



Stigmatizing attitudes toward Internet gaming disorder, Problematic smartphone use and Problematic social networking site use: An experimental vignette study

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ABSTRACT

Public stigma on substance and gambling disorders have been well documented. Negative effects of stigma include shame, embarrassment, fear being judged and the deterrent of help-seeking behaviors among stigmatized individuals. Less is known about the public perception toward Internet gaming disorder (IGD) and other widespread problematic behaviors that share some characteristics with established behavioral addictions, such as Problematic smartphone use (PSU) and Problematic social networking sites use (PSNSU). The purpose of this study is to compare the public perception of problematic Internet gamers, problematic smartphone users and problematic social networking sites users using an experimental within-group vignette study design. A sample of 280 adults ($F = 72.1\%$; $M_{age} = 32.84$, $SD = 13.85$) was recruited and completed the study online. Participants were presented with male OR female vignettes (i.e. the gender of the target in the vignette was randomized) describing an individual with IGD, PSU, and PSNSU. A repeated-measures ANOVA followed by post hoc tests using Bonferroni's correction was used. IGD was seen as more serious, more noticeable, and less understandable than both PSU and PSNSU. Moreover, participants' emotional reaction (e.g., anger and sadness) and desired social distance were significantly stronger toward IGD. However, vanity attributions were higher for individuals with PSNSU, which were also more blamed compared to both IGD and PSU. PSU was seen as more controllable than both IGD and PSNSU. The results, taken together, suggest that IGD is perceived as more inherently problematic, but PSNSU also seem to deserve scientific attention as individuals showing symptoms of PSNSU are blamed more than problematic Internet gamers. Our findings provide initial information that can be used when developing interventions to impact stigma toward technological addictions.

1. Introduction

The rapid growth in popularity of digital devices has led to various theoretical discussions and empirical investigations into the potential benefits of their use. Despite various advantages, some authors in the past have raised the possibility that frequent use might hide a non-chemical (behavioral) addiction which involves human-machine interaction (i.e., technology addiction; Griffiths, 1995). Some researchers considered the technological addictions according to the six-component model, thus suggesting that if salience, tolerance, withdrawal, mood modification, conflict, and relapse are present, the behavior should be

conceptualized as an addiction (Griffiths, 2005). Other researchers suggested that excessive technology use might reflect a maladaptive coping strategy (Billieux et al., 2013), a temporary compensatory strategy (Kardefelt-Winther, 2014), or a dissociative mechanism (Schimmenti & Caretti, 2010) to cope with negative states or adverse life events. Moreover, it has been suggested that technological addictions should not be defined as such when the technology use is a mere medium to access the addictive object (Caplan, 2002; Davis, 2001). In this perspective, unlike pornography and shopping addiction that might exist regardless of digital technologies, technology use is a necessary component of problematic behavior (Casale et al., 2021) in Internet

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Gaming Disorder (IGD), problematic smartphone use (PSU) and problematic social networking sites use (PSNSU). Various studies have shown that IGD, PSU and PSNSU share some core dimensions with substance addictions and gambling disorder, including some commonality between the neural mechanisms (e.g., Fauth-Bühler & Mann, 2017; Horvath et al., 2020; Lee, Namkooong, Lee, & Jung, 2021), craving symptoms under abstinence conditions (e.g., King, Kaptsis, Delfabbro, & Gradisar, 2016; Stieger & Lewetz, 2018; Wilcockson, Osborne, & Ellis, 2019) and withdrawal effects (see, for a review, Fernandez, Kuss, & Griffiths, 2020). Yet, consensus on the conceptualization of PSU and PSNSU as primary mental health conditions has still not been reached (Panova & Carbonell, 2018), and a recent debate on the risk of the so-called “diagnostic inflation” has highlighted the importance of having a clinically useful definition of problematic behaviors in online contexts (Musetti et al., 2022; Starcevic et al., 2021). Moreover, the attribution of the addictive feature to an increasing number of behaviors involves not only scholarly research and literature but also mass media and public opinion, influencing a variety of important outcomes, including stigmatization processes (Lang & Rosenberg, 2017). Yet, research into public perception and stigma in this field is lacking but needed, as it might facilitate awareness campaigns for prevention and harm-minimization and help to generate robust knowledge forming the basis for evidence-based treatments (Pontes et al., 2022).

1.1. Public perception of IGD, PSU, and PSNSU

Stigma has been defined as a universal and trans-cultural phenomenon and a deeply discrediting attribute (Goffman, 1963), as it implies labeling, stereotyping, separation, status loss, and discrimination (Buchman & Reiner, 2009; Link & Phelan, 2001). Stigma tends to occur when individuals’ particular or unusual traits are recognized as socially relevant, deviant, or immoral, leaving people socially undesirable (Link & Phelan, 2001). Thus, according to Buchman and Reiner (2009), stigma represents a relational notion, in that the psychological disorder tend to cause anger, irritation, anxiety, pity, and fear among stigmatizing people, whereas stigmatized individuals aware of public stigma likely tend to experience embarrassment, shame, fear, alienation, or anger (Link, Yang, Phelan, & Collins, 2004). The consequences of feeling stigmatized include determent to treatment or other forms of help-seeking and difficulties in the change process (Hing et al., 2016).

When it comes to addictive behaviors, scholarly interest has largely focused on the association between stigma and substance use disorders (i.e., drugs and alcohol), highlighting that stigma is associated with functional impairments and low-self-esteem among individuals affected by substance use disorders. Moreover, compared to other psychiatric disorders, substance users reported the highest perceived stigma (Bipeta et al., 2020). Male gender and greater duration of addiction seem to increase a number of stigmatizing attitudes, whilst the younger age of people with a drug addiction diminished them. The characteristics of respondents also modulated stigma: men, older respondents, and those with lower education expressed more-stigmatizing responses (Sattler, Escande, Racine, & Göritz, 2017).

As for stigmatizing attitudes toward behavioral addictions, the literature has mainly focused on gambling (Hing et al., 2014; Hing, Nuske, Gainsbury, Russell, & Breen, 2016; Hing, Russell, & Gainsbury, 2016; Hing, Russell, Gainsbury, & Nuske, 2016; Horch & Hodgins, 2008), showing that disordered gamblers are not perceived as dangerous individuals. However, they are perceived as having high control over their behavior, which implies higher anger and blame attitudes in accordance with the attribution theory (Corrigan, Markowitz, Watson, Rowan, & Kubiak, 2003). In fact, behavioral addictions are generally seen as having a lower addiction liability than substances, and are generally more attributed to flawed character (Konkoly Thege et al., 2015). More recently, some studies have focused on IGD (Lau et al., 2020) or compared stigmatizing attitudes toward various addictive behaviors, including problematic videogaming or IGD (Jamieson &

Dowrick, 2021; Konkoly Thege et al., 2015; Peter, Li, Pfund, Whelan, & Meyers, 2019). Overall, initial evidence has been provided that IGD is seen as being highly controllable, and engendered anger and blame. Internet gamers are seen as significantly less dangerous to be around and created a lower level of desired social distancing than (casino) gamblers (Peter et al., 2019). Interestingly, despite the large scholarly interest, we are unaware of any prior studies that explored stigmatizing attitudes toward PSU and PSNSU, despite their dissemination (Meng et al., 2022) and a recent call for papers on the topic (Galanis et al., 2021).

1.2. The present study

Only a few studies have explored public perception and stigmatizing attitudes toward IGD, whereas research on PSU and PSNSU is still lacking. Therefore, the present study aimed to compare public perception and stigmatizing attitudes associated with IGD, PSU, and PSNSU through the use of vignettes. First, since IGD is recognized as a potential mental health disorder (American Psychiatric Association, 2013) and online gaming is less widespread (i.e., somehow less normative) than smartphone and social networking site use (Statista, 2021a, b, c), we hypothesized that IGD will be considered a more serious and chronic problem compared to PSU and PSNSU (H1). Second, since studies on gambling have shown that individuals affected by behavioral addictions are generally perceived as having high control over their behavior (Hing, Russell, Gainsbury, & Nuske, 2016; Peter et al., 2019), we hypothesized that IGD, PSU, and PSNSU can be viewed as controllable to a similar degree (H2). Generally speaking, behavioral addictions are not perceived as dangerous to others (Hing, Russell, Gainsbury, & Nuske, 2016). However, since it has been reported that problematic smartphone users also use their smartphones while driving (Yeo & Park, 2021), we hypothesized that PSU will be perceived as more dangerous to others relative to IGD and PSNSU (H3). Higher levels of attribution of noticeability and vanity in PSNSU than IGD and PSU were also hypothesized (H4) because of the well-known highly visual and appearance-oriented social networking sites use (Lupton, 2021; Rodgers, Wertheim, Paxton, Tylka, & Harriger, 2022). In this regard, we expected that female characters of the PSNSU vignette will be stigmatized more than male ones (H5), especially in terms of vanity since female social networking sites users have been found to be more engaged in creating, editing, and posting digital visual content than males (Gioia et al., 2021; Terán, Yan, & Aubrey, 2020). Furthermore, we evaluated potential gender-related differences through the interaction of participants and the vignettes’ gender (men/women and male/female vignettes) since previous studies have shown that gender accounts for some variability (Sattler et al., 2017). Finally, we aim to explore whether having experienced the same behavioral problems described in each vignette increases or decreases stigmatizing attitudes toward IGD, PSU, and PSNSU, since familiarity is negatively related to the stigmatization of mental illness (Corrigan, Green, Lundin, Kubiak, & Penn, 2001).

2. Methods

2.1. Vignettes development

No prior studies that we are aware of have developed vignettes depicting IGD, PSU, and PSNU. Consequently, we designed three different similar in length vignettes (9–13 sentences, 280–327 words) describing IGD, PSU, and PSNSU, respectively (in the male and female version for a total of six vignettes). Evans and colleagues’ (2015) recommendations were carefully followed to develop the vignettes and test their validity. The three vignettes were developed on the basis of the relevant literature on IGD, PSU, and PSNSU and IGD symptom severity modeled off the diagnostic criteria for IGD (American Psychiatric Association, 2013). In particular, the vignettes described an individual engaging in the respective problematic behavior with recent increased intensity, when feeling distressed, who experience negative emotions

when the behavior is interrupted, and whose social or work functioning is compromised because of their excessive engagement in the behavior.

Vignettes were independently examined by a panel of 4 international experts in IGD, PSU, and PSNSU not involved in the research project and unaware of the study purposes, who were asked to answer a 8-item measures (for each scenario) on a 5-point Likert scale (from 1 = not at all to 5 = very much) concerning the vignette clarity, cultural neutrality, and validity (in accordance with Evans et al., 2015). Each item must have received a score of minimum 4 ("Rather much") by each expert in order to consider the related requirement met. The international experts were also asked for potential additional suggestions by means of open-ended questions. The final versions of the vignettes and questions administered to experts for their evaluation are shown in Appendix A. Descriptive statistics of the scores given by the international experts are shown in Appendix B.

2.2. Participants and procedure

We adopted a within-group design, in which all participants read and responded to questionnaires for all three vignettes in accordance with prior investigations (e.g., Hing et al., 2016). A power analysis indicated that a sample size of 251 participants was large enough to detect medium effects with power of 0.95. A snowball sampling method was adopted as recruitment strategy. There were no specific inclusion criteria, except that of being of legal age which, according to Italian law, is 18 years of age. Participants were involved by sharing on online forums an online survey implemented in Google Forms. A total of 280 Italian adults (Women = 72.1%; $M_{age} = 32.84$, $SD = 13.85$) responded to the online survey. Since it has been shown that vignette gender has an impact on attitudes toward mental disorders (e.g., Fekih-Romdhane et al., 2022), participants were randomized and presented with male OR female vignettes, i.e. the gender of the target in the vignette was randomized. A total of 146 (F = 71.4% women) out of 280 participants were exposed to the female version of the vignettes, whereas the other 134 participants (F = 72.9% women) were exposed to the male version of vignettes. Participants electronically signed the informed consent after reading the research aims, scope, and measures to be used in generating the data. Participation was voluntary and no course credits or payment was given. The study was approved by the Research Ethics Commission of the University and was conducted according to the ethical guidelines for psychological research set down by the Italian Psychological Association (AIP).

2.3. Materials

Participants were asked to self-report demographic factors, read the vignettes, and then rate each of them various on measures (i.e., each measure was administered for each vignette).

Sociodemographic Information. Information was collected about gender, age, relationship status, education level, and occupation. Participants were asked the following questions to assess previous personal experience or contact with IGD, PSU, and PSNSU: "Have you ever continuously (for more than a month) suffered from the difficulty described in the vignette?", "Have you ever met someone who suffered from the difficulties described in the vignette?".

2.4. Public perception and stigma measures

Global Illness Perception. The Italian version (Giardini, Majani, Pierobon, Gremigni, & Catapano, 2007) of the Illness Perception Questionnaire (IPQ-R; Moss-Morris et al., 2002) was used. The IPQ-R comprises 38 items and a seven-factor structure: (i) Timeline chronic (i.e., "X will last for a long time"), which assesses the perception of a temporary/permanent problem; (ii) Consequences (i.e., "X has serious financial consequences"), which assesses the perceived seriousness of the described condition; (iii) Personal control (i.e., "The course of X depends

on that user"), which assess how much the condition is perceived as controllable by the affected individual; (iv) Treatment control (i.e., "Counseling treatment will be effective in improving X"), which assesses how much the condition is perceived as treatable; (v) Illness coherence (i.e., "You don't understand X"), assessing how much the respondent understands or comprehends the described behavior; (vi) Timeline cyclical (i.e., "X is very unpredictable"); and (vii) Emotional representations (i.e., "X makes you feel afraid"), which assess the intensity of the emotional reaction toward the affected individual in terms of anger, sadness, worry and anxiety. Participants responded on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Previous studies (Lau et al., 2020) have already adapted the wording of the IPQ-R items in the field of IGD. Cronbach's α values ranged between 0.70 (IGD timeline chronic) and 0.89 (IGD and PSNSU illness coherence).

Blame/Personal responsibility. The Blame/Personal responsibility subscale of the Universal Stigma Scale (USS; Ebnetter & Latner, 2013) was used to investigate perceived responsibility toward vignette targets. The subscale is a 5-item measure rated on a 5-point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree). A sample item was "A problem like _____'s is a sign of personal weakness". The Cronbach's α value for each measurement was 0.71 (IGD), 0.55 (PSU), and 0.72 (PSNSU).

Vanity Attribution. The Vanity Attribution Scale (VAS; Geerling & Saunders, 2015) is a 7-item measure rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree), evaluating stigmatizing attribution toward individuals' vanity in PSU, IGD, and PSNSU (i.e., "This disorder is caused by vanity"). Cronbach's α value for each measurement was 0.89 (IGD), 0.91 (PSU), and 0.94 (PSNSU).

Dangerousness. The Italian version (Pingani et al., 2012) of the Dangerousness subscale of the Attribution Questionnaire (AQ; Corrigan et al., 2003) was used to evaluate the participants' perception about IGD/PSU/PSNSU dangerousness ("I would feel unsafe"). The subscale is a 3-item measure rated on a 9-point Likert scale ranging from 1 (not at all) to 9 (very much). Cronbach's α value for each measurement was 0.69 (IGD), 0.71 (PSU), and 0.72 (PSNSU).

Social Distance. The Social Distance Scale (SDS; Link, Cullen, Frank, & Wozniak, 1987) consists of 7 items rated on a 4-point Likert scale from 0 (definitely willing) to 3 (definitely unwilling), exploring the participants' willingness to accept people who engage in vignette targets (e.g., "How would you feel having someone like ... as a neighbor?"). Cronbach's α value for each measurement was 0.90 (IGD), 0.89 (PSU), and 0.91 (PSNSU).

Concealability/Noticeability. The single-item measure developed by Hing et al. (2016) was used to evaluate the noticeability of IGD, PSU, and PSNSU ("How noticeable would ...'s situation be to his family and friends if (s)he hadn't told them about it?"). The measure is rated on a 6-point Likert scale ranging from 0 (not at all noticeable) to 5 (extremely noticeable).

Higher scores indicate higher levels of the relative dimension for all the self-report measures, with the exception of Illness coherence and Blame/Personal responsibility (i.e., higher scores indicate lower levels of the variable). The preliminary Italian version of Blame/Personal responsibility, VAS, SDS, and Concealability measures were obtained using a back-translation method. One translator translated the tests from English to Italian. A second bilingual translator translated the new versions of the tests back to the source language. The original and the back-translated versions of the tests were then compared, and judgments were made about their equivalence.

2.5. Statistical analyses

All statistics were performed using the Statistical Package for Social Sciences SPSS (Version 23 for Windows). Multivariate analysis of variance (MANOVA) was used to examine whether respondents' gender and/or vignettes' gender had an impact on the study variables. A repeated-measures ANOVA followed by post hoc tests using the Bonferroni's correction was used to test the effect of the vignette on all the

study variables (i.e., to test differences in IGD, PSNSU and PSU perception). One-way analysis of variance (ANOVA) was used to explore whether there were significant differences in the perception of IGD, PSU, and PSNSU between individuals suffering or having suffered from the described problem and the others. The magnitude of the differences was evaluated with effect sizes. For eta squared, threshold values are interpreted as small (0.01), medium (0.06), and large effects (0.14) (Cohen, 1988).

3. Results

3.1. Preliminary analyses

Since it was not possible to submit the form without filling in all the required fields, the results did not present missing data. Among the participants, 67.9% were in a stable relationship. Concerning the education level, 4.3% completed the middle school, 33.2% had a high-school diploma, 30% were graduates, 26.1% had a master's degree, and 6.4% had post-graduate education. 43.6% were college students, 50% were employed, 1.4% were unemployed, and 5% were pensioners.

The MANOVA exploring gender related differences in relation with IPQR-R, blame, vanity, dangerousness, social distance, and concealability did not reveal significant differences based on the vignettes' gender (Wilks's $\lambda = 0.84$, $F_{(36,241)} = 1.25$, $p < .163$) nor a significant interaction effect between the gender of the participants and the vignettes (Wilks's $\lambda = 0.87$, $F_{(36,241)} = 1.00$, $p < .470$, ns). Consequently, $H5$ was not supported, and we analyzed differences in IGD, PSNSU and PSU perception independently of both respondents' and vignettes' gender.

3.2. Stigmatizing attitudes

Correlations between age and all the study variables were trivial ($0.00 < r < 0.32$), hence age was not added as covariate. The repeated-measures ANOVA (Table 1) showed significant differences on all the study variables, with the exception of beliefs that symptoms come and go in cycles (i.e., the three problematic behaviors were perceived as equally predictable). Significantly higher seriousness and noticeability were attributed to IGD ($H1$ was supported) compared to both PSU and PSNSU. Moreover, participants' negative emotional reaction and desired social distance were significantly stronger toward IGD, which was also perceived as less understandable – but more treatable – than both PSU and PSNSU. Conversely, PSU was seen as more controllable than both IGD and PSNSU ($H2$ was not supported). Vanity attributions were higher for individuals with PSNSU ($H4$ was supported), which were also more blamed compared to both IGD and PSU. Finally, PSNSU was seen as less dangerous than IGD, whilst we did not find that PSU was perceived as more dangerous than IGD and PSNSU ($H3$ was not supported).

Table 1
Stigmatizing Attitudes Across Conditions: Means, SD, Repeated-Measures ANOVA Results, and Pairwise Comparison.

	IGD		PSU		PSNSU		F (df)	η^2	Post-hoc
	M	SD	M	SD	M	SD			
IPQR Timeline chronic	3.53	0.63	3.47	0.63	3.27	0.61	21.864** _(2,1196)	0.14	IGD, PSU > PSNSU
IPQR Consequences	4.38	0.59	4.03	0.60	3.93	0.66	91.371** _(2,1997)	0.40	IGD > PSU > PSNSU
IPQR Personal control	3.91	0.64	4.10	0.54	3.93	0.63	17.693** _(2,1196)	0.11	PSU > IGD, PSNSU
IPQR Treatment control	4.31	0.65	4.19	0.65	4.19	0.96	10.753** _(2,1196)	0.07	IGD > PSU, PSNSU
IPQR Illness coherence	2.68	1.04	2.18	0.83	2.48	1.00	41.028** _(2,1912)	0.13	IGD > PSNU > PSU ^a
IPQR Timeline cyclical	2.68	0.79	2.70	0.84	2.72	0.79	0.396 ^{n.s.} _(2,1948)	0.00	–
IPQR Emotional representation	2.94	0.89	2.93	0.89	2.85	0.86	3.107* _(2,1904)	0.01	IGD > PSNSU
Blame/Personal responsibility	2.72	0.78	2.98	0.73	2.58	0.76	38.006** _(2,1997)	0.21	PSU > IGD > PSNSU ^b
Vanity	2.56	1.23	2.82	1.30	4.10	1.62	202.995** _(2,1653)	0.42	PSNSU > PSU > IGD
Dangerousness	3.83	1.75	3.73	1.70	3.53	1.75	5.682* _(2,1910)	0.02	IGD > PSNSU
Social Distance	2.07	0.76	1.87	0.74	1.84	0.81	33.241** _(2,1986)	0.19	IGD > PSU, PSNSU
Concealability/Noticeability	3.15	1.05	2.98	1.05	2.90	1.05	10.075** _(2,1965)	0.07	IGD > PSU, PSNSU

Note. a = Higher scores indicate less coherence; b = Higher scores indicate lower attribution of responsibility and blame; ** = $p < .001$; * = $p < .05$; n.s. = non-significant.

Ninety-nine participants (35%), 24 participants (8.6%) and 56 participants (20%) report suffering/having suffered from symptoms of PSU, IGD or PSNSU (respectively), as described in the vignette. Individuals reporting having had a direct experience of IGD symptoms also reported higher understanding of the illness ($F_{(1, 278)} = 14.234$, $p < .001$, $\eta^2 = 0.05$) and perception of less serious consequences ($F_{(1,278)} = 6.447$, $p < .05$, $\eta^2 = 0.02$). Individuals reporting having had a direct experience of PSU symptoms reported higher understanding of the illness ($F_{(1, 278)} = 39.798$, $p < .001$, $\eta^2 = 0.13$), less perception of dangerousness ($F_{(1,278)} = 5.518$, $p < .05$, $\eta^2 = 0.02$), and stronger beliefs that PSU symptoms come and go in cycles ($F_{(1,278)} = 4.736$, $p < .05$, $\eta^2 = 0.02$). Finally, individuals reporting having had a direct experience of PSNSU symptoms also reported a higher understanding of the illness ($F_{(1,278)} = 14.060$, $p < .001$, $\eta^2 = 0.05$), stronger beliefs that PSNSU symptoms come and go in cycles ($F_{(1,278)} = 2.652$, $p < .05$, $\eta^2 = 0.01$), but also more negative emotions toward the individual affected by PSNSU ($F_{(1,278)} = 4.476$, $p < .05$, $\eta^2 = 0.02$).

4. Discussion

The present study contributes to the still underdeveloped research field concerning public perception and stigmatizing attitudes toward IGD, PSU, and PSNSU. Indeed, the scientific literature has provided only a few studies concerning the association between stigma and IGD by which online gamers resulted less stigmatized than casino gamblers (Peter et al., 2019). Since other behavioral addictions might attract similar types of stigmatizing attitudes and beliefs (Peter et al., 2019), we have compared public perception and stigma-related attitudes toward IGD, PSU, and PSNSU.

Overall our results seem to suggest that, as hypothesized, IGD is perceived as more inherently problematic and it is more stigmatized than PSU and PSNSU. Participants believed that IGD had more negative consequences than PSU and PSNSU, and this might be due to the fact that the formal inclusion of IGD in the last edition of DSM-5 and the great interest of mass media in the addictive features of Internet gaming might have contributed to clarifying IGD seriousness for public opinion. However, participants' negative emotional reaction and desired social distance were significantly stronger toward IGD, suggesting that IGD also attracts greater stigma than PSU and PSNSU. This is not surprisingly since smartphone and social networking site use have become an integral part of everyday lives and a “way of being” (Kuss & Griffiths, 2017), and this might clarify why PSNSU and PSU were reported as more understandable compared to IGD. The other side of the coin is that the widespread use of smartphone and social networking sites might lead the potential risks to go more unnoticed, which is also consistent with our result showing that IGD was seen as more noticeable. In keeping with this perspective, the fact that IGD was seen as more subjected to

treatment control than PSU and PSNSU might mean that the latter are not seen as conditions requiring treatment.

Interestingly, PSNSU is seen as a less chronic problem than both IGD and PSU. One possible explanation is that individuals might believe – whether their opinion is empirically supported or not – that PSNSU is often a temporary strategy (rather than a stable phenomenon) driven by the need to maintain social contact and satisfy the need for affiliation and relatedness (Karddefelt-Winther, 2014). Indeed, it has been recently shown that in COVID-19-related lockdown periods, the prevalence of PSNSU was higher compared to non-lockdown periods (Alimoradi et al., 2022). Still, our results suggest that attitudes toward PSNSU warrant further scientific attention. In accordance with our hypothesis, the participants of the present study have attributed the cause of PSNSU to psychological factors (vanity). Moreover, individuals showing symptoms of PSNSU were more blamed than problematic Internet gamers and problematic smartphone users, and those individuals who consider themselves as someone who suffers or has suffered from PSNSU symptoms have reported more negative emotions toward PSNSU – which might be indicative of self-blame. Considering the fact that previous studies have also found strong positive correlations between shame levels and PSNSU (Casale & Fioravanti, 2017), it seems essential to consider that problematic social networks users might be ashamed to disclose their difficulties in regulating their use of social networking sites, which might cause difficulties in asking for outside help.

When it comes to PSU, participants believed that it is subjected to relatively better personal control than IGD and PSNSU (differently from our hypothesis). A possible interpretation of these findings might be related to the variety of smartphone features – i.e., PSU might be related to news consumption, social networking sites use, relaxation, and/or work or all the activities mentioned. The proposed vignette describes the type of use but not the motivations, thus preventing participants from developing an idea of why the person actually uses the smartphone – which does not help when deciding how much control the individual has over their behaviour. Interestingly, PSU was not viewed as more dangerous to others (which is not in accordance with our hypothesis) despite evidence that problematic smartphone users also use their smartphones while driving (Yeo & Park, 2021). One possible explanation is that it is possible that participants considered PSNSU as dangerous as PSU since one of the most common tools used for using social networking sites is smartphone.

Another point which deserves to be discussed is the absence of significant differences depending on the vignettes' gender. Despite prior evidence of gender-related differences in technological addictions and their motivations, recent meta-analytic reviews found no significant gender differences in the prevalence of PSU and PSNSU (see Meng et al., 2022). One possible explanation for our result is that since smartphone use, social networking sites use, and online gaming are very widespread across both men and women, the symptomatology of technological addictions is not stereotypically associated with gender.

Some limitations of the present study need to be addressed. First, we used self-report measures with consequent potential biases, including social-desirability (Rosenman et al., 2011). In this regard, participants with stigmatizing attitudes toward the targets may have avoided to explicitly share their perceptions. Moreover, some of the self-report measures used were translated for the present study and future studies are needed to explore their psychometric qualities in Italy, even considering that the PSU Blame/Personal responsibility subscale of the USS (Ebnetter & Latner, 2013) showed weak reliability. Second, the present findings might have been influenced by the specific wording used for the vignette description. Furthermore, they did not capture the complex nature of IGD, PSU, and PSNSU phenomena and, as already mentioned, the motivations surrounding the use (a key element when it comes to problematic use of technologies; Karddefelt-Winther, 2014). Most importantly, the sample size was quite small, relatively young and highly educated (i.e. 95.7% of the sample had obtained the high school diploma or more) and mainly consisted of Italian young adults – which

limits the generalizability of the results to other countries and older people. Age and education level, in particular, might have an impact on stigmatizing attitudes towards problematic use of technologies (Corrigan & Penn, 1999).

That having been said, this study represents an initial attempt to evaluate unexplored differences in people's perception of IGD, PSU, and PSNSU, and gives indications that different addictive behaviors might attract similar or different levels of stigmatizing attitudes depending on the specific dimension considered. This also suggests the need for research aimed at comparing IGD, PSU, PSNSU, with gambling and substance use disorders. Moreover, our results seem to suggest that it may be appropriate to begin designing interventions targeting public stigma of problematic involvement with technology. IGD-specific interventions may aim to correct perceptions regarding the negative emotional reaction and the need of social distance in response to problematic involvement with gaming, whilst PSNSU interventions should target perceived levels of personality responsibility of the problem.

CRedit authorship contribution statement

Silvia Casale: Conceptualization, Data curation, Formal analysis, Methodology, Supervision, Writing – review & editing. **Valentina Boursier:** Conceptualization, Project administration. **Alessia Musicò:** Investigation, Project administration. **Simon Ghinassi:** Project administration, Writing – original draft. **Gemma Cigolini:** Investigation, Project administration. **Elisabetta Petrucci:** Investigation, Project administration. **Francesca Gioia:** Data curation, Formal analysis, Project administration, Writing – original draft.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.addbeh.2023.107665>.

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