



Gender differences in internet addiction: A study on variables related to its possible development

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ABSTRACT

Internet addiction and its related variables (i.e., internet gaming addiction, social media addiction, fear of missing out, phubbing) have mostly been investigated in the general population without considering possible gender differences. The present study aimed to investigate the specific characteristics of men and women in the possible development of pathological behaviors related to internet addiction. A total of 276 participants (of ages ranging from 18 to 30 years old) were recruited in the study (46.7% were males) and responded to online questionnaires on variables related to internet addiction and psychological traits. The results showed that gender represents a key factor in explaining why individuals are addicted to the internet in different ways. Stepwise linear regression analyses showed that both genders shared social media addiction as the primary predictor of internet addiction but also exclusive predictors for each gender. Knowing the variables underlying the development of internet Addiction can be useful for both prevention and treatment and tailoring intervention for this addictive behavior.

1. Introduction

Lack of control is a core definition of psychoactive substance dependence or addiction. Since it occurs in a range of behaviors that are separate from substance abuse, the concept of non-substance or "behavioral" addictions, i.e., syndromes similar to substance dependence but with a different behavioral focus, has emerged. Thus, the term "behavioral addiction" specifically refers to a form of reinforcement resulting from the enactment of a particular behavior, namely a behavior performed for its own sake (Robbins & Clark, 2015). Although this construct has some scientific and clinical heuristic value, it remains controversial (Grant et al., 2010).

The topic is strongly debated since even the term "addiction" is sometimes perceived as stigmatizing. In addition, the consideration of

these addictions as new mental disorders, particularly because they are related to excessive engagement in non-substance activities, also stimulates considerable debate (Petry et al., 2018). As suggested by Billieux et al. (2015), addiction diagnoses need to consider two mandatory factors, such as functional impairment and temporal continuity, which are not always observed in these particular dysfunctional behaviors.

The American Psychiatric Association (APA) had considered the inclusion of these behavioral, or non-substance addictions, such as gambling, internet gaming, internet use in general, sex, eating, shopping, and exercise among recognized mental disorders. However, according to the guidelines identified by Stein et al. (2010), only gambling disorder has been included in the DSM-5 (American Psychiatric Association, 2013; Derevensky et al., 2019).

However, the DSM-5 proposed criteria for gambling disorder have

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some parallels with Internet gaming disorder (IGD) whose diagnostic criteria, in turn, could be applied to problems arising from extensive internet use beyond gaming, as these addictions share some specific features. People, in fact, may use the internet problematically for many activities, including gambling, as well as gaming, shopping, socializing, viewing pornographic material, and information gathering (Petry et al., 2018).

The use of the internet has intensely increased in the last few decades, becoming one of the most important daily habits and causing inevitable changes in many daily activities (Akmoglu, 2002).

Even though the internet has brought several tangible benefits, it is important to consider that excessive or inadequate use can have a negative impact on biopsychosocial health. Indeed, Internet Addiction has become an important area of study that has attracted interest from across different disciplines, including psychology, sociology, and communication (Balci & Gülnar, 2013). It has been observed that excessive use of online platforms can result from difficulties in impulse control and can lead to a series of symptoms comparable to those of substance addictions (Weinstein & Lejoyeux, 2010). Internet Addiction can lead to psychological disorders that would also affect the emotional and relational domain of the abuser (Hur, 2006). Individuals addicted to the internet may use the internet for extended periods, thus isolating themselves from other forms of social contact and focusing almost entirely on online rather than real-life events (Weinstein & Lejoyeux, 2010).

Young (1999) identified some symptoms of problematic internet use, such as tolerance, reduced impulse control, obsessive thoughts about the internet, abstinence, and inability to limit internet usage. Internet Addiction Disorder (IAD) can be linked to impulse control disorder (Liu & Potenza, 2007) and is associated with a maladaptive use of digital networks and new social and virtual technologies (Echeburúa & Corral, 2010). It can manifest as an uncontrollable preoccupation, an urgency to engage in behaviors related to computer use or internet access, resulting in a severe discomfort or impairment of daily activities (Young, 2004).

However, it should be emphasized that IAD can be described by referring to different ways in which the internet itself can be used. According to Young et al. (Young, 1998), IAD includes a wide variety of behaviors and impulse control disorders. Five subtypes of IAD can be described: compulsive online gambling; cybersexual addiction, which refers to exaggerated access and research of available material online forbidden to minors (e.g., pornographic images, games, movies); cyber relationship addiction, where individuals who exhibit behaviors compatible with social media addiction (SMA) attribute a stronger character to virtual relationships than to real ones, thus leading to issues in interpersonal and family relationships; multiuser dimensions (MUDs); and internet gaming disorder (IGD), which refers to role-playing games in which several users can play simultaneously online; information overload addiction, which is an obsessive search for information for most of the connection time. The IGD and SMA have been most frequently investigated in the literature in more heterogeneous samples (Mérelle et al., 2017). Therefore, this study mainly focuses on these specific subtypes of IAD, analyzing the possible differences related to gender. In fact, gender-related differences in addictive behaviors and their motivations have been reported by several studies (e.g., Tang et al., 2017), and have been considered important in understanding IAD (Liang et al., 2016).

2. Gender differences in Internet Addiction Disorder (IAD)

Male gender has been identified as a risk factor for IAD, as reported by several studies (Choi et al., 2015; Hassan et al., 2020; Lee et al., 2014; Ostovar et al., 2016; Pan et al., 2020; Sharma et al., 2014; Xin et al., 2018). This is in line with research indicating that females tend to use the internet predominantly for social interactions (Peris et al., 2020), while males engage in activities more predictive of IAD, such as pornography, cybersex, and online gaming (Hassan et al., 2020; Király

et al., 2014; Tsumura et al., 2017). In addition to gender influence, several studies have investigated the predisposing factors for IAD, revealing a significant effect of factors such as personality traits (e.g., neuroticism; Quagliari et al., 2022; Peris et al., 2020; Wu et al., 2015; Koo & Kwon, 2014) and prosocial behaviors (Kumar et al., 2019; Wartberg et al., 2016). Studies that have considered gender differences suggest that males and females share several risk factors for IAD, such as impulsivity/sensation seeking (Koo & Kwon, 2014; Li, Ren, et al., 2021; Mottram & Fleming, 2009), as well as other factors, such as sleep problems (Shen et al., 2021) and attention deficit hyperactivity disorder (ADHD) symptoms (Ko et al., 2012; Lee et al., 2014; Shen et al., 2021). However, there are independent predictive factors of IAD for females and males. Specifically, factors such as traumatic experiences (Schimmenti et al., 2017), hostility (Ko et al., 2009), frustration intolerance (Kuss et al., 2014), and self-control indicators (Li, Ren, et al., 2021) are associated with IAD in males, while alexithymic traits, emotional difficulties, negative mood (Dalbudak et al., 2014; Kandri et al., 2014; Koo & Kwon, 2014; Lyvers et al., 2016; Schimmenti et al., 2017; Shen et al., 2021), and smartphone addiction (Choi et al., 2015) are associated with IAD in females. Both males and females, however, may report suicide ideation and insomnia as consequences of IAD (Shen et al., 2021).

3. Gender-related differences in internet gaming disorder (IGD) and social media addiction (SMA)

IGD has been defined as the “persistent and recurrent use of the Internet to engage in games, often with other players, leading to clinically significant impairment or distress as indicated by five (or more) of the following in a 12-month period” (American Psychiatric Association, 2013, p. 795).

On the other hand, the term social media includes multiple types of online websites, such as social networks, online chatrooms, and blogs (van den Eijnden et al., 2016). Therefore, SMA has been defined as an “incapacity to regulate the use of social networks, which causes negative effects at the personal and interpersonal level” (Larose et al., 2011; Ryan et al., 2014).

Gender differences regarding internet users are a potential element that can affect the increase in Internet Addiction. Although several studies have been conducted to discuss this issue, online gaming addiction seems to be predominant among males (Bouna-Pyrrou et al., 2015; Spilková et al., 2017; van den Eijnden et al., 2018). Compared to females, males typically spend more time playing online games and these findings have been observed in different countries, both in adults (Laconi et al., 2017) and in a sample of adolescents (Wichstrøm et al., 2019). In contrast, recent studies have suggested that women spend more time on social media than men (Chae et al., 2018). In fact, they seemed to show a greater tendency to experience addictive symptoms associated with social media use (Varchetta et al., 2020) and would thus be more vulnerable to developing SMA (Andreassen et al., 2017; Martínez-Ferrer et al., 2018). A possible explanation could lie in the fact that when assessing IAD, men are assessed for online gaming, while women tend to be assessed for social media (Hawi & Samaha, 2019). However, additional data suggest that SMA would be prevalent among males. In fact, in some studies, males showed a higher level of SMA than females (Araujo Robles, 2016; Cam & Isbulan, 2012).

4. Gender-related differences in fear of missing out (FoMO)

Among the different social phenomena often linked to inappropriate use of the internet, one of the most studied is the Fear of Missing Out. This term refers to the often intense feeling of distress triggered by the concern that friends or others may be experiencing particularly gratifying experiences to which an individual does not partake (Przybylski et al., 2013). It is characterized by the desire to remain socially connected and may result in a form of social anxiety (Przybylski et al., 2013). It has been suggested that individuals with the highest levels of

FoMO may enter a cycle of behaviors that attempt to reaffirm their identity and self-esteem by spending an increasing amount of time online (Przybylski et al., 2013; Quaglieri et al., 2022). Indeed, FoMO is a variable involved in different problems linked to the problematic use of social networks and emotional problems (Li et al., 2020; Przybylski et al., 2013; Quaglieri et al., 2022; Varchetta et al., 2020).

Regarding gender differences, the data we have in the literature are few and not entirely clear. For example, Przybylski et al. (2013) found that FoMO scores were higher in young males who had a low level of life satisfaction, felt depressive and lonely, and showed an overuse of social media. In contrast, in a study conducted in South America, females scored were higher (Oberst et al., 2017). In other studies (Gil et al., 2015; Vallejos-Flores et al., 2018), no statistically significant difference was found in FoMO levels between males and females.

5. Gender-related differences in phubbing

Smartphones, as pocket-sized and multidimensional tools, can represent a way to ensure a constant connection with the virtual world, even if this connection creates new problems in real life. The term phubbing, a portmanteau of the words phone and snubbing, represents an increasing issue of smartphone abuse in social situations (Pathak, 2013). It describes the attitude of snubbing someone in a social environment by focusing on their phone rather than talking directly to the person (Chotpitayasunondh & Douglas, 2016). Gender has been found to play a key role in affecting many behaviors associated with smartphones, such as in the preference for online activities (Ha & Hwang, 2014). In Chotpitayasunondh and Douglas' study (2016), men were more likely to report experiencing phubbing than women. However, only a few studies have explored the potential gender differences in the phubbing phenomenon, and most have focused on gender differences in nomophobia and problematic phone use (Arpaci et al., 2019; Yildirim et al., 2016). The term nomophobia is a neologism that comes from the union of the words nonmobile phone and phobia. It appeared for the first time in 2008 in the United Kingdom. In a survey on the relationship of users with their mobile phone carried out by the British Post Office involving more than 2000 people, 53% of respondents said that they felt anxious when they did not have their phone with them. Thus, Nomophobia has been defined as the phobia of being left without one's cell phone (Bragazzi & Del Puente, 2014).

In addition, we refer to the notions of Smartphone Addiction (Casey, 2012; Kwon et al., 2013) or Problematic Smartphone Use (Hassanzadeh & Rezaei, 2011; Matthews et al., 2009) in situations where individuals excessively use their smartphones while neglecting other important life domains. In this respect, Albursan et al. (2019) observed that women display a higher risk of problematic smartphone use than men. In the same vein, Van Deursen et al. (2015) argued that women spend more time with smartphones, and they experienced higher levels of anxiety if they cannot reach their smartphones. In line with these data, in the study by Álvarez-Cabrera et al. (2021), women scored higher than men in the dimension of not being able to communicate and obsession with their mobile phone. This generates the constant need for people (in this case, women) to check their mobile phones more often to verify if any new messages have arrived. On the other hand, men presented altered communication, which is reflected by being more aware of their mobile phone when they are in the company of others, problems in the dialog, and an interruption in communication and in interaction with others, resulting in inadequate management of interpersonal relationships (Álvarez-Cabrera et al., 2021).

However, there are few studies about the phenomenon, which results in issues with not having a solid theoretical foundation and sufficiently clear data.

6. Emotional (Dys)regulation and internet addiction

Being able to regulate their own emotions refers to the ability to

modulate one's emotional states, be aware, recognize, understand and accept one's own emotions as well as those of others, in order to act in the world without being influenced by one's emotional state (Gratz & Roemer, 2004) in line with personal goals and desires (Gross, 1998; Thompson, 1988).

An extensive literature supports the relationship between Emotional (Dys)regulation and addictive disorders as Gambling (Velotti et al., 2021) and Internet Addiction (Scimeca et al., 2014; Yu et al., 2013). For instance, an Italian study on adolescents (Spada & Marino, 2017), showed that Emotional Dysregulation was directly associated with a higher risk of developing symptoms which are typical of Internet Addiction.

Social Media Addiction was also significantly associated with the difficulty of regulating their own emotions in a sample of American University students (Hormes et al., 2014). Moreover, Estevez and colleagues (2017) have shown a positive relation between high levels of Emotional (Dys)regulation and video game addiction.

There are conflicting findings on gender differences in Emotional Regulation, also considering the complexity and multidimensionality of the construct. Bender et al. (2012) observed that females would be more anxious and have more difficulty regulating negative emotions than males.

A study on adolescents found that girls showed greater acceptance and awareness of their emotions, less effective coping strategies and greater difficulty in adopting appropriate coping strategies in situations of emotional distress (Neumann et al., 2010).

In contrast, in the study by Tamres et al. (2002), females reported using more strategies than males, including reappraisal, active coping (or problem-solving), acceptance, and social support. Overall, research on gender differences in the ability to regulate emotions does not provide completely unambiguous results.

7. Prosociality and internet addiction

Prosocial behavior seeks to help and bring tangible and intangible benefits to others, reducing the likelihood of engaging in antisocial and aggressive behavior (Martí-Vilar et al., 2019; Rodríguez et al., 2021). Behavioral addictions involve performing core behaviors for individuals, as they become exclusive and significantly affect other daily activities on a physical, mental and social level. In this regard, people with addiction problems might tend to be less prosocial, suggesting that prosociality might be a protective factor against the development of this kind of addictions (Hernández-Serrano et al., 2016; Paleologou et al., 2019). Nonetheless, Guo et al. (2021) observed that prosocial behaviour reduces the risk of problematic internet use. In addition, in a Dutch sample prosocial behavior was found to be negatively correlated with video game addiction (Lemmens et al., 2015).

With respect to gender differences in prosocial behavior, several studies indicate that women tend to be more prosocial than men (Holmgren et al., 1998) and exhibit stronger prosocial morality (Jaffee & Hyde, 2000).

However, the nature and multidimensionality of prosocial behavior must be considered. Indeed, the female behavior is more care-oriented while male behavior is more justice-oriented (Gilligan, 1993). As Eagly (2009) reported males tend to engage more in physical supportiveness than females. In addition, different forms of prosocial behavior may have different antecedents, motivations, and consequences (Eisenberg & Spinrad, 2014), which means that gender differences will probably vary depending on the kind of prosocial behavior performed.

8. Impulsivity and internet addiction

Impulsivity can be defined as a personality trait characterized by difficulty in planning and prediction, reduced perseverance, high sensation seeking and immediate gratification. Impulsiveness can also predict loss of control and has often been associated with the onset of an

addictive behavior (Blaszczynski et al., 1997). Actually, it can play a crucial role in the development and maintenance of addictive behaviors (Cao et al., 2007; Treuer et al., 2001), as Internet Addiction is also considered an impulse control disorder (Sadock et al., 2007; Shapira et al., 2000). With respect to impulsivity and Internet Addiction, a study by Cao et al. (2007) has investigated their relationship in a sample of Chinese adolescents. The authors showed that the Internet Addiction group was more impulsive than the control group. Similarly, individuals with higher levels of Internet Addiction were more impulsive than those with lower levels of IAD (Choi et al., 2014). In addition, the study by Lee et al. (2012) found that impulsiveness may be a risk factor for IAD and pathological gambling.

In the study of impulsivity there is considerable interest in gender differences (Moffitt et al., 2001). Overall, it is well recognized that males exhibit higher levels of impulsivity, as several studies have shown that, from early adolescence, girls tend to exhibit less impulsive behavior than boys (e.g., Burton et al., 1998; Chapple et al., 2005; Chapple & Johnson, 2007). Other studies, however, found no significant differences between males and females on impulsivity (Patton et al., 1995). However, Silverman (2003) suggested that females actually use more effective strategies to delay rewards, while males would be more impulsive, a strategy that may prove detrimental on the long run.

9. Study aim and hypotheses

Recently, interest in gender differences in IAD has increased considerably, highlighting a different role of gender depending on the subtype of Internet Addictions.

However, conflicting results have left the relationship between the gender of users and internet addictive behaviors unclear. Moreover, the relationship between gender and FoMO and phubbing, have been poorly studied.

The aim of this study is to offer further insights into the difference between men and women in their approach to using online platforms and possibly to understand whether such behaviors can be explained by some psychological variables, such as impulsivity, tendency to engage in prosocial behaviors, and ability to regulate and recognize one's emotional responses.

We want to investigate possible gender differences in Internet Addiction-related variables.

In particular, we expected:

Hypothesis 1. (H1). Significant differences between males and females in Internet Addiction, social media addiction, fear of missing out, phubbing, and psychological variables. In particular:

- Female will demonstrate higher levels of Internet Addiction;
- Males will demonstrate higher levels of Internet Gaming Disorder, and females will demonstrate higher levels of Social Media Addiction;
- Female will demonstrate higher levels of Fear of Missing Out;
- Male will show a mayor tendency to suffer the condition of Phubbing;
- Females will show higher levels of Prosociality;
- Males will demonstrate higher levels of Emotional Dysregulation and Impulsivity.

Hypothesis 2. (H2). Significant correlations between Internet Addiction and the investigated variables depending on gender.

Hypothesis 3. (H3). The investigated variables will be predictors of Internet Addiction in male versus female groups.

10. Methods

10.1. Participants

A total of 276 participants were recruited for the study; 46.7% were males, and their ages ranged from 18 to 30 years ($M = 22.25$, $SD = 3.31$). A total of 68.8% of the participants had secondary education, 18.1% had an undergraduate degree, 9.8% had a graduate degree, 2.2% only had a primary education, and 1.1% had a master's or doctoral degree. Of the respondents, 79% were students, 82.2% lived with their families, and 51.1% had a partner. The full sociodemographic characteristics are described in Table 1.

The sample was divided into two groups based on gender. The male Group comprised 129 participants, with a mean age of 22.76 ($SD = 3.65$), while the female Group comprised 147 participants, with a mean age of 21.81 ($SD = 2.93$). Statistically significant differences were found between the two groups in age ($F_{(1,275)} = 5.74$, $p = 0.017$).

10.2. Procedure

Participants were recruited online and responded voluntarily and anonymously to the survey, which they accessed with a designated link via the Qualtrics Online Platform. Participants provided informed consent before starting the survey and were free to quit or leave the survey at any time without explanation.

Ethical approval was obtained from the Institutional Board of the Department of Psychology, Faculty of Medicine and Psychology, "Sapienza" University of Rome (IRB 2193/2020), in accordance with the principles embodied in the Declaration of Helsinki.

11. Materials

11.1. Internet addiction test

The Internet Addiction Test (IAT; Young, 1998) is a widely used instrument to assess Internet Addiction. It consists of 20 items rated on a five-point Likert scale ranging from 1 (very rarely) to 5 (very frequently). A higher score indicates a higher level of Internet Addiction. For this study, we used the Italian version of the IAT developed by Fioravanti and Casale (2015). In the present study, Cronbach's alpha

Table 1
Descriptive statistics of the sample.

		N	%	
Gender	Male	129	46.7%	
	Female	147	53.3%	
Education	Primary education	6	2.2%	
	Secondary education	190	68.8%	
	Undergraduate degree	50	18.1%	
	Graduate degree	27	9.8%	
	Master or Doctoral degree	3	1.1%	
Marital Status	Single	122	44.2%	
	Married	1	0.4%	
	Cohabitant	12	4.3%	
	In a relationship	141	51.1%	
	Businessman	4	1.4%	
Occupation	Practitioner	9	3.3%	
	Managerial employer	3	1.1%	
	Conceptual employer	4	1.4%	
	Worker	5	1.8%	
	Professional Healthcare	6	2.2%	
	Teacher	3	1.1%	
	Student	218	79.0%	
	Other	24	8.7%	
	Family type (lives with)	On my own	15	5.4%
		Partner	11	4.0%
Partner and child/children		2	0.7%	
Relatives		227	82.2%	
Cohabitant/s		21	7.6%	

was 0.848.

11.2. Bergen social media addiction scale

The Bergen Social Media Addiction Scale (BSMAS; [Andreassen et al., 2016](#)) is a self-report questionnaire developed to investigate social media addiction. It is based on the six dimensions (salience, mood, modification, tolerance, withdrawal conflict, and relapse) proposed by [Griffiths \(2005\)](#) and consists of six items rated on a five-point Likert scale ranging from 1 (very rarely) to 5 (very often). A higher score indicates a greater risk of developing a social media addiction. In this study, we used the Italian version developed by [Monacis et al. \(2017\)](#). Our study showed a Cronbach's alpha of 0.769.

11.3. Internet gaming disorder scale

The Internet Gaming Disorder Scale-Short Form (IGDS9-SF; [Pontes & Griffiths, 2015](#)) evaluates the severity of IGD and its harmful effects by examining both online and/or offline gaming activities occurring over a 12-month period. The scale comprises nine items corresponding to the nine core criteria defined by the DSM-5 ([APA, 2013](#)). Participants responded on a five-point Likert scale ranging from 1 (never) to 5 (very often). Higher scores indicate a higher degree of gaming disorder. In the present study, we used the Italian version developed by [Monacis et al. \(2016\)](#), and the Cronbach's alpha was 0.849.

11.4. Phubbing Scale

The Phubbing Scale (PUBB; [Guazzini et al., 2019](#)) comprises ten items on a five-point Likert scale from 1 (never) to 5 (always), with two factors: communication disturbances (e.g., "My eyes start wandering on my phone when I'm together with others") and phone obsession (e.g., "When I wake up in the morning, I first check the messages on my phone"). In the present study, Cronbach's alpha was 0.710.

11.5. Fear of missing out scale

The Fear of Missing Out Scale (FoMOs; [Przybylski et al., 2013](#)) is a ten-item self-report questionnaire rated on a five-point Likert scale ranging from 1 (not at all true of me) to 5 (extremely true of me). This scale measures individual differences in experiencing a pervasive apprehension that "others" are engaged in positive activities and relationships compared to the self. The questionnaire is composed of two factors: the first relates to the fear that others are having more rewarding experiences or are having fun without the subject, and the second relates to the need to control what is going on in one's own social relationships. In this study, we used the Italian version developed by [Casale and Fioravanti \(2020\)](#). The Cronbach's alpha was 0.832.

11.6. Difficulties in emotion regulation scale

The Difficulties in Emotion Regulation Scale (DERS; [Gratz & Roemer, 2004](#)) is a 36-item self-report questionnaire that measures six dimensions of difficulties in regulating emotions (nonacceptance, goal-directed behavior, impulse control, limited access to effective emotional regulation strategies, lack of emotional awareness, and lack of emotional clarity). In this study, the Italian short version proposed by [Lausi et al. \(2020\)](#) was used. It is composed of 20 items rated on a five-point Likert scale ranging from 1 (almost never) to 5 (almost always). Higher scores indicate greater difficulties in emotion regulation. In the current study, the total Cronbach's alpha was 0.881, while concerning factors (i.e., non-acceptance, goals, impulse, clarity, awareness) Cronbach's alpha was .908, .900, 0.915, 0.873, 0.817, respectively.

11.6.1. Prosociality scale

The Prosociality Scale (PS; [Caprara et al., 2005](#)) is a 16-item

questionnaire that evaluates behaviors and feelings that refer to one of four types of actions (sharing, helping, taking care of, and feeling empathic with others and their needs). For each prosocial behavior item, participants responded on a five-point Likert scale ranging from 1 (never/almost never true) to 5 (almost always/always true). The Cronbach's alpha in this study was 0.924.

11.7. Impulsive behavior scale

The Impulsivity Behavior Scale ([Whiteside & Lynam, 2001](#)) is a 59-item questionnaire that evaluates five dimensions of impulsivity (positive urgency, negative urgency, lack of perseverance, lack of premeditation, and sensation seeking). In this study, we used the short Italian version developed by [D'Orta et al. \(2015\)](#), comprising 20 items. Each dimension is evaluated by four items on a four-point Likert scale ranging from 1 (strongly agree) to 4 (strongly disagree). The Cronbach's alpha for the total score in this study was 0.714, while concerning factors (i.e., negative urgency, positive urgency, lack of premeditation, lack of perseverance, sensation seeking) Cronbach's alpha was .834, .781, 0.817, 0.925, 0.825, respectively.

11.8. Data analysis

Statistical analyses were performed using the Statistical Package for Social Science (SPSS; version 26.0; IBM SPSS, Armonk, NY). Descriptive statistics are provided for gender, age, education, marital status, profession, and family type (see [Table 1](#)). Questionnaire scores were analyzed by using an independent-samples *t*-test and finally results were controlled for age (MANCOVA) by using the Bonferroni correction. When Levene's test for equality of variances was significant, we reported the corrected degree of freedom rounded to the nearest whole number (as implemented in SPSS). For each gender separately, we conducted Partial Pearson's correlations and subsequently stepwise linear regression analyses to explore relationships between variables and Internet Addiction. The variance inflation factor (VIF) and tolerance were used to verify the multicollinearity problem. Statistical significance was defined at $p < 0.05$. The distributions of all data were verified for normality, and all statistical analyses were performed on deidentified data.

12. Results

With respect to the IAT, we analyzed the total score and the two dimensions ("Emotional and cognitive preoccupations with the internet and social consequences" and "Loss of control and interference with daily duties") separately. There were no statistically significant differences between groups, as shown in [Table 2](#), when controlling for age "Loss of control" showed statistically significant result [$F_{(2)} = 4.213$, $p < 0.05$; $\eta^2 = 0.030$] in which females showed higher mean than males. The BSMAS showed statistically significant results between subjects [$t(274) = -2.53$, $p < 0.05$, $d = 0.30$] also after controlling for age ($p < 0.05$; $\eta^2 = 0.005$); the scores were higher for females ($M = 2.10$, $SD = 0.71$) than for males ($M = 1.89$, $SD = 0.67$). Concerning the IGDS9-SF, there was a statistically significant difference between groups [$t(274) = 5.85$, $p < 0.001$, $d = 0.80$], also after controlling for age ($p < 0.001$; $\eta^2 = 0.142$) with a higher mean in the male group ($M = 15.63$, $SD = 5.69$) than in the female group ($M = 11.81$, $SD = 3.59$). With respect to the "communication disturbances" dimension of the PUBB, no statistically significant difference was observed, while the "phone obsession" dimension showed a statistically significant difference [$t(274) = -2.27$, $p < 0.05$, $d = 0.27$], also after controlling for age ($p < 0.05$; $\eta^2 = 0.025$) in which females showed higher scores ($M = 15.60$, $SD = 3.18$) than males ($M = 14.72$, $SD = 3.23$). Concerning the FoMOs, also the "need to control" dimension showed a statistically significant difference [$t(274) = -2.43$, $p < 0.05$, $d = 0.29$], also after controlling for age ($p < 0.01$; $\eta^2 = 0.045$) with the female group reporting a higher mean ($M = 16.18$, $SD = 4.09$) than the male group ($M = 14.98$, $SD = 4.08$). While after

Table 2
Differences between the Male and Female Groups.

Independent-samples <i>t</i> -test						
Variables	<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>	Male M(SD)	Female M(SD)
IAT_EmoTional	0.725	274	0.469	–	20.50(6.48)	19.98(5.54)
IAT_Loss of Control	–1.05	274	0.294	–	23.91(5.28)	24.56(4.97)
IAT_Total Score	–0.103	274	0.918	–	44.42(10.79)	44.54(9.41)
Bergen Social Media	–2.53	274	0.05*	0.30	1.89(0.67)	2.10(0.71)
Internet Gaming Disorder	5.85	171	0.001***	0.80	15.63(5.68)	11.81(3.59)
PB_Communication disturbances	–0.567	274	.571	–	11.85(2.97)	12.05(2.74)
PB_Phone obsession	–2.27	274	0.05*	0.27	14.72(3.23)	15.60(3.18)
FoMO_Fears of other’s experiences	–0.526	274	0.600	–	9.30(3.65)	9.53(3.55)
FoMO_Need to control	–2.43	274	0.05*	0.29	14.98(4.08)	16.18(4.09)
FoMO_Total Score	–1.74	274	0.084	–	24.28(6.96)	25.71(6.69)
DERS_Non acceptance	0.279	274	0.781	–	12.72(5.13)	12.54(5.36)
DERS_Goals	–0.091	274	0.928	–	14.03(4.11)	14.07(3.88)
DERS_Impulse	0.106	274	0.916	–	10.00(4.26)	9.95(4.24)
DERS_Clarity	0.888	274	0.375	–	8.77(3.14)	8.45(2.82)
DERS_Awareness	3.36	249	0.01**	0.40	8.33(3.49)	7.03(2.89)
DERS_Total Score	1.15	274	0.249	–	53.85(13.29)	52.04(12.75)
Pro Sociality scale	–5.07	274	0.001***	0.60	3.73(0.62)	4.11(0.63)
sUPPS-Negative urgency	–0.585	274	0.559	–	11.54(3.72)	11.81(3.83)
sUPPS-Positive urgency	0.669	274	0.504	–	11.84(3.40)	11.56(3.35)
sUPPS_Lack of premeditation	–0.738	274	0.461	–	8.40(2.92)	8.67(3.15)
sUPPS_Lack of perseverance	3.20	274	0.01**	0.38	10.37(4.05)	8.87(3.75)
sUPPS_Sensation Seeking	2.89	271	0.01**	0.36	12.93(3.12)	11.70(3.95)

Note. M = Male Group; F = Female Group; IAT = Internet Addiction test; PB = Phubbing Scale;; FoMO = Fear of Missing Out Scale; DERS = Difficulties in Emotion Regulation Scale; sUPPS = Short Impulsivity Behavior Scale; * = difference is significant at the 0.05 level; ** = difference is significant at the 0.01 level; *** = difference is significant at the 0.001 level. The bold indicates significance.

controlling for age also the FoMOs total score reported a statistically significant result [$F_{(2)} = 5.280, p < 0.01, \eta^2 = 0.037$] with higher mean in female group ($M = 25.71, SD = 6.69$) than males ($M = 24.28, SD = 6.96$). With respect to the DERS dimensions, only “awareness” showed statistically significant results [$t(249) = 3.36, p < 0.01, d = 0.40$] also after controlling for age ($p < 0.01; \eta^2 = 0.046$). Levene’s test indicated unequal variances ($F = 6.35, p = 0.012$), so degrees of freedom were adjusted from 274 to 249. After controlling for age both “goals” and “clarity” showed significant results [$F_{(2)} = 9.49, p < 0.001, \eta^2 = 0.065$], [$F_{(2)} = 4.897, p < 0.01, \eta^2 = 0.035$] with higher mean in females group ($M = 14.07, SD = 3.88$) and higher mean in males group ($M = 8.77, SD = 3.14$) respectively. The PS showed a statistically significant difference [$t(274) = -5.07, p < 0.001, d = 0.60$] also after controlling for age ($p < 0.001; \eta^2 = 0.088$), in which the female group showed higher scores ($M = 4.11, SD = 0.63$) than the male group ($M = 3.73, SD = 0.62$). Last, the “lack of perseverance” and “sensation seeking” dimensions of the S-UPPS-P showed a statistically significant difference between groups [$t(274) = 3.20, p < 0.01, d = 0.38$, and $t(271) = 2.89, p < 0.01, d = 0.36$, respectively] also after controlling for age ($p < 0.001; \eta^2 = 0.057; p < 0.05; \eta^2 = 0.030$). Concerning both the “lack of perseverance” and “sensation seeking” dimensions males showed higher scores ($M = 10.37,$

$SD = 4.05$ and $M = 12.93, SD = 3.12$) than females ($M = 8.87, SD = 3.75$ and $M = 11.70, SD = 3.95$) respectively. All statistical results are reported in [Table 2](#).

12.1. Correlations between variables in the male and female groups

Partial Pearson’s correlations were calculated to explore the relationships between the main variables involved in the study. We performed different correlation analyses for each group to investigate possible relationships between the total score of the IAT and the other variables, controlling for age.

For clarity, we reported all the significant correlations concerning both male and female groups in [Tables 3a](#) and [3b](#).

In addition, the significant correlation coefficients of the two groups were compared with Fisher’s *z* test. Values are also reported in [Tables 3a](#) and [3b](#)

12.2. Linear regression analyses

Stepwise multiple linear regression analysis was used to test whether the variables on problematic social media use significantly predicted

Table 3a
Significant correlations between the Internet Addiction Test and the other variables in the Male and Female Groups.

	Pro Sociality	Bergen Social Media	Internet Gaming Disorder	PB_Communication disturbances	PB_Phone obsession	FoMO_Fears of other’s experiences	FoMO_Need to control	FoMO_Total Score
Male Group								
IAT_Total Score	0.179*	0.704***	0.671***	0.451***	0.497***	0.544***	0.433***	0.542***
N	126	126	101	126	126	126	126	126
Female Group								
IAT_Total Score	–0.005	0.830***	0.433***	0.443***	0.583***	0.366***	0.306***	0.381***
N	144	144	110	144	144	144	144	144
Comparing Correlations								
<i>z</i>	1.507	–2.536	2.496	0.081	–0.986	1.832	1.195	1.668
<i>p</i>	0.066	0.006	0.006	0.468	0.162	0.033	0.116	0.048

Note. IAT = Internet Addiction test; PB = Phubbing Scale; FoMO = Fear of Missing Out Scale; * = difference is significant at the 0.05 level; ** = difference is significant at the 0.01 level. The bold indicates significance.

Table 3b
Significant correlations between the Internet Addiction Test and the other variables in the Male and Female Groups.

	DERS_Non Acceptance	DERS_Goals	DERS_Impulse	DERS_Clarity	DERS_Total Score	sUPPS_Negative Urgency	sUPPS_Positive Urgency	sUPPS_Lack of Perseverance
Male Group								
IAT_Total Score	0.352***	0.391***	0.320***	0.405***	0.438***	0.254**	0.282**	0.289**
N	126	126	126	126	126	126	126	126
Female Group								
IAT_Total Score	0.211*	0.270**	0.195*	0.222**	0.317***	0.150	0.105	0.195*
N	144	144	144	144	144	144	144	144
Comparing Correlations								
z	1.244	1.103	1.087	1.652	1.146	0.88	1.495	0.81
p	0.107	0.135	0.139	0.049	0.126	0.189	0.067	0.209

Note. IAT = Internet Addiction test; DERS = Difficulties in Emotion Regulation Scale; sUPPS = Short Impulsivity Behavior Scale; * = difference is significant at the 0.05 level; ** = difference is significant at the 0.01 level. The bold indicates significance.

participants' Internet Addiction ratings. We conducted a separate linear regression for each gender.

The results of the regression concerning the Male Group (Table 4) indicated that five predictors explained 71.4% of the variance ($R^2_{Adj} = 0.714$, $F_{(5,98)} = 52.33$, $p < 0.001$). It was found that BSMAS significantly predicted the IAT ($\beta = 0.361$, $p < 0.001$), as did IGDS9-SF ($\beta = 0.426$, $p < 0.001$), "fear that others are having more rewarding experiences" of the FoMOs ($\beta = 0.144$, $p < 0.05$), "communication disturbances" of the PUBB ($\beta = 0.153$, $p < 0.05$) and, last, "goals" dimension of the DERS ($\beta = 0.127$, $p < 0.05$).

Concerning the regression of the female group (Table 5), the results indicated that three predictors explained 73.7% of the variance ($R^2_{Adj} = 0.737$, $F_{(3,109)} = 105.53$, $p < 0.001$). It was found that BSMAS significantly predicted the IAT ($\beta = 0.712$, $p < 0.001$), as did "phone obsession" of the PUBB ($\beta = 0.197$, $p < 0.01$) and "lack of perseverance" of S-UPPS-P ($\beta = 0.107$, $p < 0.05$).

13. Discussion

The present study examined the differences between men and women in the use of the internet, social media, and related features. In particular, the research underlined the specific characteristics of the two groups in the possible development of pathological behaviors related to Internet Addiction, investigating social media, mobile use, and gaming addiction. In general, it has been shown that increased internet use is associated with several social and psychological variables. In the assessment of factors related to IAD from a multidimensional perspective, researchers have often considered demographic factors first (Yen et al., 2009), and among these, "gender represents a key factor to explain why individuals are addicted to the internet according to different ways" (Tang et al., 2017). Despite the extensive existing literature on the subject, mixed results still occur (Aylaz et al., 2016; Sun et al., 2012).

Our first hypothesis (H1) was partially confirmed. In fact, the results underlined significant differences between males and females assessed by the Internet Gaming Disorder Scale, Bergen Social Media Addiction

Table 4
Multiple linear regression of IAT Total Score predictors in the Male Group.

	b	SE B	β	p
(Constant)	6.626	2.899		0.024
BSMAS	5.921	1.057	0.361	<0.001
IGDS9-SF	0.793	0.110	0.426	<0.001
FO_F	0.413	0.180	0.144	0.024
PB_DI	0.536	0.203	0.153	0.010
D_GO	0.323	0.154	0.127	0.038

Note. BSMAS = Bergen Social Media Scale; IGDS9-SF = Internet Gaming Disorder Scale-Short Form; FO_F = Fear that others are having more rewarding experiences of Fear of Missing Out Scale; PB_DI = Communication disturbances of Phubbing Scale; D_GO = Goals of Difficulties in Emotion Regulation Scale.

Table 5
Multiple linear regression of IAT Total Score predictors in the Female Group.

	b	SE B	β	p
(Constant)	14.354	2.659		<0.001
BSMAS	8.935	0.796	0.712	<0.001
PB_OS	0.589	0.189	0.197	0.002
U_PE	0.280	0.128	0.107	0.031

Note. BSMAS = Bergen Social Media Scale; PB_OS = Phone obsession of the Phubbing Scale; U_PE = Lack of perseverance of the Impulsivity Behavior Scale.

Scale, the Phone Obsession Subscale of Phubbing Scale, the Need to Control Subscale of Fear of Missing Out Scale, the Lack of Emotional Awareness Subscale of Difficulties in Emotion Regulation Scale, Prosociality Scale, and the Lack of Perseverance and Sensation Seeking Subscales of Impulsive Behavior Scale. In particular, males have often been reported to exhibit higher levels of IAD than females (Anderson et al., 2017; Chen et al., 2015), together with online gaming addiction (Bouna-Pyrrou et al., 2015; Spilková et al., 2017; Laconi et al., 2017; van den Eijnden et al., 2018; Wichstrøm et al., 2019). Also, the present study, after controlling for age, showed significant differences based on gender in the "loss of control" IAT dimension. A previous meta-analysis highlighted the importance of restraint indicators and Internet Addiction especially, the negative link between a restraint indicator and Internet Addiction was stronger among males than females (Li, Ren, et al., 2021). This result partially supports the view that males are more self-reliant than females (Charness & Rustichini, 2011), suggesting that females seem to be more influenced by others, thus, a greater self-control is linked to much less Internet Addiction among males than among females.

In line with the study conducted by Amendola et al. (2019) on an adolescent sample, males showed higher scores on the IGD9-SF scale that measures internet gaming disorder, one of the five subtypes of IAD indicated by Young (1998). The present results support the previous finding where men more prone to experience a persistent need to engage in online games, spending more time playing than women (Bouna-Pyrrou et al., 2015; Spilková et al., 2017; van den Eijnden et al., 2018), compromising their functioning and potentially causing themselves distress (APA, 2013). The male group also scored higher on the Lack of Emotional Awareness Subscale of DERS, in line with the study by Neumann et al. (2010), which reflects a lack of attention to emotional responses. Also, after controlling for age, the male group showed higher emotional clarity, while females reported difficulties in engaging in goal-directed behaviors. Last, the male group also showed higher scores in the Lack of Perseverance Subscale of S-UPPS-P (e.g., Cyders, 2013), which reflects the tendency to have difficulties in staying focused on a task that can be long, boring, or difficult. Considering the general results obtained by this group, it could be hypothesized that this aspect may reflect the role of impulsivity as a risk factor for IAD in males (Koo &

Kwon, 2014; Li, Ren, et al., 2021; Mottram & Fleming, 2009).

Otherwise, the female group obtained higher scores on BSMAS, phone obsession, and need to control, indicating major difficulties in regulating social media and phone use. These results are in line with the previous literature regarding the prevalence of social media addiction in females (Andreassen et al., 2017; Martínez-Ferrer et al., 2018; Varchetta et al., 2020) than males. At the same time, these results can also provide possible insight into the role of the FoMO in the development of Internet Addiction. In fact, compared to the few previous studies that found mixed results (Gil et al., 2015; Vallejos-Flores et al., 2018), the present study, in line with the one conducted by Oberst et al. (2017), underlined a prevalence in women in experiencing need for control, which can be considered as one of the factors that most contribute to the development of the FoMO. Specifically, after controlling for age the FoMOs total score was higher in female group supporting previous literature suggested that women tend to score higher than men on FoMO (Balta et al., 2020; Beyens et al., 2016).

Females also scored higher on the Prosociality Scale, which may seem partially in contrast with the need to obsessively control one's phone and apps that enable contact with others online. Actually, the construct assessed by this specific scale refers to the prosociality displayed in offline interactions and then in social contexts. Particularly, it is interesting to emphasize that women scored higher on the Phone Obsession Subscale of the PUBB, a measure that the previous literature indicated as mostly characteristic of men (Chotpitayasunondh & Douglas, 2016; Álvarez-Cabrera et al., 2021). In fact, males seemed to present a major tendency in displaying smartphone abuse in social situations, creating problems in communication and interactions with others (Álvarez-Cabrera et al., 2021). Therefore, it is perhaps possible to hypothesize that women who participated in this study were more able to maintain in-person interpersonal relationships and the capacity to feel empathic in social contexts while keeping their smartphone under control, thus not interfering with their sociality and prosociality. Last, the males group also showed higher scores on the Sensation Seeking Subscale of the S-UPPS-P, a psychological characteristic that, in the previous literature, was found to be a risk factor for IAD both in males and females (Koo & Kwon, 2014; Li, Ren, et al., 2021; Mottram & Fleming, 2009), indeed, more distinctive for males (Adan et al., 2016; Fraschetti et al., 2021).

Our second hypothesis (H2) was also confirmed. The Internet Addiction Test correlated with all the investigated variables, showing a relationship with the total score of the tests or with one or more of their subscales' scores. In particular, for females, the analysis underlined positive correlations between IAT and social media addiction, internet gaming disorder, phubbing (Communication Disturbances and Phone Obsession Subscales), Fear of Missing Out (Fear and Need to Control Subscales, and Total Score), Difficulties in Emotion Regulation (Non-Acceptance, Goals, Impulse Control and Lack of Emotional Clarity Subscales, and Total Score), and Impulsivity Behavior Scale (Lack of Perseverance Subscale).

Otherwise, IAT was positively correlated with the same variables both for males and females, along with the Prosociality Scale and the Impulsivity Behavior Scale (Negative and Positive Urgency Subscales).

Between the two groups, statistically significant differences in correlations were found on the SMA, IGD, "Clarity" dimension of DERS and "Fears that others having rewarding experiences" of FoMOs scales. The significant difference in the correlations of the Social Media Addiction Test between the two groups underlined an important role of social media use and abuse in the possible development of Internet Addiction disorder in women. In fact, females were more prone to experience addictive symptoms associated with social media use (Varchetta et al., 2020) and would thus be more vulnerable to developing social media addictions (Andreassen et al., 2017; Martínez-Ferrer et al., 2018). On the other hand, the significant difference in the correlations of the internet gaming disorder supported the important role of this addiction on the possible severity of internet dependence in general in men, since men

typically spend more time playing online games than women (Laconi et al., 2017; Wichstrøm et al., 2019) and would predominantly link internet abuse to gaming addiction.

There is a positive correlation between IAT and FoMO, as when the fear of missing the developments on social media increases, the risk of being an internet addict increases. Despite the previous literature has shown contrasting results on gender-related differences in the relationship between emotion dysregulation and problematic Internet use, our results showed a positive correlation between the "lack of clarity" dimension of DERS with IAT especially in males' group (Ceyhan et al., 2018; Yu et al., 2013). In a broad sense, results suggest that individuals with problems in emotion regulation are more prone to engage in addictive behaviors in order to suppress difficult emotions and/or seek a short-term emotional gratification (Schreiber et al., 2012; Yu et al., 2013).

Our third hypothesis (H3) about different variables predicting Internet Addiction in the two groups was partially confirmed. In fact, social media addiction (as measured by BSMAS) was the first predictor of both males' and females' propensity to develop Internet Addiction (as measured by the IAT), thus reaffirming that social media addiction, which is the compulsive use of social media, is one of the most common forms of Internet Addiction (Hou et al., 2019; Quaglieri et al., 2022; Starcevic, 2013). Regarding the male group, as expected, internet gaming addiction, as measured by the IGDS9-SF, was found to be another important predictor of IA, both because it is one of the five subtypes of Internet Addiction Disorder (Young, 1998) and because it was found to be more related with males (Bouna-Pyrrou et al., 2015; Spilková et al., 2017; Laconi et al., 2017; van den Eijnden et al., 2018; Wichstrøm et al., 2019). In addition, although no statistically significant differences between groups emerged in the Fear Subscale of FoMOs, it was one of the predictors of Internet Addiction in the male group. Previous studies have investigated the relation between FoMO and other variables linked to Internet Addiction (e.g., Quaglieri et al., 2022) and gaming addiction (e.g., Li et al., 2020). However, to the best of our knowledge, no other researchers have analyzed the contribution of the different FoMO subscales. In this regard, the present result could represent a first step in a deeper comprehension of the role of the various elements of such variables in the development of Internet Addiction. In particular, in the male group, the fear that others are having more rewarding experiences or are having fun without you is linked with the drift toward Internet Addiction. Another phenomenon related to Internet addiction, mostly studied as a whole and not in its sub-dimensions, is phubbing. Overall, only a few studies (e.g., Chotpitayasunondh & Douglas, 2016) investigated gender differences in phubbing, which is more likely experienced by men. In the male group of this study, the PUBB Subscale of Communication Disturbances was found to be a predictor of Internet Addiction. In a recent study by Chi et al. (2022), in line with our results, being male was predictive of the phubbing phenomenon, together with low levels of extraversion. Then, in light of the results found by Chi et al. (2022) and those of the present study, it could be hypothesized that lower levels of prosociality, which was considered one of the predictors of extraversion (e.g., Graziano & Eisenberg, 1997), can lead to a higher level of difficulties in communications and, consequently, to overuse of smartphones in social situations (i.e., phubbing). Furthermore, SMA was found to affect phubbing behavior in general (Karadağ et al., 2015), without investigating its two different subdimensions (i.e., phone obsession and communication disturbances). Lastly, the Goals Subscale of the DERS positively predicted Internet Addiction in men. Overall, even if the difficulties in managing negative emotions and, consequently, emotional dysregulation have been found to predict various subtypes of Internet Addiction (Amendola et al., 2019; Gioia et al., 2021; Quaglieri et al., 2022). To the best of our knowledge, no previous studies have included gender differences in assessing these kinds of Internet Addictions linked to emotional (dys) regulation. Thus, the present result can offer a first attempt to better understand the role of poor emotional skills based on gender,

specifically in social contexts and in the assessment of behavioral addictions.

Regarding the female group, together with the BSMAS, the Phone Obsession subscale of the PUBB was found to be one of the predictors of Internet Addiction. For the male group, the phubbing phenomenon was linked to SMA in general (Karadağ et al., 2015), and specifically, Blachnio and Przepiorka (2019) observed that the phone obsession is higher in women than in men. Indeed, as underlined by Álvarez-Cabrera et al. (2021), women were more inclined to check their mobile phones more often to verify if any new messages have arrived, while men were more aware of their mobile phone when in social contexts, leading to difficulties in dialogues and communications and, consequently, in the management of interpersonal relationships (Álvarez-Cabrera et al., 2021). The last predictor of Internet Addiction in females was the Lack of Perseverance Subscale of S-UPPS-P. This result can be understood in light of the well-known relation between Internet Addiction and impulsivity (Koo & Kwon, 2014; Li et al., 2021; Mottram & Fleming, 2009), but it may also suggest that phone obsession can affect one's capacity to complete a task. In fact, the personality trait of conscientiousness, linked to higher levels of perseverance (Leary & Hoyle, 2009), was found to be a protective factor in the exacerbation of Internet Addiction (Quaglieri et al., 2022).

14. Conclusion

The results of the present study provide new insights into the role of gender in the development of pathological internet behaviors. Plausible differences were tested based on research suggesting that gender could affect the development of addictive behaviors. Overall, the results indicate that Internet Addiction could be predicted by different variables depending on gender, with a common matrix detected in social media overuse. In this light, knowing the variables underlying the development of Internet Addiction can be useful for both prevention and treatment and tailoring interventions for this addictive behavior. The results of the present study may facilitate the understanding of which aspects may influence or be influenced by the dimensions and subdimensions of tests considered and identify the specific traits and interventions that are effective at decreasing the maladaptive aspects of Internet Addiction while increasing or enhancing its adaptive aspects. In any case, the causal conjectures of the present study design should be examined and verified via longitudinal or experimental research.

Nevertheless, some limitations of the present study must be considered. Indeed, the present study used only self-report measures to assess Internet Addiction and variables related to problematic social media use, together with personality traits; these measures are insufficient to provide diagnoses, thereby limiting the clinical implications of the results. Furthermore, the study sample may have been affected by selection bias since the questionnaires were more accessible to certain groups of individuals. Finally, participants' psychiatric history was not collected, although these data may have influenced the interpretation of the results. Further studies could be conducted by using solid statistical analyses (e.g., Structural Equation Modelling) and also a prediction model (e.g., machine learning) to more deeply and understand the investigated phenomenon and cause-effect relationships. Additionally, future studies may investigate whether differences, detected in the use of social media overuse in both genders, can depend on the purpose for which the platforms are used as on the one hand, women may be more dependent on social media to stay in touch with others or to create a new social network, while on the other hand, men may use these platforms as a communication channel intended for exchanging information related to online gaming.

Author contributions

Conceptualization, E.M., M.V., A.F., M.M.V., F.G.S., A.M.G. and A.Q.; methodology, E.M., S.B., P.R., A.F. and A.Q.; software, M.V.; formal

analysis, E.M., S.B., A.F., P.R. and E.M.; writing—original draft preparation, E.M., S.B., M.V., C.C. and A.Q.; writing—review and editing, A. F., A.P., B.B., P.R., M.M.V., F.G.S. and A.M.G.; supervision, P.R., A.M.G. and A.Q. All authors have read and agreed to the published version of the manuscript.

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The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Review Board of Department of Psychology, Faculty of Medicine and Psychology, "Sapienza" University of Rome (protocol number 2193, 12/18/2020).

Informed consent statement

Informed consent was obtained from all subjects involved in the study.

Declaration of competing interest

All authors declare that they have no conflicts of interest.

Data availability

Data will be made available on request.

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