjective interpretation of regular PU as problematic and leads to treatment seeking.

In our model, the amount of religious practices was also positively related to pornography consumption (estimate = 0.55). However, this association turned out to be significant only for treatment seekers, and not significant in the non-treatment-seeking group. This indicates that such relation seems to be a characteristic of the clinical group and is not necessarily present in the general population. In addition, it is worth noting that the amount of consumed pornography and religious practices (reflecting an importance of religious norms) was higher among treatment seekers. One possible interpretation for these results is that for some treatment-seeking individuals, behavioral engagement in the behavior-supporting religious norms (religious practices) can be a tool to regulate negative emotions caused by previous engagement in behavior violating these norms (pornography consumption). Another potential mechanism that can be proposed is that both pornography consumption and engagement in religious practices can be seen as a consequence of increased strength of impulses to watch pornography among treatment seekers. Thus, pornography consumption can simply be a sign of yielding to one's impulses, and religious practices can be viewed as a way of dealing with them. If this scenario is true, both amount of PU and religious practices would be positively correlated, although this relationship would be determined by an underlying factor such as craving for PU.

Another possible interpretation for the high correlation between PU and religious practices among treatment-seeking individuals can be made in terms of ironic processes of mental control theory (Wegner, 1994). Higher and more rigid religious norms can lead to higher levels of inhibition for behavior (or thoughts related to behavior) that is seen as not convergent with these norms (e.g., watching pornography). However, as shown in numerous cognitive studies (see Abramowitz, Tolin, & Street, 2001 for a review) in some cases, inhibition can have a paradoxical effect, leading to higher frequency of behaviors that violate the norm. This can make the norm itself more salient and in turn elevate the level of behaviors that support the norm – in this case – religious practices. Thus, any kind of behavior enforcing rigid religious norms, and behaviors violating this norm can become mutually supportive, even when conscious intention of an individual was aimed at entirely contrary effects. Although previous studies on paradoxical effects of suppression focused mostly on thought suppression (Abramowitz et al., 2001), we have some evidence that emotion suppression can lead to similar, ironic effects (Webb, Miles, & Sheeran, 2012). In addition, some researchers suggest the role of paradoxical effects of suppression in the development of psychological disorders such as obsessive–compulsive disorder (OCD; Purdon, 2004), and many clinicians point to similarities between CSBs and OCD (see Gola, 2016; Kor, Fogel, Reid, & Potenza, 2013 for a review). All mechanisms described above are hypothetical and cannot be verified on the basis of our data alone. However, we believe that they are worth investigating in future studies that will be aimed at clarifying the nature of the relationship between religiosity and pornography consumption among treatment seekers for problematic PU.

In addition, our analysis expands on findings of previous studies regarding the relationship between religiosity and

the severity of experienced negative symptoms (Grubbs et al., 2016; Štulhofer et al., 2016). When considering only the bivariate relationship between these two variables, our results confirm conclusions from the previous studies and indicate that the relationship in question is positive and significant ($r = .25$ for religious practices and $r = .09$ for subjective religiosity; Table 2). However, when amount of PU is included as an additional predictor of negative symptoms, religiosity is no longer related to the latter variable, while remaining a powerful predictor of treatment seeking (Figure 2).

Results concerning the relation of religiosity to negative symptoms and treatment seeking for problematic PU are especially interesting in the broader context of the relationship between religiosity and other forms of psychopathology. In previous research, higher level of religiosity was shown to be positively correlated with psychological well-being (Dilmaghani, 2017; Ismail & Desmukh, 2012; Joshi, Kumari, & Jain, 2008), life satisfaction (Pfeifer & Waelty, 1995), and inversely related to psychopathology in clinical patients (Gupta, Avasthi, & Kumar, 2011; Sharma et al., 2017). On the other hand, some research (McConnell, Pergament, Ellison, & Flannelly, 2006) suggests that higher degree of spiritual struggles can be positively correlated with some dimensions of psychopathology (anxiety, phobic anxiety, depression, paranoid ideation, obsessive–compulsiveness, and somatization). In addition, we have evidenced that at least some of the religious denominations can be associated with higher levels of OCD symptoms (Abramowitz, Deacon, Woods, & Tolin, 2004; Gonsalvez, Hains, & Stoyles, 2010). This indicates that the impact of religious convictions on psychopathology can be moderated by psychopathology type and characteristics of religious belief. In addition, as we have shown in our final model, in the specific case of problematic PU among women, religiosity seems to be related to treatment seeking rather than to psychopathological symptoms. Here, our results are in line with previous studies showing that strength of religious convictions and amount of religious practices are positively related to mental health service use (Pickard, 2006).

Interestingly, for females, age plays a significant role in PU; this includes both the age of the subject (ad. c) and age of the onset of PU (ad. d), while none of these variables were significant in our previous study on men (Gola et al., 2016). Younger women declared using pornography more often than older individuals, and those who started using pornography at a younger age tended to report the higher severity of negative symptoms related to PU. The explanation of this finding definitely deserves further investigations. Such investigations could address two interesting questions: (Q1) Does the popularity of PU increase among younger generations of females? (Q2) Is the female brain more vulnerable to the conditioning of a certain type of sexual stimuli than the male brain?

(Q1) According to our knowledge, there are no longitudinal data allowing us to address this question. Interestingly, recent survey data from the UK (Opinium Research, 2014) show that by the age of 18, pornography viewing was common and typical for 98% of boys and girls. Such a result may suggest that PU among girls has increased over the past years (perhaps due to Internet availability) and

equalized among boys, as older studies indicated sex-related differences in PU. For example, Sabina et al. (2008) reported that among American college students, 93.2% of males and 62.1% of females watched Internet pornography by the age of 18, whereas Træen, Spitznogle, and Beverfjord (2004) reported that among a representative sample of Norwegians, during their whole life, 87.9% of males and 62.9% of females had seen a pornographic magazine, 77.2% versus 55% watched a pornographic movie, and only 36.6% versus 8.9% watched pornography on the Internet. Other data suggest that a profile of hypersexual activity among women may have also changed over the last decade. Briken, Habermann, Berner, and Hill (2007) reported that the most dominant sexual behavior among treatment-seeking women was risky casual sex (among men, it was PU and masturbation), whereas the team Klein et al. (2014) reported PU as the most common behavior among women obtaining high scores in the Hypersexual Behavior Inventory (Reid, Garos, & Carpenter, 2011). In our opinion, the hypothesis about an increasing ratio of female pornography users deserves careful study. It would also be interesting to examine how the patterns of dominant forms of sexual activity change among treatment-seeking women.

(Q2) In the numerous studies on substance use (Grant & Dawson, 1998), the onset of use is an important factor related to the severity of symptoms. In our studies on males (Gola et al., 2016), we expected to see such a relation with the onset of PU. Surprisingly, we did not. But among females, the onset of PU is significantly related to both the severity of associated negative symptoms and to the amount of PU. It is possible that women's sexuality is more susceptible to learning (Baumeister, 2000). If so, then the question about increasing popularity of PU among young females (Q1) would be even more important to study.

Besides the above-discussed effects, we also noticed a large disproportion in the ratio of males and females seeking treatment for problematic PU. Our recruitment procedure was exactly the same for males and females. In the case of males, it took us 12 months to recruit 132 treatment-seeking individuals, whereas among females, we needed 18 months to find 39 subjects. This shows that males are seeking treatment because of problematic PU 5.07 times more often than females. This result provides empirical verification of the 5:1 ratio previously estimated by Kuzma and Black (2008), and is in line with previous studies showing a 4:1 ratio (Briken et al., 2007).

Clinical implications

In our opinion, the presented results show that it is important to discuss the role of personal beliefs about pornography and religious norms in the case of women seeking treatment for problematic PU, as these norms seem to be the crucial factor for deciding on treatment. Personal, religion-related beliefs may also play the role of a supportive factor during treatment. This aspect deserves a deeper discussion. Second, a factor worth discussing during clinical interviews is the onset of PU. Our results show that early onset of PU is related to more severe negative symptoms among women (which was not the case among men; Gola, Skorko, et al.,

2017). The onset of PU is worth studying as a potential predictor of treatment outcomes among women.

Finally, as the World Health Organization is currently considering inclusion of CSB disorder in the upcoming ICD-11 classification (World Health Organization, 2017), we would like to suggest future discussion on guidelines for treatment of women and men considering gender-related differences in the clinical picture of CSB (Briken et al., 2007; Reid, Dhuffar, Parhami, & Fong, 2012) and factors leading to treatment seeking.

Limitations

Despite providing new insight into the factors leading to treatment seeking among women with problematic PU, this study has a few important limitations worth mentioning. First, we have a small number of participants in the treatment-seeking group. However, gathering a large number of treatment-seeking females is extremely difficult, as we already mentioned earlier. We believe that this difficulty is also the reason why this study is one of the few studies done on actual treatment-seeking women and the first one investigating factors leading to treatment seeking, as previous studies focused on diagnostic (Briken et al., 2007) and personality differences between treatment-seeking men and women (Reid et al., 2012), as well as the role of shame (Dhuffar & Griffiths, 2014) and difficulties in obtaining treatment (Dhuffar & Griffiths, 2016). Due to this novel aspect, our analysis was exploratory and we did not apply a multiplicity correction, which could elevate the possibility of a type 1 error. These issues indicate a need for future replication on a larger sample of treatment-seeking females. Moreover, applying similar analyses to populations of different cultures can help to verify the cultural specificity of our results, as our sample was entirely recruited in Poland – a country perceived as conservative and religious. As we discussed earlier, cultural aspects (among them religiosity) may have a strong impact on women in self-defining a hypersexual behavior as problematic or normative. However, a similar relationship between religiosity and self-perceived problematic character of sexual behaviors was also shown in American (Grubbs et al., 2016) and Croatian (Štulhofer et al., 2016) populations.

We hope that our findings will be useful as a reference point for future research, as well as for therapists working with females seeking treatment for problematic PU.

and provided summaries of previous research studies. KL conducted the statistical analysis. MG, KL, and JS wrote the first draft of the manuscript. All authors contributed to and have approved the final version of the manuscript. All authors had full access to all data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

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