Problematic cyberpornography use in men and women: the role of desire thinking and craving

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Cyberpornography

With technological advances over recent decades, the Internet has become the most important means of distribution of pornography, increasing both the time of exposure to pornographic content and its **potential consequences on individual health** (Boies et al., 2004; Chen et al., 2018; Cooper et al., 1999).

Cyberpornography or Internet pornography is defined as "**the use of the Internet for any activity (text, audio, or graphics) that involves sexuality**" (Cooper et al., 2002, p. 106) and it has become steadily more dependable, easily accessible, and affordable, and constant source of sexual reward.

Problematic Cyberpornography Use

Problematic Cyberpornography Use (PCU) has not been recognized as a mental disorder in DSM-5 and ICD-11 classifications.

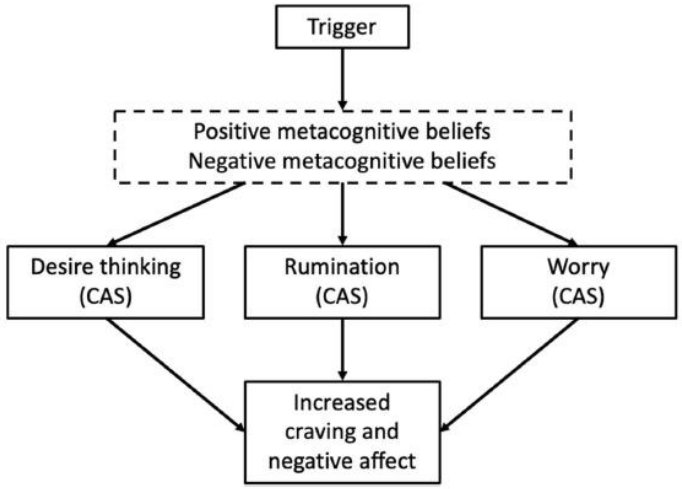
PCU has been defined as:

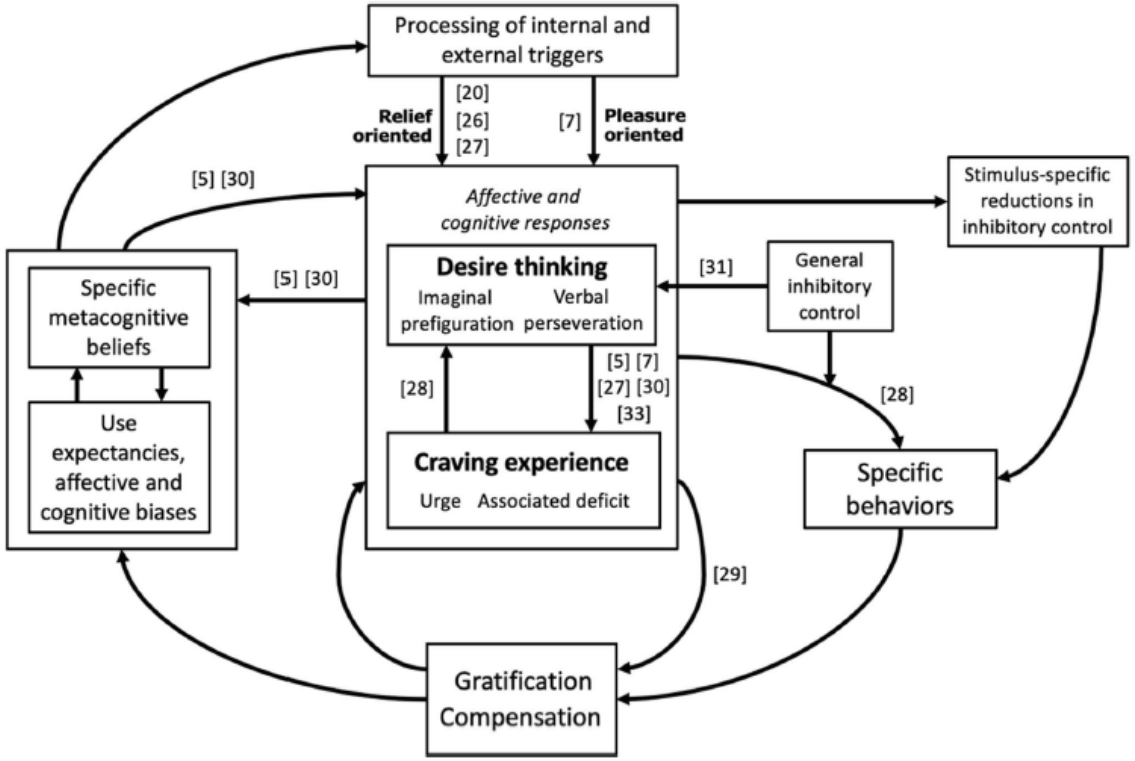
- a form of obsessive–compulsive disorder (Cooper et al., 2004; Young, 2005),
- a symptom of hypersexual disorder (Reid et al., 2011),
- a behavioural addiction (Griffiths, 2001; Meerkerk et al., 2006),
- as a **specific Internet-use disorder** (Brand et al., 2016) characterized by :

✓ compulsion to achieve a specific desired target,
✓ perception of losing control,
✓ repetitive implementation of maladaptive behaviours despite awareness of the negative consequences,
✓ craving

I-PACE model

A recent adaptation of the Interaction of Person-Affect-Cognition-Execution (I-PACE model; Brandtner et al., 2021), integrating theoretical assumptions from the Elaborated Intrusion Theory of Desire (EIT; Kavanagah et al., 2005) and the Self-Regulatory Execution Function Model (S-REF; Spada et al., 2013), suggested that PCU, conceptualized as a specific Internet-use disorder, might be closely **related to desire thinking (DT) (Caselli & Spada, 2010) and craving**. Therefore, the aim of the present study is to test the role of DT and craving in PCU in women and men.





Desire thinking

Desire thinking (DT) is a multi-dimensional cognitive, conscious and voluntary process involving the elaboration of a desired target, which may be an activity, an object, or a state (Kavanagah et al., 2009), at two levels:

(i) **Imaginal Prefiguration**, referring to the allocation of attentional resources to target-related information, followed by mental imagery elaboration (e.g., imagination or memory recall);

(ii) **Verbal Perseveration**, consisting of repetitive self-talk regarding the desired targets.

Research has shown that DT is positively associated with, but distinct from, craving, because DT is conceptualized as a perseverative, conscious, and intentional process, while **craving is considered an automatic and motivational experience** (Caselli et al., 2012; Caselli & Spada, 2011; May et al., 2004).

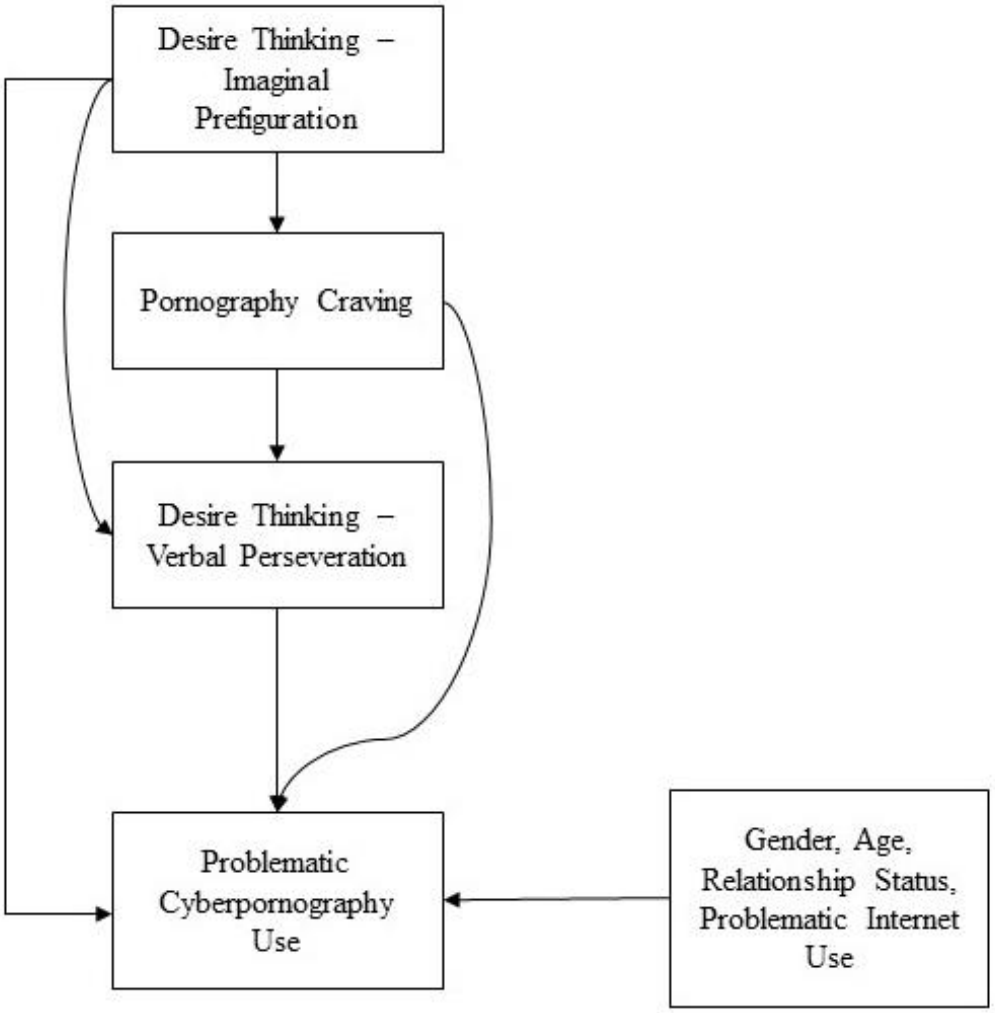
I-PACE model

According to the new theoretical assumptions of the **I-PACE model** (Brandtner et al., 2021), **DT and craving** are two distinct but intertwined constructs which develop as **affective and cognitive responses** to the perception of internal and external **triggers** via two entering pathways: a pleasure-oriented pathway (entailing the expected **gratifications** of DT) and a relief-oriented pathway (reflecting the expected **compensations** of DT)

It is postulated that when a person engages in **DT as a dysfunctional coping mechanism associated with irrepressible craving and diminished behavioural control, problematic Internet-use disorders like PCU may arise**.

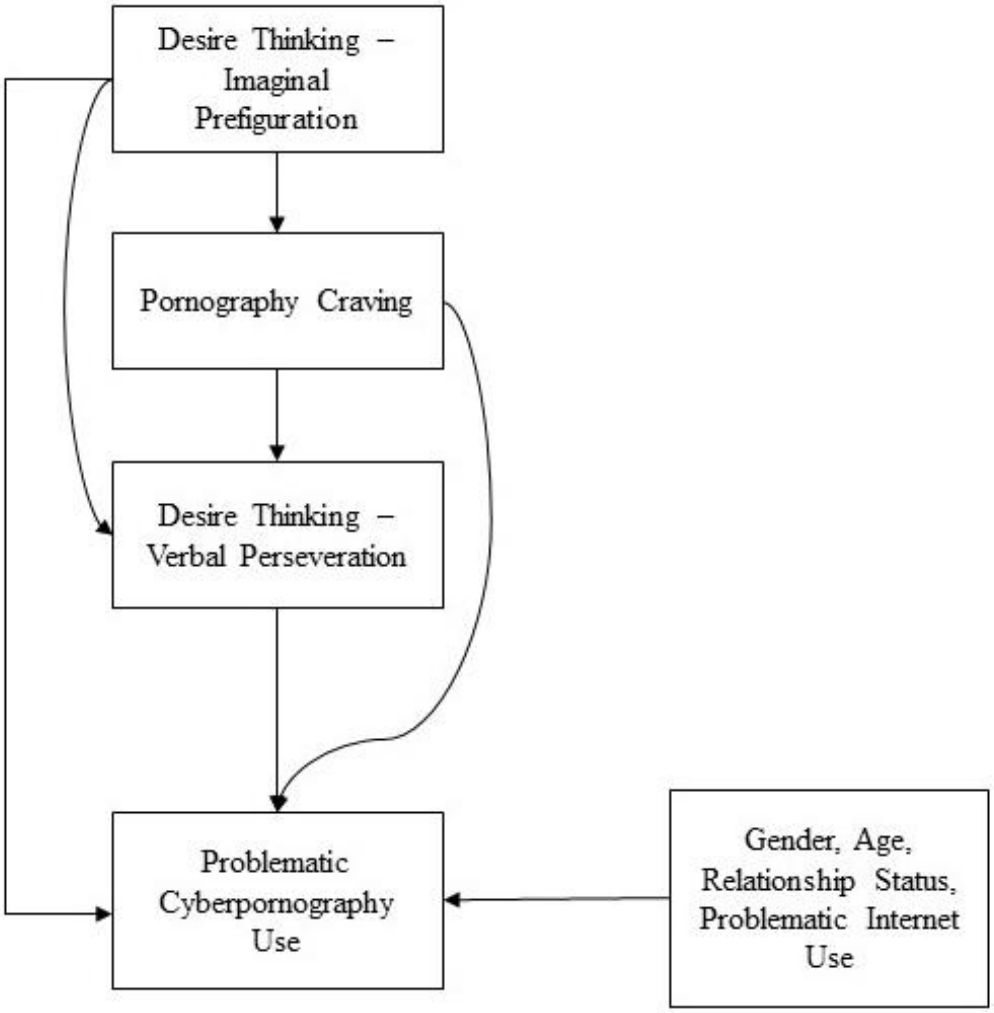
Aim (1)

Following findings related to other potentially addictive behaviors (e.g., problematic Facebook use [Marino et al., 2019], and alcohol [Caselli & Spada 2015; 2016; Martino et al., 2017]), we tested the **potential mechanism linking DT components to craving and PCU**.



Aim (2)

Several studies have reported **gender differences** in problematic pornography use both offline and online, with men scoring higher than women (e.g., Bőthe et al., 2018; Chen et al., 2018b; Šev˘cíková et al., 2014). No study has explicitly tested whether the underlying mechanism linking DT to PCU differ in men and women. Therefore, the present study adopted a **multi-group approach** in order to explore potential gender differences in the hypothesized pattern of relationships among variables.



Participants

Data were collected through an online questionnaire
Shared on social media

414 participants
(mean age = **27.55 years**, SD = 6.13; age range= 18 – 58 years; **53.6% males**).

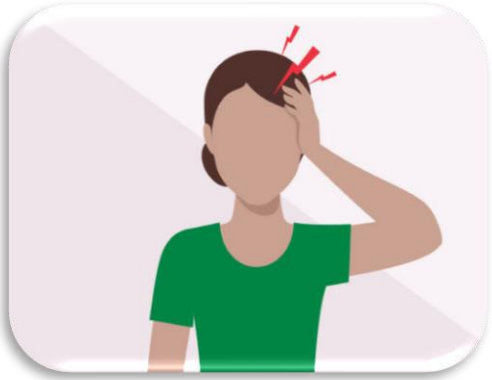
Sexual orientations reported were heterosexual (87.9%), bisexual (8.2%), and lesbian/gay (3.9%).

The most common relationship status was being in a relationship (68.6%) followed by being single (31.4%).

Measures

Problematic Cyberpornography Use Cyber Pornography Addiction Test (Cacioppo, et al., 2018); 18 items; 5-point scale; α= .92 (95% CI .91-.93).

Pornography Craving Pornography Craving Questionnaire (PCQ-12) (Kraus & Rosenberg, 2014); 12 items; 7-point scale; α= .93 (95% CI .92-.94).



Desire Thinking Desire Thinking Questionnaire (Caselli & Spada, 2011) consisting of two dimensions of 5 items each: DT-IP (Desire Thinking – Imaginal Prefiguration; e.g., "I imagine myself doing the desired activity"; α= .85 (95% CI .83-.87)) and DT-VP (Desire Thinking – Verbal Perseveration; e.g., "I repeat mentally to myself that I need to practice the desired activity"; α= .88 (95% CI .86-.90)). In this study, the desired activity was "**watching porn online**".

Problematic Internet Use Generalized Problematic Internet Use Scale-2 (Fioravanti et al., 2013; original English version by Caplan, 2010); 15 items; 8-point scale; α= .91 (95% CI .90-.93).

Statistical analyses

1. a series of Welch's **t-tests** for independent samples were conducted in order to compare the scores of the study variables between women and men.

2. the associations between the variables of interest were tested with **correlation** analyses on the whole sample and then for women and men separately.

3. the hypothesized model of the inter-relationships between the study variables was tested through a **path analysis** using Mplus 8.2 (Muthén & Muthén, 2017). Specifically, a single observed score for each variable and the **robust maximum likelihood method estimator** suitable for non-normally distributed variables (Satorra & Bentler, 1994) were used. **Bias-corrected bootstrap confidence intervals with 5000 bootstrapped iterations** were used for calculating indirect effects, which were considered significant if their 95% confidence interval did not include zero. The model was first tested on **the whole sample** and **then in the two gender groups**. Then, the null hypothesis of equality of the path coefficients across gender groups was tested with a series of **Wald chi-square tests of parameter equalities** in Mplus (Muthén & Muthén, 2017; Wang & Wang, 2012, pp. 276-278). In other words, in the **multi-group model**, unstandardized coefficients were compared between groups (with the "Model test" command) to test for gender differences in the associations between the study constructs (Loehlin, 1998).

Results – correlations whole sample

Table 1: Means, standard deviations, ranges, and inter-correlations of study variables.

	Mean	SD	Range	Skewness (SE)	Kurtosis (SE)	2	3	4	5	6
1. PCU	25.93	1.81	18-71	1.81(.12)	3.11(.24)	.38***	.57***	.49***	.32***	.10*
2. DT-IP	9.71	3.90	5-20	.52(.12)	-.65(.24)		.67***	.52***	.21***	-.02
3. DT-VP	8.39	3.74	5-20	1.07(.12)	.30 (.24)			.54***	.29***	-.002
4. PC	29.01	16.11	12-84	1.20(.12)	.86 (.24)				.31***	.05
5. PIU	42.95	19.47	15-102	.63(.12)	-.33(.24)					-.13**
6. Age	27.55	6.13	18-58							-

Notes: $N = 414$; *$p < .05$; **$p < .01$; *** $p < .001$; PCU = Problematic Cyberpornography Use; DT-IP = Desire Thinking – Imaginal Prefiguration; DT-VP = Desire Thinking – Verbal Perseveration; PC = Pornography Craving; PIU = Problematic Internet Use.

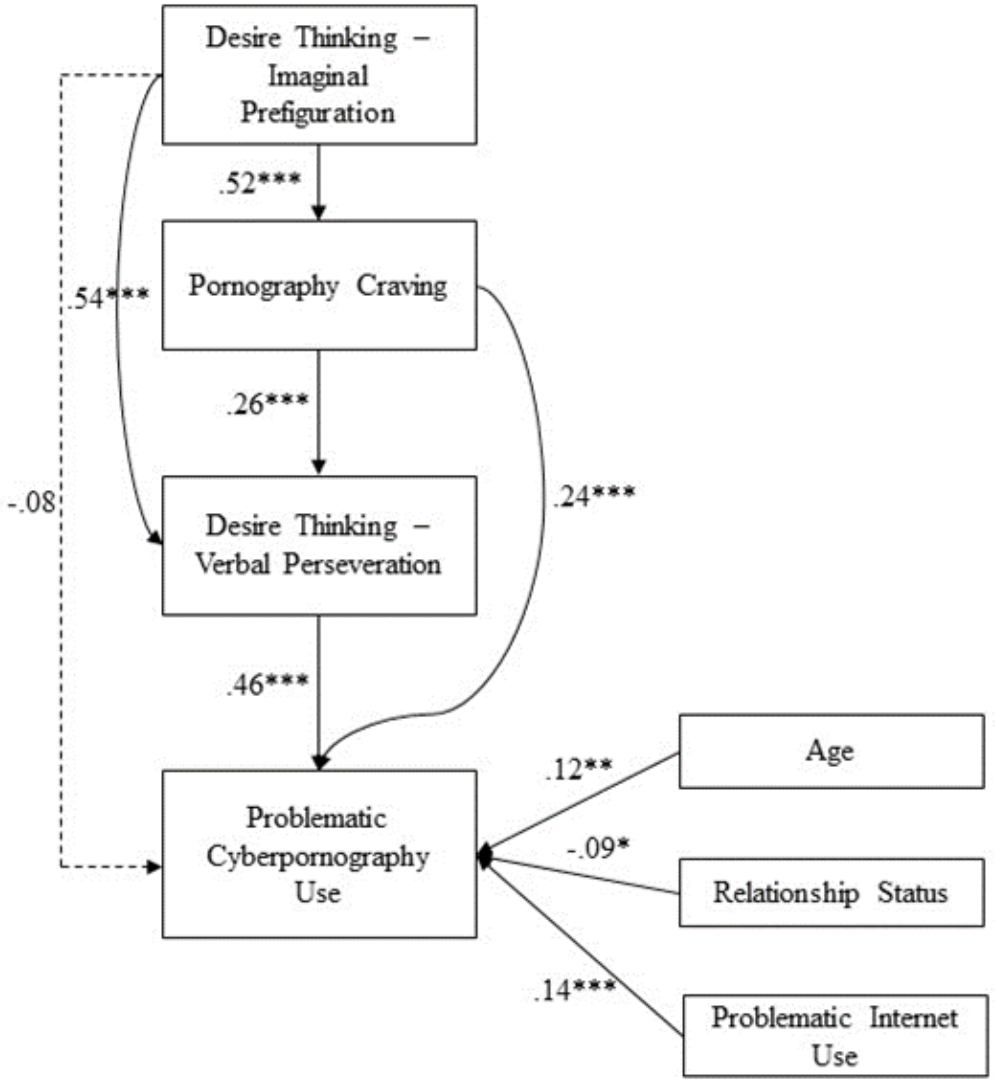
Results – t-tests – correlations women - men

Table 2: Means, standard deviations of study variables in women and men; Welch's *t*-tests; inter-correlations of study variables (women above the diagonal [N = 192]; men below the diagonal [N = 222]).

	Women		**Men**		**Welch's *t*-tests**		**Correlations**					
	Mean	SD	Mean	SD	$t_{(412)}$	*p*	1	2	3	4	5	6
1. PCU	21.16	5.48	30.05	11.93	-9.96 (320.09)	<.001	-	.39***	.42***	.48***	.22**	-.11
2. DT-IP	8.94	3.69	10.37	3.97	-3.81 (409.73)	<.001	.35***	-	.63***	.57***	.25***	-.08
3. DT-VP	7.33	3.04	9.30	4.04	-5.64 (404.45)	<.001	.57***	.68***	-	.51***	.24***	-.05
4. PC	24.13	12.89	33.24	17.40	-5.98 (402.77)	<.001	.42***	.49***	.49***	-	.29***	-.09
5. PIU	43.63	19.34	42.37	19.61	.66 (404.98)	.511	.46***	.20**	.36***	.37***	-	.05
6. Age	25.04	3.58	29.73	7.00	-8.75 (338.76)	<.001	-.07	-.10	-.14*	-.05	-.21**	-

Notes: *$p < .05$; **$p < .01$; *** $p < .001$; PCU = Problematic Cyberpornography Use; DT-IP = Desire Thinking – Imaginal Prefiguration; DT-VP = Desire Thinking – Verbal Perseveration; PC = Pornography Craving; PIU = Problematic Internet Use.

Results – path whole sample

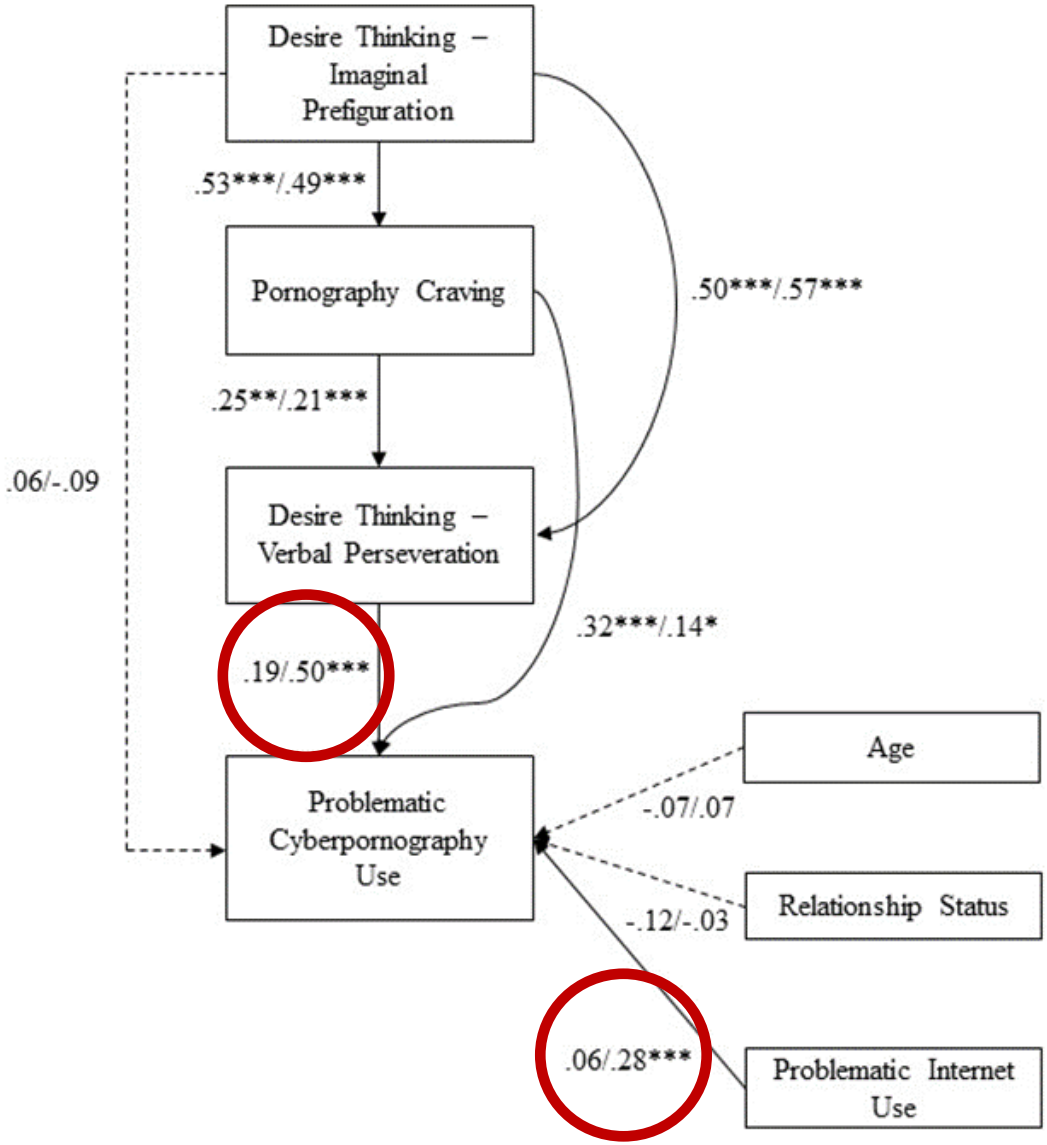


Notes: N= 414; *p < .05; **p < .01; *** p <.001; Relationship Status: 1= Not in a relationship; 2= In a relationship.

R-sq PCU = .38

TCD = .52

Results – path women/men



Notes: N=414 (women = 192; men = 222); *p < .05; **p < .01; *** p <.001; Relationship Status: 1= Not in a relationship; 2= In a relationship.

Results – indirect effects

	Whole Sample (N = 414)			Women (N = 192)			Men (N = 222)		
	Est.	95% CI		Est.	95% CI		Est.	95% CI	
DT-IP → PC → DT-VP → PCU	.006	.036	.096	.025	-.001	.085	.051	.028	.096
DT-IP →PC → PCU	.125	.064	.194	.168	.062	.286	.067	.010	.142
DT-IP → DT-VP → PCU	.245	.171	.330	.094	-.013	.205	.283	.199	.432

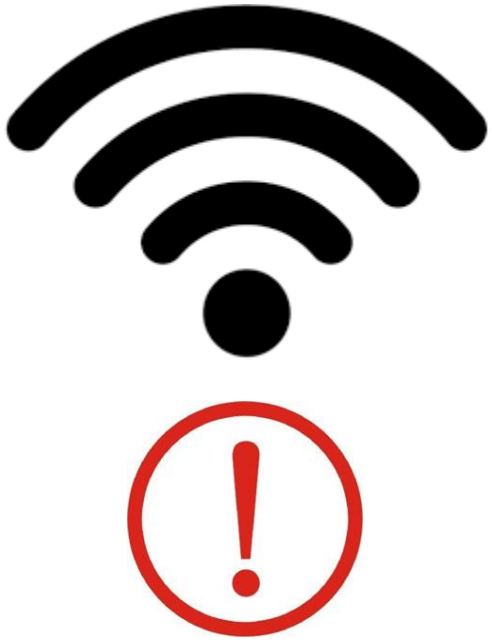
Note: 95% CI = bias-corrected bootstrapped confidence interval; PCU = Problematic Cyberpornography Use; DT-IP = Desire Thinking – Imaginal Prefiguration; DT-VP = Desire Thinking – Verbal Perseveration; PC = Pornography Craving; PIU = Problematic Internet Use.

Discussion

- The present study provided **support for the potential role of DT and craving in PCU conceptualized as a specific Internet-use disorder** (Brandtner et al., 2021) and expanded the literature in the field by testing **unexplored gender differences**.
- **DT may lead to dysfunctional consequences**, such as an increase in the accessibility of information-related targets and an **interference with the regulation of craving** (Caselli & Spada, 2011; 2013; Spada et al., 2013).
- **Craving**, along with imaginal prefiguration (Allen et al., 2017), is likely to lead to **engagement in repetitive self-talk** regarding the need to access cyberporn content (DT-VP), which in turn increases the levels of PCU, in terms of obsession with cyberpornography, perceived inability to stop or control using cyberpornography, and negative consequences for daily life.

Limitations

- cross-sectional research design
- convenience sampling method
- the sample is Italian but results may differ in other cultural and religious settings
- the sample mainly comprises heterosexual individuals, not allowing to grasp any differences for other sexual orientations
- positive and negative metacognitions were not included in the study



Conclusions

In terms of **assessment**, information about DT should be gathered during the anamnesis process of PCU. Individuals with PCU should be socialized to the idea that DT may contribute to the persistence of PCU.

In terms of **interventions**, in line with the metacognitive tenet (Wells, 2000; 2009), reducing the propensity to engage in DT should be considered as a possible preventive and therapeutic target for the treatment of PCU.

Thank you for your attention

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