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From emerging adults' unmet psychosocial needs to their  
problematic use of social networking sites:  
the mediating role of Fear of Missing Out

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*Ai miei genitori,  
che per primi mi hanno trasmesso la passione per lo studio e la conoscenza.*

## **Abstract**

Fear of Missing Out (FoMO) is a pervasive apprehension that others might be having rewarding experiences from which one is absent. Consequently, individuals experiencing FoMO wish to stay constantly in contact with what others are doing and engage with social networking sites for this purpose.

In recent times, FoMO has received increased attention from psychological research, as a minority of users experiencing high levels of FoMO - particularly young people - might develop a problematic social networking site use, defined as the maladaptive and excessive use of social networking sites, resulting in symptoms associated with other addictions.

According to the theoretical framework of the Interaction of Person-Affect-Cognition-Execution (I-PACE) model, FoMO and certain motives for use may foster problematic use in individuals who display unmet psychosocial needs. However, to date, the I-PACE model has only conceptualized the general higher-order mechanisms related to the development of problematic use.

Consistently, the overall purpose of this dissertation was to deepen the understanding of the mediating role of FoMO between specific predisposing variables and problematic social networking sites use.

Adopting a psychological approach, two empirical and exploratory cross-sectional studies, conceived as independent research, were conducted through path analysis.

Study 1 involved 362 Italian university students Instagram users. Findings highlighted that neuroticism resulted a predisposing variable for problematic Instagram use only indirectly, through FoMO, escapism and self-expression motives.

Study 2 was cross-cultural and included a sample of 1411 Italian and Hungarian university students. Results revealed that both self-concept clarity and bridging social capital were associated with problematic social networking sites use. These connections were enhanced by the mediations of FoMO, ideal and impression-oriented self-presentations.

Overall, evidence provides new insights into the mediating role of FoMO, and important implications for clinical settings and prevention programs aimed at promoting responsible and balanced use of social networking sites.

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## Introduction

“Fear of Missing Out” (FoMO) is an expression introduced in 2004 and became popular in the digital culture since 2010 to describe a phenomenon observed on social networking sites. In 2013, FoMO has been included in the Oxford dictionary as an “anxiety that an exciting or interesting event may be happening elsewhere, often aroused by posts seen on a social media website” (Oxford Dictionaries, 2022). Meanwhile, FoMO has started to receive attention from researchers with the aim of explaining why people might be particularly attracted to social networking sites (Przybylski et al., 2013). FoMO has been defined by academics as “a pervasive apprehension that others might be having rewarding experiences from which one is absent” (Przybylski et al., 2013, p. 1841), driving individuals to remain constantly connected to what other people are doing and thus, compulsively checking updates on their social networking sites. Recent estimates indicate that more than half of the world’s general population has suffered from this concern at least once in their lifetime, and this is most evident in young Millennials, among whom this feeling affects 7 out of 10 individuals (ATD, 2022). Specifically, people who are low in basic need satisfaction (e.g., relatedness) are more sensitive to FoMO and may gravitate towards social networking sites in order to fulfill their need to belong, to develop social competences, and to deepen social ties (Przybylski et al., 2013). In more recent years, studies have shown that FoMO not only encourages social networking sites engagement, but more importantly, can promote an excessive and problematic use of social networking sites in a minority of users (e.g., Fioravanti et al., 2021).

The problematic social networking sites use (PSNSU) is about being overly preoccupied with those platforms and being driven by a strong motivation to connect, use and devote so much time and effort to social networking sites, that it compromises other social activities, study or work, interpersonal relationships and/or health and psychological well-being (Schou Andreassen & Pallesen, 2014). Despite the growing number of studies on problematic social networking sites use, a widely accepted conceptualization of this addictive behavior is still lacking and, as a result, criteria for problematic social networking sites use have not yet been included in an international diagnostic classification system. Nevertheless, different theoretical frameworks have provided explanations for the development of the problematic social networking sites use.

In particular, the Interaction of Person -Affect-Cognition-Execution (I- PACE) model (Brand et al., 2016) has proposed that the development and maintenance of problematic social networking sites use might be the result of a complex and dynamic interaction process between

predisposing variables (e.g., characteristics of social deficits at the personality level, or interpersonal factors dictated by the environment), cognitive and affective components (such as FoMO and usage motives), and the progressive impairment of inhibitory controls at a neuropsychological level (Brand et al., 2016). Following the *fear driven/compensation seeking hypothesis* for problematic social networking sites use of the I-PACE model (Wegmann & Brand, 2019), FoMO acts as a maladaptive cognition, linking the core's vulnerable characteristics of individuals to the problematic social networking sites use (Wegmann et al., 2017), as users may over-engage on social networking sites to compensate for their basic psychosocial deficits and to alleviate the urgency of FoMO. The constant and prolonged use of these platforms would reinforce FoMO's maladaptive cognition of social networking sites, leading users to compulsive and addictive behaviour. However, the I-PACE model is a recent comprehensive framework, which conceptualizes the general higher-order mechanisms shared by the different subtypes of problematic Internet use (PIU). Since individuals are not addicted to the Internet per se, but to the activities they can perform on the different platforms, including those on social networking sites (Starcevic, 2013), current challenges in making the model applicable in clinical, educational and research contexts concern the investigation of the specifics that contribute to the promotion and maintenance of different problematic uses of the Internet, such as the problematic social networking sites use.

Accordingly, the overall aim of this dissertation is to deepen and expand the understanding of the mediating role of FoMO between the predisposing variables for the addictive use of social networking sites and the problematic use of social networking sites.

While much research over the past decade has focused on problematic Facebook use, little is known about Instagram, which seems to be increasingly popular in young generations and potentially addictive (e.g., Kircaburun et al., 2020). Furthermore, few studies have explored the relationship between personality traits and problematic Instagram use (e.g., Balta et al., 2020) with mixed results, whereas other research has focused only on motives related to problematic Instagram use (e.g., Kircaburun & Griffiths, 2019). Consequently, in study 1 we aim to explore whether and how personality, FoMO and specific motivations for Instagram use may interact sequentially in promoting problematic Instagram use.

Subsequently, through the lens of developmental psychology, we expand the scope of the research on the interacting factors of the I-PACE model by considering bridging social capital (i.e. the wider audience of weak user relationships) (Putnam, 2000) on social networking sites, and self-



concept clarity (an indicator of identity content maturation at the level of personality traits) (Lodi-Smith et al., 2017) as predisposing variables for problematic social networking sites use in the emerging adult population. Therefore, in study 2, we hypothesize that these individual (self-concept clarity) and social (bridging social capital) characteristics may lead young adults to manipulate their online self-presentation activities in order to receive social validation, thus fostering the development of the problematic use of social networking sites. Furthermore, we assume that those relationships might be amplified by high levels of FoMO, as individuals with low self-concept clarity and/or a larger number of “friends” on social networking sites might be more sensitive to feel excluded from their social networks (Servidio et al., 2021).

In the theoretical part (Chapters 1 – 4), we will illustrate theories that will be adopted to frame the empirical section. More in detail, we will briefly present the spread of FoMO in society and its psychological conceptualization according to Przybylski and colleagues (2013) based on Self-Determination Theory. Next, we will introduce the problematic use of social networking sites according to the biopsychosocial model, and the role of FoMO in promoting this addictive behavior (Chapter 1). Subsequently, the I-PACE model for the development and maintenance of problematic social networking sites use will be outlined, describing the predisposing variables, the mediating role of FoMO, and the motivations that might lead individuals to choose a “first choice” social networking site to satisfy their unmet psychological needs (Chapter 2). Afterwards, through the perspective of developmental psychology, we will discuss the relationship between self-concept clarity, fear of “being left out” (i.e., FoMO), online self-presentation activities and problematic use of social networking sites (Chapter 3). Then, through the lens of social capital theory, we will report the relationship between bridging social capital, FoMO, online self-presentation activities and problematic use of social networking sites (Chapter 4). Finally, the gaps in the presented literature will be discussed and related to the empirical studies’ research questions (Chapter 5).

In the empirical part (Chapter 6 – 7), following the I-PACE model, we will present two independent studies adopting a sequential path analysis to test the interaction process of variables previously illustrated in promoting the problematic use of social networking sites. In particular, study 1 aims to investigate the role of neuroticism, FoMO and motives for selecting a specific “first choice” social networking site (i.e., Instagram) in developing problematic Instagram use. For this purpose, a sample of Italian emerging adults has been involved (Chapter 6). Study 2 is designed to explore the role of self-concept clarity (internal factor) and bridging social capital (external factor) as predisposing variables for problematic social networking sites use, and the role of FoMO and

different types of online self-presentation activities as mediators between the predisposing factors and the addictive behavior. For this scope, two different subsamples of Italian and Hungarian emerging adults have been involved (Chapter 7). In conclusion, we will present the results and general contributions of the studies, highlighting their limitations and suggesting possible future lines of investigation. Finally, we will discuss the practical implications of the main research findings (Chapter 8).

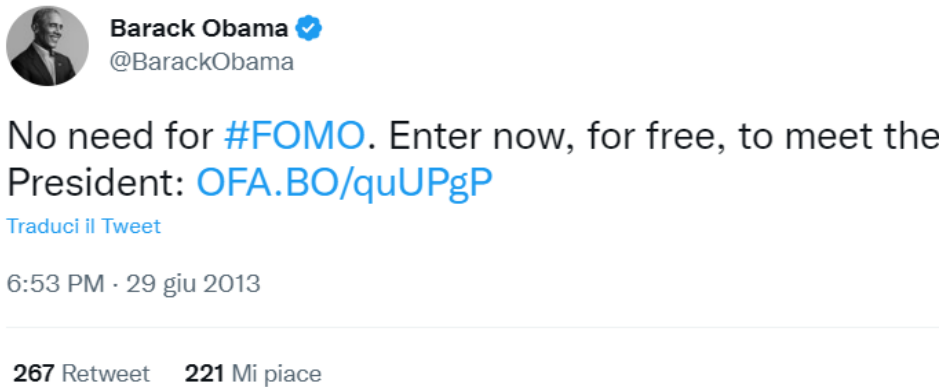
# Chapter 1

## 1. Fear of Missing Out (FoMO) and social networking sites use

### 1.1 FoMO: history of an offline and online psychological phenomenon

The acronym “FoMO” (Fear of Missing Out) was first launched in an article “Social Theory at HBS: McGinnis’ Two FOs” (McGinnis, 2004) published in *Harbus*, the Harvard Business School student newspaper. Patrick McGinnis (2004) introduced the term FoMO, to refer to the fear of missing a multitude of potentially rewarding choices that people have in developed countries. In his article FoMO was also related to “FoBO”, the “Fear of a Better Option” (McGinnis, 2004), the notion about a better opportunity always around the corner, a suspicion that makes individuals less inclined to really commit, even when they are making a choice. Research showed that having too many choices can lead to decision paralysis, which inhibits decision-making and undermines psychological well-being. Both FoMO and FoBO appear to McGinnis as “diseases of abundance” (McGinnis, 2004), which lead some people to keep all options open rather than fully engage in work tasks or romantic relationships. One of the disadvantages of having too many opportunity is the potential regret arising from the possibility of making an inappropriate choice (McGinnis, 2004). According to the author, nowadays, post-decisional regret is particularly visible in the younger generations of Western society, because of a lack of clear guidelines for making meaningful life choices (Schwartz et al., 2000). Indeed, alongside the crisis of traditional authorities, FoMO and post-decisional regret has broadly developed in children, adolescents, and young adults (Milyavskaya et al., 2018). In 2007, one year after Twitter appeared on the screens, Kathy Sierra, a popular tech blogger, linked FoMO directly to the use of social media, emphasizing how this phenomenon highlights the importance of being constantly updated and amplifies the feeling of missing out if not checking Twitter frequently enough (Reagle, 2015). In 2010, FoMO id widely debated, and the phenomenon is unequivocally associated to social media. The following year, the phenomenon was recognized as something marketers could take profit from. For instance, Dan Herman (2011), a marketing consultant, created the Web site [fomofearofmissingout.com](http://fomofearofmissingout.com) (<http://fomofearofmissingout.com/>) and wrote about the “consumer who is led by a new basic motivation: ambition to exhaust all possibilities and the fear of missing out on something”. Later, the term FoMO became so popular in digital culture that it was used by celebrities and politicians through their Twitter accounts, such as Barack Obama.

**Figure 1.** FoMO in a Barack Obama tweet



*Note.* Source: Twitter, 2022.

In June of 2013, Wikipedia proposed a two-paragraph article concerning the “Fear of Missing Out” (Wikipedia, 2013). The first paragraph described FoMO as a form of social anxiety, “a compulsive concern that one might miss an opportunity,” and linked it to social media platforms. The second, describing a research article by social psychologist Andrew Przybylski and his colleagues (Przybylski et al., 2013), hypothesized that some people may gravitate towards social media due to unmet psychological needs. The researchers asked questions about comparisons with friends, being left out, missed experiences, and compulsion. They found that those who showed higher scores on those variables were typically young, male, and with higher levels of social media usage and lower levels of general mood and life satisfaction. Although Przybylski et al. (2013) attempted to circumscribe the notion of FoMO through a 10-item questionnaire, this term has appeared everywhere in pop culture, and this has contributed to making the discourse inside and outside universities much more messy, fascinating, and sometimes incoherent. Indeed, the expression has been used as a hashtag on social media and has been mentioned in hundreds of news articles reaching a great popularity, from online sources such as *Salon* to newspapers such as the New York Times.

Today, the expression “fear of missing out” has been broadly known and has even been accepted by several dictionaries such as the Oxford English Dictionary and the Merriam-Webster. Additionally, as McGinnis suggests in his book *Fear of Missing Out: Practical Decision-Making in a World of Overwhelming Choice* (McGinnis, 2020) despite common thinking, FoMO has not been

exclusively related to what happens on social networking sites, and even these media have undoubtedly aggravated FoMO, people do not need to be constantly on a mobile phone to experience this particular social apprehension. This might explain why FoMO's consequences do not just affect the lives of digital natives, such as Millennials and Generation Z: it might be enough to devote an enormous amount of time and energy to all the things individuals would like to have, instead of appreciating the things they have and take for granted (McGinnis, 2020). By its specific nature, FoMO consists of an aspiration, rooted in the pursuit of what appears to the person to be more important, gratifying and luminous than what he or she possesses at a specific time (McGinnis, 2020). The expression "Keeping Up with the Joneses," for example, spoke to the desire for people to have the bigger and better material lives than those around them (Reagle, 2015, p.8). In affluent Western societies, people take it for granted that they have alternatives, an overwhelming array of possible choices. Thus, FoMO may be understood as the attempt to improve one's own life satisfaction: the fear of missing a party, a trip or a job opportunity is dictated by the belief that achieving each of these goals will make one's life better. However, this perception can be misleading and the mismatch between what the individual hopes to achieve and what one will achieve is known as "information asymmetry" and is an intrinsic part of FoMO (McGinnis, 2020). When people have perfect information, the unknown loses its power and individuals do not worry about being cut off from something.

At the beginning of the second millennium, the access to digital communications, such as e-mail, required an Internet location and a deliberate act of wanting to be connected. There were no notifications or messaging apps constantly calling individuals' attention. Today, research from the Digital Global Overview Report (2022) reveals that the "typical global user aged 16 to 64 years, spends almost 7 hours per day using the Internet across all devices." The opportunity of unlimited access to information through smartphones and the extreme increase in connectivity brought about by the emergence of social media, exponentially encourage the tendency to compare oneself to others, whether it is a close friend or a total stranger. According to the Information Foraging theory, from an evolutionary perspective, humans have an innate drive to seek information (Gazzaley & Rosen, 2016). Like animals in search of food, individuals are constantly on the lookout for news and updates, especially when it comes to relationships with others. Hours spent on social media can be explained, especially for teenagers and young adults, by an intense desire to gather information that signals one's place in social relationships (Roberts & David, 2020; Whiting & Williams, 2013).

As a result, the sources of envy have never been closer than in the presence of smartphone devices, resulting in the spread of performance anxiety and social comparison fueled by the online dissemination of manipulated images and messages, which can have extremely dangerous implications, especially for the youngest. In 2022, 56% of the general population and the 69% of the Millennials reported to experience FoMO (ATD, 2022). These social media users avoid disconnecting from social networking sites for fear of being cut off from the events, news, and updates of their virtual contacts (Murphy et al., 2013). Of course, due to the information asymmetry fostered by the nature of the medium, it is often difficult to know whether those attractive and enviable images and posts correspond to reality: the possible gap between online representation and truth is the strength of FoMO's experience in social media environments.

### **1.2 The FoMO conceptualization according to Self-Determination Theory**

In the last two decades the use of social media has grown exponentially worldwide. With the spread of the means to control the social networking sites, particularly the increasing ubiquity of smartphones, it became easy to be aware of potentially rewarding experiences (online and offline) that one might miss. Thereby, from the very beginning, FoMO has been characterized as an anxiogenic construct in the popular media (Fake, 2011).

Increased attention on FoMO in academic research coincides with growing societal debate about whether too much digital screen time might be harmful to children and adults (Orben & Przybylski, 2019). In recent years, for a better conceptualization and operationalization of FoMO, scholars have used different theoretical frameworks from various disciplines, such as psychology, communication, and information systems. Although FoMO is usually described and assessed in relation to an online context, its most widely accepted definition and the most widely used scale to assess it - the FoMO Scale (Przybylski et al., 2013) - do not explicitly refer to online behavior. Przybylski and his colleagues (2013) defined the Fear of Missing Out as “a pervasive apprehension that others might be having rewarding experiences from which one is absent, FoMO is characterized by the desire to stay continually connected with what others are doing” (Przybylski et al., 2013b, p. 1841). As the first statement refers to the cognitive aspect of anxiety (e.g., worrying, rumination, etc.), the second one involves a behavioral strategy aimed at relieving anxiety (Elhai, Vasquez, et al., 2018). The behavioral component of FoMO entails frequent checking of social networking sites (SNSs) and messaging services to maintain social connections and avoid missing

out on rewarding experiences. This attitude of staying “continually connected” is related to the Oxford’s dictionary definition of FoMO as an “anxiety that an exciting or interesting event may be happening elsewhere, often aroused by posts seen on a social media website” (Oxford Dictionaries, 2022). Similarly, contemporary discussions of FoMO invoke multiple, often tangled, references to emotions (e.g., fear and anxiety), sources (e.g., social media), and manifestations (e.g., compulsive checking and illness) (Reagle, 2015).

Following the perspective of Self-Determination Theory (SDT; Deci & Ryan, 1985), a macro theory of human motivation, Przybylski and colleagues (2013) carried out that FoMO acts as a self-regulatory limbo arising from situational or chronic deficits in psychological needs fulfillment. Specifically, low levels of satisfaction of the fundamental needs for competence (efficacy), autonomy (meaningful choice), and relatedness (connectedness to others) tend towards higher levels of fear of missing out (Przybylski et al., 2013), and represent risk factors for behavioral dysregulation in other areas, such as alcohol abuse (Riordan et al., 2015), or bad sleeping habits (Scott & Woods, 2018), with negative impact on subjective well-being (Stead & Bibby, 2017). Przybylski and colleagues (2013) also found that individuals, especially emerging adults, with lower levels of general mood and life satisfaction, show higher levels of FoMO, as well as greater levels of social media engagement (Przybylski et al., 2013). However, these people probably have ambivalent feelings towards social media (Elhai et al., 2021; Karadağ et al., 2015). On one side, the persistent online checking behavior intrinsic to FoMO fulfills individuals search for social connection and greater social involvement with friends online (Ellison et al., 2007), while app notifications offer a control that alleviates the feeling of FoMO (Paul et al., 2011). On the other side, many individuals do not just intentionally look at their smartphones in their free time, but they frequently react, even passively, to the many social-related notifications received throughout the day, to which there is a compulsion to respond (Elhai et al., 2021). This attitude has also led to normalize the “phubbing” behavior, which refers to the widespread tendency for people to check their smartphones in the middle of a real conversation (Karadağ et al., 2015). Indeed, devices’ alerts can lead to distracted and less focused daily face-to face relationships, experiences, impairing attention, and interrupting work and school activities (Duke & Montag, 2017; Elhai, et al., 2019). The “switching costs” from offline to online and back make it difficult to return to current activity and disrupt concentration (Salvucci & Taatgen, 2008). Therefore, FoMO may cause users to over-check to SNSs notifications, with a negative impact on efficiency and productivity. In addition, these users may be overexposed to the life images and texts of others on social media, threatening their own well-being, sometimes inducing a feeling of having missed the best decisions in life to the

point of promoting feelings of depression (Przybylski et al., 2013). The effects of FoMO are worrying enough that recently, even in academia, a debate has developed on the need to regulate the algorithms and tools of social media apps that generate FoMO (Alutaybi et al., 2018; Montag et al., 2019). Furthermore, individuals experiencing an advanced degree of FoMO may use more social media platforms while experiencing increasing distress (Franchina et al., 2018). To date, the literature on FoMO has mainly focused on certain social media platforms (e.g., Facebook), and the understanding of the phenomenon will necessarily have to be extended to other virtual contexts with social implications (e.g., Netflix) (Tandon et al., 2021). Moreover, as FoMO is a multidimensional construct (Przybylski et al., 2013), researchers have been engaged in studying and refining Przybylski's conceptualization and measurement (Chai et al., 2019). For instance, Wegmann et al. (Wegmann et al., 2017b) have explored two dimensions of FoMO that refer to its nature as a characteristic trait (i.e., trait FoMO) and a specific manifestation of Internet-related communication (i.e., state FoMO). Casale and Fioravanti (2020) on their part, revealed two FoMO factors involving missing out on the experiences of others, and the use of rumination strategies for controlling one's social experiences (Casale & Fioravanti, 2020). Finally, Alt (2015, 2018) has pointed out three FoMO factors in social, news, and commercial information. As regards the relationship of FoMO with socio-demographic variables, it has been associated with age, since young people as adolescents and college students tend towards higher levels of this social apprehension (Casale & Fioravanti, 2020; Elhai et al., 2018; Przybylski et al., 2013; Stead & Bibby, 2017). However, most studies have targeted these population groups, while there is a lack of research exploring FoMO in adulthood, even though around 30% of individuals using social media are adults aged between 35 and 64 years old (Kemp, 2019). Moreover, conflicting results about sex differences have been reported. Some studies showed that men experience higher levels of FoMO compared to women, but only in a young sample (Przybylski et al., 2013). Other research has found that females have higher levels of FoMO than males (Casale et al., 2018; Elhai et al., 2018; Stead & Bibby, 2017), whereas other findings indicate no sex differences (Casale & Fioravanti, 2020). A multidisciplinary approach can also help develop experiment-based research protocols to help researchers overcome current methodological challenges (e.g., objective measurement, self-reporting, or social desirability bias of the construct) (Tandon et al., 2021). Indeed, more consistent evidence has been conducted in the fields of medicine, psychology and psychiatry regarding FoMO's association with psychopathology and decreased well-being (Milyavskaya et al., 2018), fear of negatively evaluation (Wolniewicz et al., 2018a), low self-presentational social skill (Casale et al., 2018), sense of social exclusion (P. Wang et al., 2018), anxiety (Elhai et al., 2018), depression (Tsai et al., 2019),



dissatisfaction with life (Stead and Bibby, 2017), compulsive social media use (Eide et al., 2018), social media fatigue (Dhir et al., 2018), sleep disturbances (Scott & Woods, 2018), need for relatedness (Conlin et al., 2016; Dogan, 2019), reduced competences (Xie et al., 2018), proneness to experience boredom (Wolniewicz et al., 2020), loneliness (Alt, 2018), rumination (Elhai et al., 2018), negative affect and mood (Wolniewicz et al., 2018), depression (Wegmann et al., 2017), lack of self-regulation (Alt & Boniel-Nissim, 2018a), and excessive social media engagement (Yin et al., 2021). However, according to a recent metanalysis (Fioravanti et al., 2021) anxiety and fear of negative evaluation show the strongest association with FoMO. From a theoretical perspective, both fear of missing out and fear of being negatively judged are concerns associated with interpersonal relationships (Blackwell et al., 2017). Thus, individuals are more likely to suffer from anxiety when they feel they do not belong or believe they are missing out on important shared experiences (Casale & Fioravanti, 2020b).

In conclusion, the existing literature on FoMO, although prolific, provides a fragmented view of this phenomenon, its antecedents, and consequences. It is still necessary to investigate whether and how FoMO influences individuals' social and professional relationships (Tandon et al., 2021), as well as to explore how the quality of these social relationships may influence the fear of missing out on the activities of others. This knowledge will help develop conceptual and operational knowledge of the relationship between FoMO and the individual's network of relationships.

### **1.3 Missing out or being left out? Envy and social comparison, need to belong and social validation as core aspects of FoMO**

From the time when other people's lives appear on smartphone screens, thanks to social networking sites such as Facebook or Instagram, FoMO has become a more troubling social phenomenon. FoMO can be related to envy (Wang et al., 2019), which refers to an unpleasant, often painful emotion, characterized by feelings of inferiority, hostility and resentment, that occurs when an individual is compared to another person or a group of people in a related field (Eniko, 2016; Smith & Kim, 2007). Envy is caused by subjective speculation in interpersonal relationships and often manifests itself as anxiety, fear, sadness, and extreme distress (Baker & Algorta, 2016; Elhai et al., 2016). Nowadays, people mainly update themselves through social media, such as Facebook, Twitter, and Instagram, causing FoMO sufferers to constantly follow news created by other users. Thanks to the dissemination of content enabled by social networking sites, such as posted pictures or shared videos, online profiles on social networking sites offer a perfect basis for social

comparison processes. By looking at a profile picture (e.g., on Instagram), the user gets an idea of a person's physical attractiveness, while status updates (e.g., on LinkedIn), might show the career success the friend is achieving. Furthermore, seeing another user's holiday photo on a deserted beach (e.g., on Facebook), one might envy the experience of being in a beautiful and quiet place (i.e., the feeling of "missing out"). If the photo also receives positive comments then, one might also envy the social validation received by the holiday-maker (i.e., the feeling of "being left out") (Reagle, 2015). According to the Festinger's social comparison theory (1954), people involved in upward comparison resulted more unsatisfied of themselves than those who made downward comparison. Because social media provide individuals with a lot of filtered and manipulated information and content, people can be led to make seemingly upward social comparisons and become envious of other members ( Fox & Vendemia, 2016). Thus, social media promote situations in which individuals can compare their "ordinary offline everyday life" with the best moments shared online by other people, resulting in feelings of envy (Chou & Edge, 2012; Tandoc et al., 2015; Verduyn et al., 2015). The terms of comparison are not necessarily the rich lifestyles of celebrities but can also be those of schoolmates or work colleagues. Examining Facebook messages posted by online friends, and the way friends socialize and spend their free time and holidays seems to increase envy levels, especially among heavy Facebook users compared to those who use the platform less (Varga, 2016). Therefore, the fear that something is missing should be framed in the perspective of psychological well-being, because it does not only concern the desire to "stay up to date", but it also implies a feeling or perception that other people have more positive experiences, have more fun, lead a better life, or experience better things than the user ( Carr, 2010). Despite comparison is a natural human tendency, previously social contacts were physically limited, and individuals could only find out what friends were doing in face-to-face conversation, via correspondence or on an analog phone, usually with a delay. Limited access to the lives of others could protect people from harmful comparisons. However, as society has changed, the significance of envy as a key emotion in FoMO has transfigured. In social networking sites, the lack of context and the immediacy of the updates one gets with each scroll of the homepage result in great exposure to the highlights of others' lives. However, according to Jordan and colleagues (2011), face-to-face experiences also play a role in reinforcing this maladaptive belief, as individuals typically overestimate the positive emotions of others, who in everyday life generally appear more cheerful in their presence and, even if they are not, often try to hide it (Jordan et al., 2011). An example of how social media can damage one's mood is the statement of a patient participating in short-term psychotherapy session conducted by Modzelewski (2020), who claimed after looking at Facebook:

“Everyone has organized and interesting lives. And I haven't achieved anything, I can't do anything, I just take care of the house” (Modzelewski, 2020, p. 219). Indeed, previous studies revealed that Facebook users believe that others are happier and do better and the more random Facebook friends one has, the more this way one feels (Chou & Edge, 2012). Furthermore, although maintaining one's own Facebook profile may lead to higher measures of self-esteem, reading other people's profiles has the opposite effect (Gonzales & Hancock, 2011), and viewing other SNSs members' activities may make some individuals start to wonder even more what they are missing out on, consequently logging on to social media more often. Therefore, heavy or excessive use of social media, in turn, can promote increased levels of FoMO (Modzelewski, 2020).

The constant spotlight on the users' network on social media has promoted the pervasive evaluation of one's social self. Many people expressed a sense of alienation, for example when looking at photos on Instagram from events to which they had not been invited (Welch, 2013). The social nature of social media has even colonized the notion of the selfie (i.e., taking a picture of oneself), ranking group selfies preferable than the solo selfie, as too many solo selfies make a person appear unsociable to other users (Reagle, 2015). Moreover, previous studies suggested that FoMO is driven by uncertainty about social belonging, thus, the higher the degree of need to belong, the higher the likelihood of experiencing FoMO (Przybylski et al., 2013). Baumeister and Leary (1995) defined the “need to belong” as a demand for frequent personal interactions within relationships characterized by stability, affective concern, and continuation into the foreseeable future. Beyens and colleagues (Beyens et al., 2016) pointed out that adolescents' need to belong and need for popularity were associated to increased FoMO, which in turn was related with greater levels of Facebook usage. Wang and colleagues (Wang et al., 2018) found that among adolescents FoMO mediates the association between the unmet need for belonging and self-presentation on social networking sites (i.e., sharing one's feelings, thoughts, and life events on the sites). Research on brain activity has also supported the link between FoMO and need to belong (Lai et al., 2016). When people suffered from social exclusion condition showed greater activation of the left temporal-parietal junction, which was evaluated as an indicator of the need to belong. Thus, it was concluded that FoMO is related to people's need to belong because people naturally need to stay connected with others and the lack of this connection leads to experience FoMO (Przybylski et al., 2013). Based on findings across multiple domains, including cognition and emotion, Baumeister and Leary (1995) concluded that belongingness was a “powerful, fundamental, and extremely pervasive motivation” (R. F. Baumeister & Leary, 1995, p. 497), and people show individual differences in the intensity and strength of need to belong (Baumeister & Leary, 1995). Compared

with those who have lower degrees, people having higher levels of need to belong are more likely to experience negative emotions when they are not satisfied with their relationships (Baumeister and Leary, 1995) and more prone to make social comparisons and experiencing feeling of envy (Yin et al., 2021). In an age of pervasive ratings and rankings, on social networking sites individuals have explicit cues about acceptance and belonging, such as the number of friends, likes, views, and comments (Reagle, 2015). Posting activities and expectancies of social validation for some people sound like asking the world “do you like me? Am I special enough? Am I funny enough, deep enough, smart enough, successful enough, love-able enough? How much do you like my opinion about this, that, and every other thing?” (Melton, 2013).

In conclusion, although some research has highlighted the potential links between the use of social networking sites and psychological well-being, as the use of these platforms allows for the maintenance of social relationships and the satisfaction of individuals' psychological needs (Przybylski et al., 2013), social networking users may also be more prone to suffer from social anxiety when they feel they do not belong to their social community (Baumeister and Leary, 1995). Moreover, being frequently exposed to other people's lives through those platforms may increase the apprehension of being excluded from rewarding experiences that others might have, and thus generate envy, frustration and consequently damage well-being and life satisfaction. This awareness has raised considerable concerns about the effects of FoMO among various stakeholders on the issue, including academics, parents, educators, and therapists ( Baker et al., 2016).

#### **1.4 Problematic social networking sites use**

Although social networking sites (SNSs) and social media are often associated with each other or used interchangeably in the previous literature, social networking sites can be considered a sub-category of social media (Hamm et al., 2013). Social media are a group of online applications that enable the creation and exchange of user-generated content (Hamm et al., 2013), whereas social networking sites are online platforms where users can create a personal profile, build a list of connections, and traverse a stream of frequently updated information ( Ellison & Boyd, 2013). What makes social networking sites unique is that they enable users to articulate and make visible their social relationships. This can lead to connections between individuals that would otherwise not take place, and these encounters are often between “latent ties” (Haythornthwaite, 2005).

The use of social media started in 1979 with Usenet, an online discussion system where individuals could post and share public messages (Kaplan & Haenlein, 2010). Nevertheless, many social networking sites were created in the 1990s. Some examples include Six Degrees, Black Planet, Asian Avenue, and MoveOn. These were online niche social networking sites where people can interact, including sites for public policy advocacy and a social network based on a web of contact's model (Edosomwan et al., 2011). However, constantly evolving, social media have been one of the most revolutionary developments during the 21st century. Today's social media landscape offers simple and streamlined ways to keep in touch with family and friends, as well as a quick means to learn about world news and other viral information (Conger & Singg, 2020). In 2022, around the world were registered 4.74 billion social media users, equating to 59.3 % of the total global population (Kepios, 2022). Nowadays, Facebook, YouTube, WhatsApp and Instagram are four of the most popular social media platforms to share and consume information (Biggest Social Media Platforms, 2022). Users can access social networking sites on different devices (mobile or computer-based), for different activities, such as interacting with friends, meeting others based on shared interest, chatting, mailing, sharing, or posting pictures and videos, blogging, dating, playing games, gambling (Allen et al., 2014; Griffiths et al., 2015). Because of their easy accessibility, social networking sites are a pervasive force in today's digital society and offer the opportunity to express oneself online, build communications, as well as form and maintain relationships with other people (Clark & Roberts, 2010; Ellison et al., 2007). However, due to their widespread diffusion some researchers have suggested that the disadvantages of using social networking sites are beginning to outweigh the advantages (Corstjens & Umblijs, 2012). In fact, although according to some researchers, involvement in online social interaction on social networking sites has the potential to improve subjective well-being (Frost & Rickwood, 2017; Pontes, 2017) other studies suggest a negative impact on users' mental health (Chatterjee, 2018; Twenge et al., 2018). Turkle (2012) has described individuals who use social networking sites intensively as “alone together”: always connected via technology, but isolated (Turkle, 2012). Moreover, though intensive use of social networking sites is not necessarily maladaptive (Kuss et al., 2014), for a minority of users it can become excessive or “problematic” (Kuss & Griffiths, 2017). Problematic social networking sites use (PSNSU) has been defined as a phenomenon that relates to “being overly concerned about social networking sites [...], to be driven by a strong motivation to log on or to use social networking sites and to devote so much time and effort [...] that it impairs other social activities, studies or job, interpersonal relationships and/or psychological health and well-being” ( Andreassen & Pallesen, 2014 p. 4054). Different theoretical frameworks

have provided explanations for the development of problematic social networking sites use (or problematic social media use) from a clinical perspective (e.g., cognitive-behavioral, social-skills or socio-cognitive models) (Turel & Serenko, 2012). According to the biopsychosocial model for behavioral addictions (Griffiths, 2005), problematic social media use is characterized by symptoms such as mood modification (i.e., excessive social media use leading to specific changes in mood states), salience (i.e., great preoccupation with social media use), tolerance (i.e., increasing amounts of time using social media), withdrawal (i.e., negative feelings and psychological symptoms such as irritability, anxiety when social media use is restricted), conflict (i.e., interpersonal problems as a direct result of social media usage), and relapse (i.e., returning to excessive social media use after a period of abstinence). The symptoms are similar to those for other substance use disorders. However, no consensus has yet been reached on the conceptualization of problematic social networking sites use (or problematic social media use) as a behavioral addiction, and some researchers have suggested the risk of “over-pathologizing” new habitual behaviors (Billieux, Schimmenti, et al., 2015; Pontes et al., 2018). Moreover, in contrast with the dominant theory focused on Internet addiction (and the other Internet-related addictions, such as social media addiction) as a mental disorder and a compulsive behavior, Kardefelt-Winther (2014) has proposed the model of “compensatory Internet use”. Following the early speculation by Young (1998), suggesting that Internet addiction may occur when it is used to cope with difficult real-life situations, Kardefelt-Winther (2014) theorizes an empirical approach combining literature about Internet addiction with motives for Internet use. Instead of the compulsive and pathological nature that the literature attributes to Internet addiction and other Internet-related addictions, the author (Kardefelt-Winther, 2014) argues that the problematic use of the Internet can be better understood as a coping strategy based on understandable (but not always healthy) motivations. The core of the problem is an individual's reaction to his or her negative life situation, facilitated by the availability of an Internet application. For instance, if the person suffers from isolation, the individual reacts with the motivation to go online to socialize, facilitated by an application that allows socializing, such as a social networking site. This behavior can result in both positive and negative outcomes: positive as the user feels better because he or she achieves the desired social relationships, and negative because he or she may not go out and make new friends offline, which in the long term means that he or she may become addicted on the Internet just for socializing. For the author, this scenario would be labelled as Internet addiction if approached from a pathological perspective, but it has little to do with the compulsive nature of addictions (Kardefelt-Winther, 2014). In such theoretical framework, symptoms of Internet addiction might represent the temporary outcome of a

maladaptive and transitory solution to a distressing situation rather than an actual psychopathological condition (Boursier et al., 2020). Furthermore, there is still a debate even on the terminology used, which partly stems from the overlap of problematic social media use with other Internet-related behavioral addictions (Bányai et al., 2017). Indeed, several expressions are used in the literature to refer to the construct, including *Social Network sites (Media) Addiction*, *Problematic Social Network sites (Media)Use*, *Social Network Sites (Media) Overuse*, *Social Network sites (Media) Use Disorder*, and *Social Networking Use Disorder* (e.g., Andreassen et al., 2016; Montag et al., 2019; Van Den Eijnden et al., 2016). In this dissertation, we prefer to use the expressions *problematic social networking sites use (PSNSU)*, *problematic social media use (PSMU)*, and *problematic Internet use (PIU)*, as these are currently more widely accepted by the scientific community. However, the diversity of theoretical models and instruments reflects the lack of agreement on the conceptualization of problematic social networking sites use and currently prevents the sharing of standardized assessment tools between studies and, consequently, their comparability. Understanding and defining the problematic social networking sites use is also complicated by gaps in some important areas of clinical research, such as the paucity of studies on the psycho-physiological mechanisms underlying addiction (Moretta et al., 2022). In addition, research in the field suffer from the absence of diagnostic criteria and methodological issues (e.g., small, and unrepresentative samples) (Kuss & Griffiths, 2011). In fact, despite the growing number of studies investigating problematic social networking sites use and problematic Internet use, research on these phenomena has not converged on a conceptualization commonly recognized by academics and has not yet been included in a classification system. Among Internet-related disorders, only the Internet Gaming Disorder has been introduced in Section 3 of the Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), while the Gaming Disorder has been included in the International Classification of Diseases (ICD-11),

Notwithstanding, problematic social networking sites use worldwide prevalence has been estimated between 1.6 and 34.0% in the general population before the COVID-19 pandemic (Meng et al., 2022) and around 15% during the pandemic years (Alimoradi et al., 2022). Therefore, although the findings and researchers' viewpoints still diverge, according to some scholars, problematic social networking sites use may represent a new public health problem that shares similar characteristics to psychoactive substance use disorder (Kuss & Griffiths, 2017) and may be considered another “specific disorder due to addictive behaviors”(Brand et al., 2020) .

## **1.5 FoMO as a driver of problematic social networking sites use**

As social networking sites are used by billions of people around the world on daily basis, a growing scientific interest has emerged in the psychological factors that can promote excessive engagement in such media. Specifically, studies on problematic social networking sites use have long focused on psychosocial risk factors (e.g., low self-esteem, impulsivity), that have already been shown to play a role in the development or maintenance of substance addiction (Billieux et al., 2015). In contrast, the FoMO construct was first introduced in psychological research to describe a possible specific path towards high social media engagement, explaining why some people might be particularly attracted to social networking sites (Przybylski et al., 2013). Given that FoMO has been associated with relatedness deficits (Przybylski et al., 2013), it probably stems from primary social fears, such as ostracization and loneliness, and these problems are well documented as reasons for social networking sites use (Conger & Singg, 2020). Several studies have carried out the relationship between FoMO and social networking sites engagement (Pontes et al., 2018; Rogers & Barber, 2019), and moderate to large connections between FoMO and social networking sites use have been discovered in several studies involving samples of children, youth, university students and adults (Chai et al., 2019; Reer et al., 2019; Tomczyk & Selmanagic-Lizde, 2018). The role of FoMO has been associated to disrupted daily life activities due to notifications on the smartphone screen (Rozgonjuk et al., 2019), as well as to distracted pedestrian behavior (Appel et al., 2019). Moreover, recent studies have shown that high levels of FoMO are also linked to problematic social networking sites use (Casale et al., 2018a), problematic mobile phone use (Wang et al., 2019) and problematic online gaming (Duman & Ozkara, 2021). In particular, FoMO increases social media exposure, facilitating problematic social networking sites use (Savci et al., 2022) and resulted also an important predictor of problematic social media use severity (Blackwell et al., 2017; Casale et al., 2018; Dempsey et al., 2019; Fuster et al., 2017; Savci et al., 2020).

Although several studies have almost exclusively used self-report methodology with a correlational, cross-sectional survey design, moderate to large positive associations between FoMO and levels of problematic social networking sites use have been found in several studies of adolescents, college students, and adults (Balta et al., 2020; Casale & Fioravanti, 2020; Dempsey et al., 2019; Dhir et al., 2018; Tomczyk & Selmanagic-Lizde, 2018). Interestingly, according to a recent metaanalysis (Fioravanti et al., 2021) the relationship between FoMO and problematic social networking sites use resulted stronger than the association between FoMO and the social networking sites use. Therefore, FoMO might not only be an important mechanism explaining



individuals' high engagement in social networking sites, but more importantly, a predictor of maladaptive use of these platforms (Fioravanti et al., 2021). Nevertheless, it is worth noting that in most of the previous research, the association between FoMO levels and problematic social networking sites use has been assessed by treating FoMO as a direct predictor of problematic social networking sites use. Casale et al. (2018) suggested that the fear of missing out is at least partly the result of the continuous connection enabled by social networking sites (Casale et al., 2018), thus enhancing and exacerbating those fears that led to problematic use in the first place. This hypothesis is in line with Slater's (2007) spiral model: cognitive or behavioral outcomes of media use also influence media use, particularly when cognitions (e.g., FoMO) or behaviors are related to personal identity. Therefore, individual differences, such as FoMO tendencies, may direct individuals towards the selection and use of social networking sites, which in turn may reinforce the need to be in contact with other people through platforms, including through problematic use. Indeed, as FoMO is characterized by the desire to stay continually connected with what others are doing (Przybylski et al., 2013b, p. 1841), social networking sites can exacerbate FoMO by reminding individuals what exciting experiences they are missing in real time. This thesis was supported, for instance, by evidence from university students: those individuals who use Facebook longer than their peers during the week were more likely to perceive their Facebook friends to be happier and have a better life (Chou & Edge, 2012). Thus, recognizing the reciprocal nature of platforms selectivity and media effects is an important starting point for understanding the reciprocal relationship between cognitions such FoMO and behavioral choices in social networking sites use and problematic social networking sites use. These relationships move forward in time, influencing one another, with the likelihood of reinforcing or having cumulative effects and creating a "spiral" model (Slater, 2007), which in some circumstances can lead to significant damage to individual well-being (Buglass et al., 2017).

Ultimately, social network sites users who fear missing out on an opportunity for social interaction or rewarding experiences occurring in their friend networks are more likely to show poor self-regulation in their social networking sites use, due to the need to stay continuously connected to what their friends are doing and to alleviate the anxious feeling of being socially excluded (Fioravanti et al., 2021).

## Chapter 2

### **2. Individual psychosocial characteristics underlying development and maintenance of problematic social networking sites use according to the I-PACE model**

#### **2.1 Problematic social networking sites use according to the perspective of the I-PACE model**

In the past decades, several theories have emerged to explain the psychosocial characteristics of the use of social networking sites and their problematic use. Katz and colleagues proposed the Uses and Gratification approach (Katz & Blumler, 1974), a mass communication theory which assumed that individuals use media platforms to fulfill some basic needs (need of entertainment, need of information, need of personal identity, and need of social interaction and integration) (Brandtzæg & Heim, 2009). Later, Nadkarni and Hofmann (2012) highlighted two fundamental social needs underlying the Facebook use: the need to belong as an intrinsic drive for social connection and the need for self-presentation as an impression management process (Nadkarni & Hofmann, 2012). Ryan and colleagues (2014) proposed that people are driven to use Facebook to satisfy their needs or motivations and that this habit may become problematic. Moreover, according to researchers, subjects use social networking sites to escape the negative mood and to seek social relationships (Ryan et al., 2014). As mentioned above, according to Kardefelt-Winther (2014) social media platforms can be used as a coping strategy for psychological problems, leading to overuse. Kardefelt-Winther and colleagues (2017) also suggested that research should have abandoned the focus on direct effect models and consider the relevance of investigating mediation and interaction effects between psychosocial well-being and motivations in the context of internet addiction (Kardefelt-Winther et al., 2017). This perspective has been later broadened by the Interaction of Person Affect-Cognition-Execution (I-PACE), which is a general process model indicating the temporal dynamics of the Internet-related addiction development (Brand et al., 2016). The I-PACE model is a comprehensive framework, which aims to conceptualize the higher-order mechanisms shared by the different subtypes of problematic Internet use. Furthermore, since individuals are not addicted to the medium itself, but to the content they use (Starcevic, 2013), the general I-PACE model for Internet addictions has also been applied to the problematic use of specific sites, like the problematic social networking sites use (Wegmann & Brand, 2019). Current challenges in making the model applicable in clinical and research settings concern the investigation of the specificities that contribute to the promotion and maintenance of addictions from different platforms, as well as the possibility of comparing them (Brand et al., 2016). The I-PACE model conceptualizes risk factors for PSNSU, both in early (Brand et al., 2016) and later

stages of excessive use (Brand et al., 2019). The framework proposes that underlying predisposing variables (“P component” of the model), such as psychopathology, social deficits, dysfunctional personality traits, and biologic determinants (including genetics), can make individuals vulnerable for developing problematic social networking sites use. The I-PACE perspective also suggests that individuals’ responses to those predisposing variables play a role in problematic social networking sites use, as mediating mechanisms between background variables and the addictive behavior. Those mediating (and sometimes moderating) factors are affective or cognitive processes (“A and C components” of the model) in response to internal or external stimuli, and include cognitive bias, ability to inhibit impulsive behavior, coping strategies, and expectations about the social networking sites (Brand et al., 2019). Within the response variables of the I-PACE model, FoMO was conceptualized as a social cognitive bias mediating the relationship between predisposing variables and problematic social networking sites use (Elhai et al., 2019; Wegmann et al., 2017). Finally, the last component of the I-PACE process regards the executive functions (“E component” of the model), as the intensive use of social networking sites promotes the progressive impairment of inhibitory controls (reducing performance of the prefrontal cortex) and diminishes control over decision-making (Brand et al., 2019). According to the I-PACE model, the selective use of specific social networking sites could lead to short-term gratification in the early stages of the addiction process. Intensive use and related benefits would seem to promote positive reinforcement, thereby increasing responsiveness to stimuli (e.g., to notifications of likes or comments received to a post) and craving (Brand et al., 2019). Therefore, based on the reinforcement learning process, maladaptive coping strategies and cognitive biases are straightened out. Like for substance use disorders (SUDs), in the early stages of the process individuals are driven towards maladaptive use by impulsivity and the search for gratification. As the addiction process progresses, the level of experienced usage gratification decreases, and concurrently the level of compensating effects increases. Indeed, the constant and ubiquitous usage of social networking sites can lead to negative consequences in relationships, including social isolation and loneliness, conflicts with parents or peers, perception of being misunderstood, feelings of emptiness and other negative emotions and experiences. In this way, the escalation of frustration and social worries in an advanced stage of addiction may lead to the use of social media no longer to find pleasure, but as a compensatory strategy with respect to problems (Brand et al., 2016a).

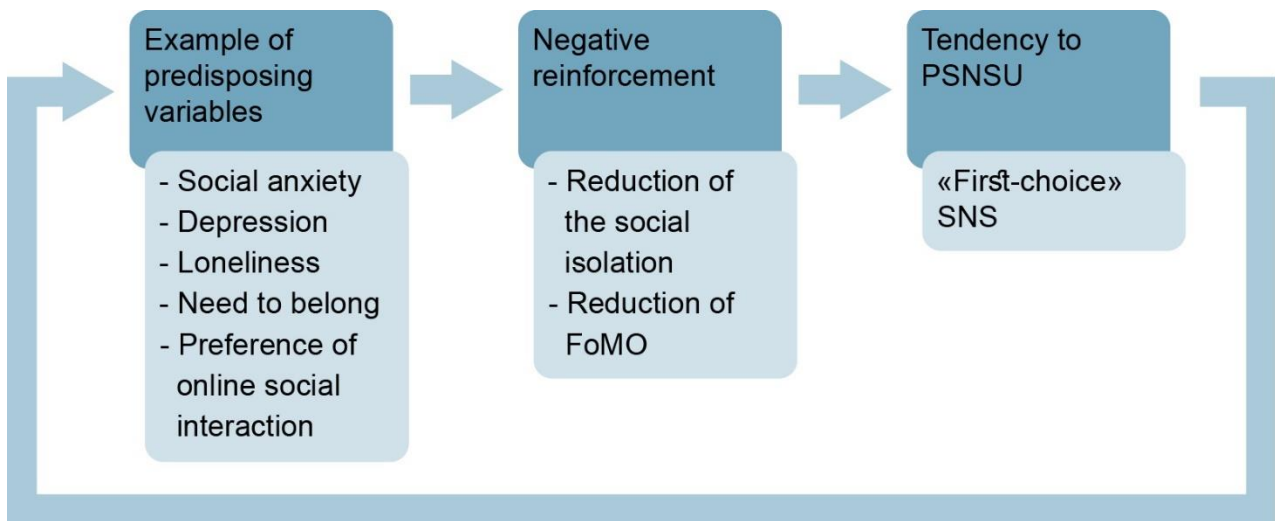
In previous literature both needs satisfaction and compensation-seeking were related to problematic social networking sites use. Wegmann and Brand (2019), based on conditional learning processes and the stage of the addiction process of the I-PACE model, hypothesized the existence of

two different addicted user profiles, which differ in predisposing factors, affective and cognitive processes, and reinforcement mechanisms, but both leading to the addiction outcome. According to scholars, individuals' orientation towards gratification and compensation through social networking sites are modulated by two orders of different expectations: in the first case, users aim to satisfy social needs (*the reward-driven hypothesis*), while in the second they seek to compensate for social deficits (*the fear-driven/ compensation-seeking hypothesis*) (Wegmann & Brand, 2019). Consequently, users' expectations and motivations might explain why individuals prefer and become dependent on social networking sites instead of other platforms (such as Internet games), as well as being relevant for the selection of the “first-choice” social networking site, the one that best meets their social needs (e.g., Facebook, Tiktok, Instagram, etc.) (Brand et al., 2016). Following the *fear-driven/compensation-seeking hypothesis*, individuals with social deficits such as social anxiety, low social skills or social loneliness might use social media to satisfy their unmet need for belonging. Furthermore, FoMO, as a cognitive bias, appears to mediate the relationship between these needs and problematic social networking sites use by acting as a negative reinforcement mechanism (Dempsey et al., 2019; Wegmann et al., 2017), given that each time people engage on social networking sites, they satisfy their intrinsic need to belong and alleviate their fear of missing out or being left out. Unlike people with social deficits, more socially integrated individuals might use social networking sites to satisfy their need for self-presentation, need for popularity, need for belonging, and impression management, which might also promote dependence on social networking sites (Nadkarni & Hofmann, 2012). Specifically, according to the *reward driven hypothesis*, at early stages, the gratification of social needs in subjects with high social competences is linked to positive reinforcements obtained through social networking sites (e.g., numbers of friends, likes, views, and comments received), that in turn, promote addictive tendencies (Meshi et al., 2013; Sherman et al., 2016). These findings were also supported by neuropsychological evidence, which found that individuals' brain reward systems are activated either when individuals are the recipients of feedback (e.g., “likes”) from other SNS users, or when they are the ones offering feedback to others (Sherman et al., 2018). In so doing, socially competent users may have the expectation of taking advantage of social networking sites to expand online relationships and to gain social validation: receiving the attention and positive feedback from other social networking sites members. Those people, high in egocentric motives and characterized by narcissistic features, might become addicted to the social networking sites, receiving gratification, and satisfying their need to belong (positive reinforcement). In particular, the researchers noted that most individuals do not receive the gratification they would expect from others (e.g., they get fewer likes than they

would like) and it is precisely the hope of gaining the desired social recognition that promotes the maintenance of problematic social networking sites use (Guedes et al., 2016).

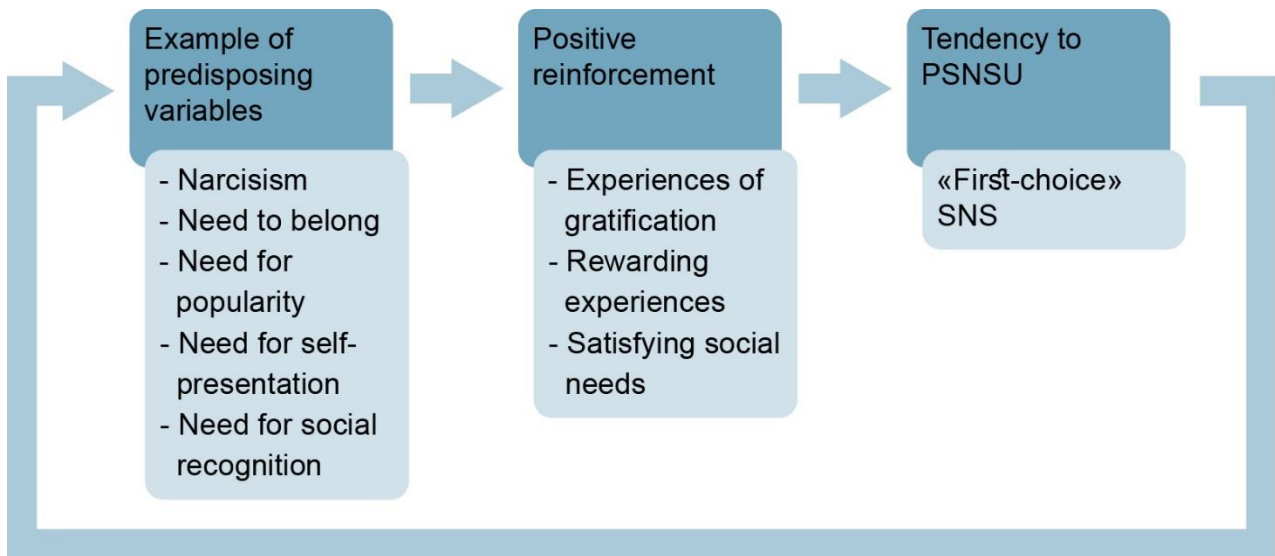
The relationships between psychosocial characteristics, motivations to use social networking sites and tendency to problematic social networking sites in the *fear-driven/compensation seeking hypothesis* and the *reward driven hypothesis* can be modulated by similar factors. These components are, for example, mood management, implicit associations, stimulus reactivity and craving (Brand et al., 2019). Finally, the *fear-driven/compensation seeking hypothesis* and the *reward driven hypothesis* are neither mutually exclusive nor disjointed. Elements of both hypotheses can interact with each other, just as transitions from reward-driven to fear-driven processes occur at different stages of addiction (Wegmann & Brand, 2019).

**Figure 2.** *The fear driven/compensation seeking hypothesis for PSNSU according to the I-PACE model of Wegmann and Brand (2019).*



**Note.** *FoMO= Fear of Missing Out; PSNSU=Problematic Social Network Sites Use; SNS=Social Network Sites.*

**Figure 3.** *The reward driven hypothesis for PSNSU according to the I-PACE model of Wegmann and Brand (2019).*



*Note.* FoMO= *Fear of Missing Out*; PSNSU=*Problematic Social Network Sites Use*; SNS=*Social Network Sites*.

## 2.2 FoMO as a response mechanism to social deficit variables predisposing to problematic social networking sites use

Following the I-PACE model process, FoMO works as a maladaptive cognition, linking the core’s characteristics of an individual, such as personality features, to the problematic use of the platform (Wegmann et al., 2017). The use of a “first-choice” social networking site (e.g., Facebook) results in the experience of gratification (Everitt & Robbins, 2016; Piazza & Deroche-Gamonet, 2013), and temporarily satisfies the social needs, reducing the feeling of FoMO (*fear driven/compensation seeking hypothesis*, Wegmann & Brand, 2019). However, the constant and continuous use of social networking sites has the effect of reinforcing the cognition of the fear of missing out on rewarding experiences that might occur on social networking sites (learning process model and spiral model) leading users to compulsive and addictive behaviour on the platforms.

Consistently with the I-PACE framework, numerous psychological, neurobiological, and psychopathological individuals’ characteristics might work as predisposing variables to develop and maintain problematic social networking sites use. For instance, previous research has evidenced different psychosocial features associated with problematic social networking sites use, such as symptoms of social anxiety (Casale & Fioravanti, 2015; Lee-Won et al., 2015; Yildiz Durak & Seferoğlu, 2019), interpersonal sensitivity (Eraslan-Capan, 2015), perceived social support (Bilgin & Taş, 2018), and need to belong (Wang et al., 2020; Yin et al., 2021). This tendency might be

explained by the fact that subjects with a low degree of basic social needs satisfaction, such as connecting with others, may be more tempted to engage with social networking sites, especially when accessed via mobile devices, as easy means to stay in touch with others and participate in their lives (Casale & Fioravanti, 2015). Among psychosocial predisposing variables, Wegmann and Brand (2019) suggested that social anxiety is an important vulnerability factor in predisposing people to problematic social networking sites use (Wegmann & Brand, 2019). Users who have forms of social anxiety are more prone to use social networking sites to connect with other individuals, and since they worry about face-to-face interactions, they fulfill online their unmet need for self-presentation to other members (Casale & Fioravanti, 2015). However, the preference for mediated expositions and communications make them at higher risk to develop problematic social networking sites use (Elhai, Yang, et al., 2019). Wegmann and Brand (2016) also proposed that the effect was mediated by the expectancies to experience pleasure, i.e., to satisfy their need to belong, and to avoid negative feelings, namely to reduce levels of FoMO. Therefore, FoMO would explain the tendency for people with chronic deficits in psychosocial needs satisfaction to constantly seek out updates and to engage problematically with social networking sites (Przybylski et al., 2013).

Furthermore, following the I-PACE framework, studies have found FoMO to mediate the relationship between psychopathological symptoms (i.e., depression and anxiety) and problematic social networking sites use (Oberst et al., 2017). Depressive symptoms were also associated with time spent on the platform and problematic social networking sites use (Donnelly & Kuss, 2016). This may be because depression and anxiety symptoms lead to social isolation and FoMO may be a natural consequence, leading to problematic behavior (Elhai, et al., 2019).

In keeping with Przybylski et al. (2013), some researchers have also speculated that FoMO might act as a mediator variable in the relationship between dysfunctional personality trait and problematic social networking sites use. Indeed, according to the I-PACE model, personality features characterized by low social competence and social deficits are key factors in the excessive and compensatory use of social networking sites use (Wegmann & Brand, 2019). For instance, narcissism has been related to problematic social networking sites use through the mediating role of FoMO (Servidio et al., 2021). Vulnerable narcissists prefer online mediated feedback from others since they are more sensitive to interpersonal rejections than grandiose narcissists. Moreover, for these individuals, social networking sites provide an ideal environment to present a carefully manipulated self-image in order to receive the admiration they fear they will not be able to obtain in face-to-face interactions (Casale et al., 2016).

The I-PACE model has also been applied to explore the association of Big Five personality traits and FoMO with problematic social networking sites use (e.g., Blackwell et al., 2017). A body of literature has examined the relationships between the Big Five (Neuroticism, Conscientiousness, Agreeableness, Openness, Extroversion) (Costa & McCrae, 1992) and problematic social networking sites use, showing remarkably inconsistent results. Most of the studies have focused on extroversion, linking the trait to higher levels of social networking sites engagement and addiction tendencies (Correa et al., 2010; Wilson et al., 2010). However, this research has overlooked the role that FoMO might play in explaining the connections between personality traits and problematic social networking sites use. In fact, more recent studies have shown that conscientiousness and neuroticism have been found to be negatively and positively associated with problematic social networking sites use (Marino et al., 2016) and FoMO respectively (Fioravanti et al., 2021; Stead & Bibby, 2017a). According to Costa and McCrae (1992), individuals with high levels of conscientiousness are task-oriented and likely to plan and strive for high results. These people may experience lower levels of FoMO because they might be more occupied with other duties and deadlines, and are more likely to avoid social platforms, as they might view social networking sites as potential distractions from more important activities (Andreassen et al., 2013; Stead & Bibby, 2017). Therefore, conscientiousness acts as a protective factor against problematic social networking sites use, in line with past findings on other types of problematic behaviors, which have shown that this trait reduces the likelihood of abusing alcohol and illicit substances (Kloos et al., 2009). With respect to neuroticism, it was found to be the strongest risk factor for problematic social networking sites use among personality traits (for meta-analytic evidence, see Huang, 2022) and an antecedent of FoMO (Rozgonjuk et al., 2021). Additionally, other findings showed that neuroticism has a direct effect on problematic social networking sites use, but this relationship is also increased by higher levels of FoMO (Gugushvili et al., 2022; Sindermann et al., 2021). Neuroticism refers to a lack of emotional stability and is characterized by the frequent experience of negative emotions, including dysfunctional reactions to stressful situations and interpersonal problems (Kirkegaard Thomsen, 2006; Suls & Martin, 2005). Neurotic individuals have an anxious predisposition and a tendency to worry (Mehroof & Griffiths, 2010), and might show some social impairments, as interaction anxiety (Newby et al., 2017), difficulties in relationships (McNulty, 2008) low social support (Lahey, 2009), resulting in poor mental health and an overall low quality of life (Lahey, 2009). Neurotic people also report experiences of loneliness, feelings of personal inadequacy, inferiority, and a high sensitivity to social threats (Denissen & Penke, 2008; McCrae & John, 1992; Watson et al., 1994). As a result, individuals with neurotic traits might experience



concerns about being socially excluded, thereby causing them high levels of FoMO (Alt & Boniel-Nissim, 2018; Blackwell et al., 2017; Stead & Bibby, 2017), frequently checking updates and engaging in social media more passively (Ryan & Xenos, 2011). Because of social difficulties, neurotic users would experience higher levels of FoMO (e.g., rumination, fear of exclusion) and turn to problematic usage of social networking sites to compensate for lack of social relationships and consequently relieve FoMO (Gugushvili et al., 2022). Moreover, since FoMO is closely related to an individual's mood (Milyavskaya et al., 2018; Yin et al., 2015), previous studies have collected several evidence of its relationship with neuroticism (Alt & Boniel-Nissim, 2018c; Balta et al., 2020a; Blackwell et al., 2017b; Stead & Bibby, 2017a). Although research revealed that FoMO and neuroticism are separate but positive correlated constructs (Fioravanti et al., 2021) some scholars have suggested that FoMO might be at least partly derived from a more stable tendency to experience negative emotions (Rozgonjuk et al., 2021). Indeed, FoMO, which is also an affective component of the I-PACE model (Wegmann & Brand, 2019) has a negative emotional component (as implied by the word “fear”), that fits well with the theoretical basis of the trait of neuroticism (Rozgonjuk et al., 2021).

In conclusion, following the I-PACE model, predisposing variables characterized by social anxiety and low social competencies represent important key vulnerability factors for problematic social networking sites use (Wegmann & Brand, 2019). However, these individual characteristics may not have a direct impact on the outcome of specific problematic use, but when combined with dysfunctional expectations and/or cognitive biases (Brand et al., 2016), such as the fear of missing out, may promote the development of problematic social networking sites use. Individuals' core characteristics also promote different motives or preferences (Kircaburun & Griffiths, 2018), which lead users to choose specific “first choice” social networking sites (Brand et al., 2016) through which they experience gratification/compensation of their social needs (Everitt & Robbins, 2016; Piazza & Deroche-Gamonet, 2013). As a results, the rewards/compensations obtained strengthen all the mechanisms of the process, including motivations, expectations, cognitions and predisposing psychopathological factors and preferences. The mechanism learned may make it increasingly difficult for individuals to exert executive and inhibitory control over their problematic use (Brand et al., 2016).

### **2.3 FoMO and usage motives as mediating factors between neuroticism and specific problematic social networking sites uses**

Against the background of the I-PACE model, the development of problematic social networking sites use is the result of the interaction between a person's individual characteristics, motivations, situations, cognitive and affective components, and gratifications (Brand et al., 2016). Specifically, according to researchers, motivations predispose the general approach behavior towards certain applications, which are relatively stable over time. Motives refer to ideas and thoughts about the concrete effects that the use of a specific application or site will most likely have in a given situation (Brand et al., 2016). Studies have identified several reasons why people use social networking sites, and found that, apart from entertainment and passing time, most are socially oriented, such as socializing, relationship building and maintenance, and self-expression (Kircaburun et al., 2020; Masur et al., 2014; Park & Lee, 2014; Ryan et al., 2014; Süral et al., 2019). Moreover, motives associated to problematic use can relate to both positive expectations (e.g., experiencing pleasure) and avoidance expectations (e.g., escaping reality) (Lee et al., 2014; Turel et al., 2011; Wegmann & Brand, 2016; Xu & Bailey, 2012). Past research has examined people's motivations for using social networking sites and highlighted the important role of motivations for use as antecedents to the development and maintenance of problematic social networking sites use (e.g., Ponnusamy et al., 2020; Ryan et al., 2014). Furthermore, previous studies have analyzed motivations in relation to different social networking sites, as each platform has a specific design and tools that meet different user needs (Alhabash & Ma, 2017). In fact, the interactive features of social networking sites allow various needs to be satisfied, leading to the intensive use of specific social networking sites and the desire to constantly seek the same gratifications (Masur et al., 2014). Therefore, following the I-PACE model, usage motives can mediate the association between predisposing variables (e.g., personality traits) and problematic social networking sites use (Brand et al., 2016). Investigating how personality traits and associated use motives are related to a specific problematic social networking site use may help to identify at-risk groups and to prevent the development of addictive forms of use (Tang et al., 2022).

Further, personality conceptualization by the Self-Determination Theory (SDT) proposes that intrinsic (rather than extrinsic) motivation for reward is essential in promoting mental health, and that intrinsic motivation is best promoted when one feels socially connected to others (Deci & Ryan, 1985, 2008). Individuals who evidenced less satisfaction of the basic psychological needs for competence, autonomy, and relatedness at a personality level, reported higher levels of FoMO. Specifically FoMO showed a mediating role between deficits in psychological needs and increased

behavioral engagement with social media to satisfy these deficits (Przybylski et al., 2013). Thus, although most of the previous studies have investigated FoMO as a mediator between motives and problematic social networking sites use (Alt, 2015; Beyens et al., 2016; Sun, 2022), according to SDT we assume a more meaningful role of FoMO as a cognition bias (Brand et al., 2016) closely related to deficits in personality-related needs and including FoMO in the neuroticism area (Alt & Boniel-Nissim, 2018).

As aforementioned, neuroticism (McCrae et al., 1999) was identified as the main Big Five personality predisposing variable for developing problematic use (Huang, 2022). Research carried out that people with neurotic trait were more prone to develop problematic Facebook use (Andreassen, 2015; Biolcati et al., 2018; LaRose et al., 2010; Tang et al., 2016) and problematic Instagram use (Balta et al., 2020a; Ershad & Aghajani, 2017). Because neurotics experience negative affect, such as emotional instability, psychological distress, and negative emotions, like depression, anxiety, angry, hostility, impulsivity, tension, and self-blame (McCrae & Costa, 1997), they are more likely to worry about social networking sites to appease their unpleasant emotional tendencies (Andreassen et al., 2012). Indeed, although some research has suggested that engagement on social networking sites (e.g., Facebook) promotes more negative short-term affects in neurotic users (Sagioglou & Greitemeyer, 2014), researchers have claimed that these people resort to social networking sites to regulate negative moods (Marino et al., 2016; Ryan et al., 2014). The mood management theory (Zillman & Bryant, 1985) argues that individuals with a pessimistic mood consume more media entertainment, hoping that pleasant information will help them improve their condition (Nabi et al., 2010). As suggested by several studies, involvement in social networking sites activities helps individuals to escape reality and to distract themselves from their problems (Gao et al., 2017; Masur et al., 2014; Yee, 2006). The driving force behind escapism is the pursuit of pleasure and fun that relieves daily boredom and stress, and allows one to avoid loneliness (Korgaonkar & Wolin, 1999), symptoms of depression and anxiety, low self-esteem (Lee & Ko, 2017) and unpleasant thoughts (Hartmann et al., 2010), such as neurotic ruminations. Using online platforms for distraction is positively associated with addictive tendencies (Davis et al., 2002). Further, FoMO increases distraction and facilitates disruptive behaviors (Alt, 2015) and might promote excessive social networking sites use in neurotic people, because it is strictly associated with psychopathological symptoms (e.g., anxiety, depression) (Oberst et al., 2017). In fact, as aforementioned, FoMO has been associated with negative affect and mood (Elhai, Gallinari, et al., 2020; Elhai, Yang, et al., 2020; Wolniewicz et al., 2018), with neurotic rumination (Dempsey et al., 2019; Elhai, Tiamiyu, et al., 2018), and proneness to boredom (Elhai, Vasquez, et al., 2018;

Wolniewicz et al., 2020). Facebook has been the most popular social networking site for many years, and escapism as a motivation for problematic Facebook use has been widely supported by the psychological literature (Alzougool, 2018; Brailovskaia et al., 2019; Masur et al., 2014). Due to the maladaptive coping strategies of neurotic users (Carver & Connor-Smith, 2010), those subjects may improve their mood through online activities (Gao et al., 2017), could be more attracted to online interactions, and may spend more time than other users on Facebook (Moore & McElroy 2012). Neuroticism has also been related to problematic Instagram use (Balta et al., 2020a), and with the aim to escape themselves through Instagram, individuals watch photos, videos and the live streams of others, and interact with other users by liking or commenting on others' posts, sometimes developing a problematic Instagram use (Kircaburun & Griffiths, 2018).

Although escapism is a common motivation for social networking sites use and abuse (Kircaburun & Griffiths, 2018; Lee et al., 2015; Omar & Dequan, 2020), people high in neuroticism fulfil multiple social needs by engaging in these platforms. Indeed, other perspectives can offer insight into the link between neuroticism and problematic social networking sites use, apart from motives related to mood disorders and negative affection management. For instance, the online disinhibition effect model (Joinson & Paine, 2007; Suler, 2005) refers to the reduced psychological restraints and behavioral inhibitions in an online social environment as opposed to the offline world. Online disinhibition offers the opportunity to express oneself even to people with high levels of neuroticism, who might otherwise be reluctant to disclose information in face-to-face interactions (Orchard & Fullwood, 2010). In fact, it has long been hypothesized that in person relationships may be anxiety-provoking for people high in this personality trait, due to their temperamental sensitivity to threats, fear of criticism, social isolation, shyness, ease of embarrassment and fear of rejection (Abbasi & Drouin, 2019; McCrae & Costa, 1997; McCrae & John, 1992). Because of their preoccupation about self-presentation to others, on social networking sites neurotic individuals may have fewer cognitive and behavioral inhibitions (Seidman, 2013), recurring to online self-expression, freely revealing their opinions and emotions (e.g., self-disclosure) or projecting online an ideal self-image (Seidman, 2013). Thus, neurotics use Facebook for reasons of self-presentation, to express different facets of themselves behind the protection of a screen (Seidman, 2013). This preference, rooted in a maladaptive cognition (feeling more positive about oneself in an online setting), may lead to problematic use (Caplan, 2003, 2005; Davis, 2001). Since people high in neuroticism also experience low levels of social support in their face-to face relationships (Hughes et al., 2012; Swickert et al., 2002) and are afraid of being misunderstood (Wilson et al., 2010), those subjects may turn to social networking sites to present themselves in order to feel closer to other

users (Andreassen et al., 2014). As a result, through their social networking sites activities, neurotics gain social validation of their self-images (Marshall et al., 2015), satisfy their need to belong (Butt & Phillips, 2008), and reduce loneliness (Amichai-Hamburger & Ben-Artzi, 2003). This thesis seems supported also by research on Facebook, in which people with high neuroticism trait reported using Facebook for validation and conformity motives (Marshall et al., 2015), while self-presentation reason was positively related to the excessive use of the platform (Masur et al., 2014). As concern problematic Instagram use, social and recognition motivations were found to be central drivers of the addictive tendency (Ponnusamy et al., 2020). Specifically, expressing a more popular self was a key motivation for excessive Instagram use (Kircaburun et al., 2020), while editing and posting selfies have been positively related to a higher amount of time spent on platforms (Kim & Chock, 2017). For example, those who fear a negative evaluation might be attracted to Instagram stories, through which people can share more mundane content that can be dissolved in 24 hours (Kocak et al., 2020). Nevertheless, Bowden-Green, Hinds, and Joinson (2021) in their recent systematic review about neuroticism and social media, reported that people with high trait neuroticism share content with negative valence (Shen et al., 2015), and the preoccupation even with the online image they portray would lead them to extreme caution or anxiety about the posts created and thus to fewer posting activities (Keep & Amon, 2017). Infrequency in posting “positive” content that might interest peers can lead to potential social dissatisfaction that, like a self-fulfilling prophecy (Dehle & Landers, 2005) is reflected in negative feelings and emotions (Shen et al., 2015), again limiting the possibility for people with high trait neuroticism to socialize. Therefore, while on one side, neurotics seem not naturally predisposed to exploit the potential of social networking sites to strengthen relationships due to their anxiety, on the other side, many of them are sensitive to signs of social exclusion (Denissen & Penke, 2008), and may strongly crave social relationships (Eşkisu et al., 2017), also becoming envious of other members on social networking sites (Wallace et al., 2017). In other words, some neurotic individuals may suffer from a feeling of exclusion, with the knowledge that their friends have something more significant than they do, or that they do not, which means they experience the feeling of FoMO (Abel et al., 2016). In this way, FoMO indirectly links neuroticism to problematic social networking sites use (Blackwell et al., 2017), as the perception of being socially excluded might drive some neurotic people to strive for self-presentation in order to maintain contact with others and compensate for their social needs (Zhu & Xiong, 2022). Online presentation enables them to change the aspects of their appearance, including their likes and dislikes, tastes, sense of humor, popularity, and other

aspects of interaction that are impossible to change offline (Manago et al., 2008), projecting online an ideal self (Seidman, 2013).

Ultimately, FoMO appears to mediate the effect of certain personality traits characterized by emotional problems, such as neuroticism, with over-involvement in social media (Przybylski et al., 2013), pushing individuals towards self-presentation behaviors that, in turn, may also lead to problematic social media use (Zhu & Xiong, 2022). That is to indicate that there is a significant positive effect of the variable “fear” (fear of missing out) on the motivation for self-presentation in order to satisfy unfulfilled social needs (Salim et al., 2017). When individuals feel valuable by getting affirming and validating feedback through self-expression on social networking sites, they continue to present themselves online with increasing intensity, especially in a positive way (Yang & Bradford Brown, 2016). The higher one’s fear of missing out, the more immersed the individual will be in social media activities, including self-presentation (Alt, 2015). These individuals spend more time on social networking sites, engaging in self-presentation activities, such as updating one’s status, uploading photos, location, etc. (Baker et al., 2016). Strategic presentation was supported by the observation that neurotics are more likely to post on a specific day and time, scheduling their posts for maximum exposure and engagement, motivated by the desire to connect with others (Keep & Amon, 2017).

Facebook and Instagram are the most widely used applications of social networking sites to present oneself online in various forms (Djafarova & Trofimenko, 2017). Instagram has recently surpassed one billion active users (Quinones & Kakabadse, 2015; Chen et al., 2020) and among university students it is one of the most used and one of those most associated with problematic use (Alhabash & Ma, 2017; Kircaburun et al., 2020). Instagram promotes visual presentation, as it is not possible to upload a post without a photo on this social networking site (Salim et al., 2017). On Instagram, users make several efforts to improve their appearance in their posts. The use of filters, along with the use of special angles and eye-catching styles, are several examples of efforts to improve the appearance of Instagram photos (Nilsson, 2016). Nonetheless, few studies have explored personality predisposing variables for problematic Instagram use (Kircaburn & Griffiths, 2018; Balta et al., 2020; Ershad & Aghajani, 2017). Moreover, despite the fact that some scholars have investigated motives involved in the addictive use of the platform (Sun, 2022; Kircaburun & Griffiths, 2019), while others have considered the role of FoMO (Balta et al., 2020; Moore & Craciun, 2021; Sun, 2022a), research that hypothesis how these variables might interact with each

other in explaining the problematic use of Instagram according to the process of the I-PACE model is still lacking.

In conclusion, the relevance of mediating variables, such as FoMO and motivations for social networking sites use might be relevant in explaining problematic social networking sites use (Brand et al., 2019). Frequent social media use can lead to social media-related habitual behaviors that become less rewarding and more compensatory over time (Brand et al., 2019). Finally, it is worth noting that mediating variables in the I-PACE process, such as FoMO and motivations to use, are important components of theoretical models for psychological disorders, because clinical and pharmacological interventions can act on usage motivations and distorted cognitions, while some vulnerability factors, such as personality traits, may be relatively stable over time (Brand et al., 2014).

## Chapter 3

### 3. Self-concept clarity, FoMO, self-presentation and problematic social networking sites use

#### 3.1 Self -concept clarity in emerging adulthood

People's beliefs about themselves - self-concepts - play a central role in their psychological experiences and can be a powerful driver of their thoughts, feelings, and actions (Baumeister, 2010). The main aspect of people's self-concept is the clarity they hold of themselves (Campbell, 1990; Campbell et al., 1996). Campbell first introduced self-concept clarity (SCC) as an organized knowledge structure that involves individuals' traits, values, and episodic and semantic memories, which controls the processing of self-relevant specific or general information (Campbell et al., 1996). Self-concept clarity considers the extent to which the contents of the self are clearly defined, consistent and stable over time (Campbell, 1990). SCC implies the following characteristics: (a) a given individual's understanding of his/her personal attributes, (b) the extent to which the individual views his/her personal attributes as harmonious with each other, or (c) the level at which the individual perceives these attributes as continuous and consistent across contexts and across time (Dunlop, 2017). A first important note regards the fact that the construct refers to the whole of one's self-concept rather than a specific self-conception. Indeed, self-concept can include a wide variety of self-beliefs and domain specific self-evaluations (e.g., perceptions of one's singing abilities). Campbell (1990) argued that differences in the clarity or confidence of self-concept could account for some of the differences observed between individuals high and low in self-esteem. Notably, the scholar observed that compared with people who scored high on measures of self-esteem, people who showed low levels appeared to be more malleable in response to situational influences, and susceptible to social external feedback (Brockner, 1984; Campbell & Fairey, 1985). These individuals not only had more negative beliefs about themselves in terms of evaluation but were also more uncertain and confused. Although empirical research has largely focused on the effect self-esteem has on self-concept clarity, the relationship between the two variables may be quite reciprocal (Campbell & Lavalley, 1993; Wu et al., 2010). Beyond self-esteem, in previous literature, self-concept clarity has been associated with several indices of psychological well-being, such as positive affect (Campbell et al., 1996), sense of coherence (Bigler et al., 2001), contentment, purpose in life and affective balance (Bigler et al., 2001), perception of meaning in life (Błażek & Besta, 2012), general life satisfaction (Ritchie et al., 2011), anxiety (Van Dijk et al., 2014), depression (Lee-Flynn et al., 2011), and perceived stress (M. Smith et al., 1996). Self-



concept clarity has also been related with markers of adult flourishing, such as need for cognition (Campbell et al., 1996), perceived social support (Smith et al., 1996), feelings of having a meaningful career (Treadgold, 1999) adaptive coping strategies (Smith et al., 1996), and relationship satisfaction and commitment (Lewandowski et al., 2010).

Dunlop (2017) situated the construct of self-concept clarity into the broader personality and individual difference landscape, including traits, characteristic adaptations, and narrative identity. Specifically, recent findings highlighted that the development of self-concept clarity resulted associated with the one of personality content. Nonetheless, research has shown that self-concept clarity is a marker of identity content maturation at the level of personality traits (e.g., the Big Five) (Lodi-Smith et al., 2017) rather than being associated with greater stability of personality traits over time (Roberts & DeVecchio, 2000). In fact, although self-concept clarity has robust constancy over time, rank-order stability of self-concept clarity may increase with age (Lucas & Donnellan, 2011). Longitudinal tests have shown that both the initial level and rates of development of self-concept clarity are significantly correlated with the building of identity processes (Schwartz et al., 2012). According to Erikson's psychosocial theory (1959, 1968), it is during adolescence that the search for an enduring sense of "self" turns into a core developmental task, prompted by the biological (i.e., puberty), cognitive (i.e., the acquisition of the formal abstract reasoning), and social changes (i.e., the starting of new social interactions with peers and modifications in parent-adolescent relationships) (Lerner & Steinberg, 2009). Thus, over the course of adolescence, individuals may rethink and integrate different aspects of the self and experiment with new roles and life plans (Crocetti & Van Dijk, 2016). This might explain why self-concept clarity increases nonlinearly across the years as regards transitional periods, such as from adolescence to emerging adulthood. Indeed, as late adolescents cope with the multiple transitions (e.g., from school to university, from living with family to independent or semi-independent living), typical of the passage to emerging adulthood, they might increase exploration of identity alternatives and reconsideration of their prior commitments, with broader exploration potentially leading to a temporary drop in self-concept clarity (Crocetti et al., 2010; Morsunbul et al., 2016). This notion seems supported by evidence suggesting that changes in self-concept content after role transitions are associated with reduced self-concept clarity (Slotter & Walsh, 2017), whereas the consolidation and stability of role identity in adulthood may be a central component of the higher self-concept clarity in later stages of life. Moreover, higher social engagement with peers positively influences self-concept clarity in the transition from late adolescence to emerging adulthood (Crocetti et al., 2016). This effect also seems to be confirmed in adulthood, as investment in relationships and community roles is

associated with a clearer self-concept (Lodi-Smith & Roberts, 2010). According to Erikson's perspective, investment in social roles fosters psychosocial maturation in adulthood, and the more central these roles are to the individual, the more sensitive the person will be to personal and other role-related expectations. Through this process, emerging adults can negotiate roles that are either consistent with their existing identity or with the prototype of their ideal self. Individuals can also select themselves into consistent roles, environments, and experiences in such a way that they experience no change in their personality. This consistency in identity, of becoming more of who oneself already is over time, it is also supported by the role continuity principle of personality development, suggesting that coherent role experiences facilitate consistent identity (Roberts et al., 2008). Nevertheless, individuals with low self-concept clarity may struggle to select roles that are consistent with their identity. In some conditions, they may make life choices that are discordant with their identity or become mired in indecision. In extreme cases, those people default to a foreclosed state or maintain a diffusion or moratorium state later than this would be normatively acceptable. Thus, despite the normative trend of increasing self-concept clarity over time, changes in self-concept clarity do not necessarily occur in combination with age, and people vary in their trajectories of self-concept clarity development due to profound individual differences in the way development occurs (Lodi-Smith & Crocetti, 2017). For example, past research carried out an intergenerational transmission of self-concept clarity from parents to adolescents (Crocetti et al., 2016), according to which parent-teenagers relationship quality affected self-concept clarity in the younger (Frijns & Finkenauer, 2009; Van Dijk et al., 2014). Moreover, following the social learning theory (Bandura & Walters, 1977), parents with higher self-certainty are more likely to represent consistent models for their children and, doing so, affect positively their self-concept clarity development. Variability within self-concept clarity indicate that individuals differ both in their stability (Crocetti et al., 2016) and change (Shin et al., 2016). As the self-concept becomes more cognitively differentiated in adolescence, contradictions within the self-concept appear, resulting in the question, 'Which is the real me?' (Harter & Monsour, 1992). From a developmental perspective, a person needs to integrate one's multiple self-representations across time to arrive at self-concept clarity (Erikson, 1959). Developing self-concept clarity involves identity integration (Erikson, 1959), i.e., the perceived compatibility between the various parts of oneself, including both identity coherence and identity confusion (Schwartz et al., 2009). Identity coherence is the degree to which a person feels that the various parts of oneself fit together. Identity confusion is the degree to which a person feels conflicted, resulting from challenges in integrating the various parts of oneself into an integrated self-concept (Schwartz et al., 2009). Identity coherence and identity confusion represent

two separate dimensions of identity integration with some degree of independence (Schwartz et al., 2009; Syed et al., 2013). For instance, increases in identity coherence do not automatically lead to equivalent decreases in identity confusion, and vice versa, and both those dimensions may coexist within a person. In fact, a goal of identity integration is to increase coherence and minimize confusion (Schwartz et al., 2009). Further, as developing self-concept clarity could involve some degree of both coherence and confusion (Marcia, 2002), another goal of identity integration in emerging adulthood involves balancing those two aspects (Schwartz et al., 2009).

In conclusion, according to a developmental perspective, self-concept clarity reflects people's identity and its development, including personal, social, and role identities, across the lifespan (Lodi-Smith et al., 2017). Indeed, a person needs to integrate one's multiple self-representations across time to achieve self-concept clarity (Erikson, 1959). Because self-concept clarity is unlikely to be fully achieved in emerging adulthood, different people may experience a varying degree of identity coherence and identity confusion. In turn, these individual differences in self-concept clarity development can themselves serve as indicators of important life outcomes (Crocetti et al., 2012; Schwartz et al., 2009).

### **3.2 Clarifying self-concept through the social networking sites use**

Internet may offer to emerging adults many opportunities both for clarifying self-beliefs (e.g., through identity experiments), and for their confirmation (e.g., feedback, social comparison, social validation) (Hertel, 2017). Interest in the relationship between self-concept clarity and the Internet has increased considerably among researchers since the publication of Valkenburg and Peter's manuscript (2011). The scholars proposed two different assumptions regarding how the use of Internet relates to self-concept clarity: *the self-concept fragmentation hypothesis* and *the self-concept unity hypothesis* (Valkenburg & Peter, 2011). On one side, according to *the self-concept fragmentation hypothesis*, the use of the Internet predicts a lower self-concept clarity (Valkenburg & Peter, 2011). Internet provides multiple ways of experimenting with identity, allowing to experience a variety of roles. However, the absence of visual or physical interactions allows people to project in online space hidden aspects of their personality, facilitating self-fragmentation (Gackenbach & von Stackelberg, 2007). Furthermore, when users overexpose themselves online to the ideas, opinions and feedback of others, self-doubt and uncertainty may increase (Valkenburg & Peter, 2011). As a result, users, particularly adolescents, find it difficult to integrate all options in a coherent and unitary self (Yang & Bradford Brown, 2016). Consequently, *the fragmentation*

*hypothesis* predicts that the more intense the online engagement, the less clear the self-concept will be (Valkenburg & Peter, 2011).

On the other hand, *the self-concept unity hypothesis* assumes that the more intense the connection to social networking sites, the better individuals understand themselves, thanks to ample opportunities for self-presentation and relevant feedback through platforms (Valkenburg & Peter, 2011). For example, self-concept clarity was positively predicted by the number of likes received on Facebook and it was higher for people that managed their Facebook photos more frequently (Drogos, 2015). According to self-affirmation theory, people aim at preserving self-integrity and self-worth by communicating self-related aspects and by receiving feedback that validate their self-concept (Steele, 1988). Thus, exercising autonomy, discovering one's own interests, creating avatars, or belonging to certain online communities are just few elements that are possible on the Internet and that contribute to a greater self-concept clarity by facilitating the processes of self-reflection, self-exploration, and identification with others (Borca et al., 2015; Guegan et al., 2015; Šporčić & Glavak-Tkalić, 2018).

Although results of most studies support for *the fragmentation hypothesis* (Israelashvili et al., 2012; C. Lee et al., 2012; Matsuba, 2006; Mazalin & Moore, 2004; Sacharin et al., 2009), this assumption dates to the early days of the media platforms, when social networking sites were at their infancy, and chatrooms, bulletin boards, and multiuser dungeons (MUDs) were among the most popular applications. In these environments, users were represented only by nicknames, which facilitated taking on different identities. MUDs typically required users to adopt a certain non-self-identity as part of a role-playing game. Individuals could use the Internet to experiment with different profiles that were only loosely tied to their identity in the offline world (e.g., Reid, 1998; Turkle, 1995). As a result, research of the 2000s was somewhat supportive of the *fragmentation hypothesis*, as negative relationships between several Internet use indicators and self-concept clarity were found with cross-sectional designs (Davis, 2013; Israelashvili et al., 2012; Matsuba, 2006; Valkenburg & Peter, 2011).

Nowadays, in contrast to the early applications and consistently with the contemporary *online* interactions (Floridi, 2015), the most common social networking sites require individuals to build an online representation of the user's true offline identity, and pretending to be someone completely else is considered a social norm violation and thus, extremely rare among users (Appel et al., 2016). Consequently, social networking sites users can only exaggerate or underestimate the

different facets of themselves that may represent their “true self”. Michikyan and colleagues (2014) showed that people most often wish to express their real selves on Facebook (e.g., “how I am in real life”), but other aspects are communicated as well, such as the ideal self (“to show aspects of who I want to be”) (Michikyan et al., 2014).

According to the *self-concept unity hypothesis*, Facebook users tend to communicate aspects of their true selves to many other individuals, which in turn, provide useful information to validate their self-concept. Indeed, from a self-affirmation perspective, engaging in Facebook activities contributes to users’ feelings of self-integrity (Toma & Hancock, 2013). More recently, a longitudinal study conducted on university students showed that a more intense attachment to Facebook predicts a lower self-concept clarity at a later stage (Appel et al., 2016). Following the *fragmentation hypothesis*, it appears that a strong attachment to Facebook impedes the development of a firm sense of oneself. A more accredited explanation assumes that individuals with low starting self-concept clarity might be more strongly attracted to social networking sites compared to individuals with higher self-concept clarity, because of attractiveness of the opportunities for self-presentation and receiving feedback from other members (Appel et al., 2016). Thus, to date, according to scholars (Appel et al., 2016), the question appears still open: is the use of social networking sites influencing self-concept clarity levels, is the self-concept clarity determining the quality social networking sites use, or a reciprocal relationship between the two? Given the difficulty in finding an answer to this question, favoring one hypothesis over another, the findings on how the use of social networking sites can be related to self-concept clarity have been classified into two different but related theoretical views.

The first perspective has focused on how social networking sites use is associated with self-concept clarity (i.e., SNSs use → SCC). This research has revealed that greater Facebook use intensity (both concurrently and longitudinally), more general internet use (e.g., time spent online), and more passive social networking site use (e.g., viewing or lurking on others’ profiles) were associated with lower levels of self-concept clarity (Appel et al., 2016; Lin et al., 2021; Liu et al., 2017; Matsuba, 2006). These findings appeared to support the *self-concept fragmentation hypothesis*, as social experiences in social media can push users to present multiple selves that can promote identity confusion. The second perspective has focused on how self-concept clarity can predict social networking sites use (i.e., SCC → SNSs use), for example showing that lower levels of clarity in self-concept were associated with greater frequency of social comparison on Facebook (Lee, 2014), increased multiple self-presentation online (Fullwood et al., 2016), and problematic

Internet use (Israelashvili et al., 2012). This evidence was interpreted as indicating that individuals with a more unstable sense of the self tend to engage in more social networking sites activities (e.g., social comparison online) to clarify who they are. In particular, as already mentioned, young people tend to have lower levels of self-concept clarity than adults due to their identity development process, and thus can engage more in social networking activities. For example, adolescents with poor self-concept clarity use the online environment more with the desire to increase self-clarification through online self-exploration activities (Matsuba, 2006), and to experiment with different roles (Šporčić & Glavak-Tkalić, 2018). Additionally, emerging adults are among the population groups with the highest social presence on social networking sites (Greenwood et al., 2016). Since young adults might be also confused about their identities because they have not yet established a secure and solid identity (Hill et al., 2013), they are likely to use social media to engage in the critical maturation task of identity development. Social networking platforms can be a safe source for self-clarification and offer the opportunity of control the conflicting aspects of the self-concept (Šporčić & Glavak-Tkalić, 2018). For instance, university students are in the process of developing a social role and a stable sense of self that can be trusted by themselves and accepted by others (Chickering & Reisser, 1993). Participating in social media provides an opportunity for them to test different facets of their identity and gain social recognition (Michikyan et al., 2014).

### **3.3 Self- concept clarity and online self-presentation**

Self-presentation is the process of sharing aspects of oneself to others ( Baumeister & Tice, 1986), and it is often regarded as a specific and more strategic form of self-disclosure. In fact, researchers have been using the two terms interchangeably to describe self-expression in computer-mediated communications (Kim & Dindia, 2011). Therefore, self-presentation can be analyzed by taking into account dimensions typically assessed in research on self-disclosure. These include breadth (amount of information presented), depth (intimacy level of information presented), positivity (valence of information), authenticity (degrees to which the presentation accurately reflects the presenter), and intentionality (extent to which individuals consciously and intentionally disclose a piece of information) ( Kim & Dindia, 2011). Whereas breadth, depth, positivity, and authenticity focus on the content of the presentation, intentionality captures individuals' attentiveness to the activity. Moreover, self-presentation is not a static state, but rather an activity sensitive to social and relational contexts. People adjust their self-presentation on these dimensions

by considering social norms and relational goals. For instance, individuals tend to limit the breadth and depth of self-disclosure in new relationships (Taylor et al., 1973). To make themselves appear as an attractive social partner, people need to strike a balance between desirability (positivity) and accuracy in their online self-presentation (Ellison et al., 2006).

Before the advent of the Internet, researchers had proposed that identity (Harter et al., 1996), self-esteem (Baumeister et al., 1989; Zuckerman, 1979), and depressive symptoms (Weary & Williams, 1990) may determine the extent of self-presentation. Individuals with low self-esteem tended to be more cautious and indirect in their self-presentations compared to those with high self-esteem (Baumeister et al., 1989), and reported presenting their false self to a greater extent (Elliott, 1982). However, individuals' offline and online worlds are psychologically connected (Subrahmanyam et al., 2011), and research showed that emerging adults also engage in self-presentation within online settings such as social networking sites (Michikyan & Subrahmanyam, 2012). Individuals usually claim to present an authentic image online, but objective measurements and judges' evaluations have suggested that the images resulted slightly idealized at the expense of accuracy (Toma & Hancock, 2012). According to Gonzales and Hancock (2011), social networking sites could be a source of self-awareness for users, since on their profiles they represent key aspects of themselves. Scholars have suggested that social networking sites increased awareness of values, meaningful connections, and other fundamental aspects of self-concept. The contents of social networking sites are a form of self-presentation, edited versions of themselves that allow users to put forward their best image (Gonzales & Hancock, 2011).

Psychological approaches to identity differ as to how malleable the self is perceived to be in response to the potentially self-relevant information encountered on everyday life, included mediated information (Cohen et al., 2019). At one end of the malleability spectrum, the personality literature has treated self-presentation as a trait, arguing that young adults present their true personality on social networking sites rather than their idealised self (Back et al., 2010; Gosling et al., 2007). However, the researchers also pointed out inconsistencies in accuracy ratings of the social networking sites profiles belonging to neurotic youth, suggesting that self-presentation on such sites may be malleable and that individuals with different personalities may present multiple facets of oneself online (Michikyan et al., 2014). In fact, personality trait differences include one's motives, thoughts, feelings, and behavioural tendencies (McCrae & John, 1992), and people who are anxious or moody (markers of neuroticism) may present the self on Facebook to show who they want to be, to deceive other people, and to impress the observers to a greater extent. Individuals

who have self-doubt, such as introverts, may engage in self-exploration to explore their self, avoiding social interactions (Michikyan et al., 2014).

At the other end, self-presentation theory (Goffman, 1959) has emphasized the flexibility of the self. Thus, self-concept cognition is conceived as extremely flexible, largely situation- and life-dependent, and may change according to the social role played and the reactions of interaction partners. Contemporary psychological approaches suggest that self-concept consists of stable features, but the situational factors influence which of them might be activate in a specific situation. This perspective is crucial as it emphasises the need to distinguish the conceptualisation of the long-term effects of media from the conceptualisation of self-related characteristics, such as thoughts and feelings of self, on short-term activation (Cohen et al., 2019). Malleability of online self-presentation was also supported by developmental studies (Manago et al., 2008; Salimkhan et al., 2010). For example, college students reported to use MySpace displaying aesthetically pleasing or enhanced photos on the site in order to impress others. From participants' responses, the researchers extrapolated that MySpace users' profiles entailed selected aspects of the self, including their idealized and real selves (Manago et al., 2008). Regarding Facebook, college students used pictures, status updates, and wall posts to present different aspects of the self (e.g., gender identity, ethnic identity, physical attractiveness) (Michikyan & Subrahmanyam, 2012). As regards Instagram, which has especially drawn the attention of younger generations, it allows a very immediate opportunity to self-present through visual content such as photos and videos (Marwick, 2015).

Following the developmental perspective, research regarding self-presentation on social networking sites has suggested that the presentation of the self is clearly associated with self-concept and identity state, with more focus on the presence of those relationships in younger samples (Michikyan et al., 2014). As mentioned above, the notion of self-concept has been distinguished from that of identity, which has focused on psychosocial processes, as the latter is more likely conceptualized as a developmental process, whereas self-concept refers to the cognitive components of the self (Baumeister, 1999). However, although the literature on the self has studied identity and self-concept separately, preliminary evidence indicates that identity development may be related to discrepancies between beliefs about multiple facets of the self (e.g., real self vs. ideal self; Harter et al., 1996; Makros & McCabe, 2001). To resolve these opposing attributes and make sense of their different identities and self-images, youth may engage in self-presentation. Fullwood and colleagues (2016) reported that adolescents with a less stable self-concept were more likely to show the world an online ideal self-image. Indeed, adolescents with a lack of self-concept clarity



may be more inclined to explore alternative online identities as an attempt at self-exploration. The authors postulated that this may be an effective strategy for teenagers to get positive feedback when users are not sure how they would like to be seen by others (Fullwood et al., 2016). Nonetheless, although identity construction gains importance during adolescence (Erikson, 1968), research suggests that it is not till late adolescence and young adulthood (18-29 years) that individuals make meaningful attempts to consolidate their sense of self (Kroger, 2006). According to Appel (2018), identity experiments on social networking sites turned out not to be such a common activity among emerging adults, whereas the desire to maintain and enhance a positive self-image is an essential motive of their self-presentation activities (Kowalski & Leary, 1990). Although recent studies have posited that emerging adults use social networking sites to present their real personalities (Back et al., 2010; Gosling et al., 2007), according to the multiple-self-presentation framework (Michikyan, et al., 2014), youth undergoing identity integration present multiple facets of the self, including the real self, the ideal self, and the false self (the latter characterised by tendencies towards deception, exploration, and comparison/impression on other people). Indeed, scholars pointed out that college students not only presented their real self (aspects that are authentic) and ideal self (who one wishes/desires to be) on Facebook, but they also presented their false self (aspects that are not fully truthful), when doubting themselves. Specifically, the presentation of the real self encompasses authentic/true feelings and appears to be motivated by internal attributes (Harter et al., 1996). Indeed, emerging adults with a more integrated and coherent sense of the self may be more authentic in how they present themselves in social contexts due, in part, to increased knowledge about the self (Kumru & Thompson, 2003). Self-concept clarity among emerging adults was positively associated with the expression of the real self and negatively with the presentation of an ideal or false self (Michikyan, 2020). Ideal self-presentation, which includes presenting parts of the self that one would like to possess (Michikyan et al., 2014), may comprise both positive and negative self-representations (Higgins, 1987; Markus & Nurius, 1986). To the extent that a person considers the ideal self-presentation positive or negative, it may depend on whether one perceives these self-representations as consistent or inconsistent within the self-concept. On the one hand, if a person perceives little or no inconsistencies between the ideal self and the real self, one is likely to experience positive feelings (Higgins, 1987). Thus, the positive representations of the ideal self-presentation may be the desired elements or “what the person would like to be and thinks he or she really can be” (Schlenker, 1985). From this perspective, emerging adults with an overall positive sense of the self (indicative of self-concept clarity) might present parts of their ideal self that are positively realistic. On the other hand, if an individual perceives considerable inconsistencies

between the ideal self and the real self, one is likely to develop a less positive and less realistic view of oneself and is more prone to feel dejection-related emotions such as confusion and anxiety (Higgins, 1987). As regard false self-presentation, it can be a normative part of identity development (Selman, 1980), but may also stem from devaluation of the self (Winnicott, 1965). Michikyan and colleagues (2014) defined false self-presentation a separate factor with some degree of independence between three dimensions: exploration, deception, and compare/impress (Michikyan, et al., 2014). Emerging adults who misrepresent themselves online to explore aspects of themselves are usually just beginning the process of identity integration (Schwartz et al., 2015). Those are the youngsters of them and take advantage of social networking sites to experiment different aspects of the self in a space perceived as safer than reality. The false self-presentation motivated by deception may involve presenting parts of the self that are inauthentic and less truthful. From this point of view, a supposed minority of emerging adults may actively lie about themselves or “keep up a false front” ( Baumeister & Cairns, 1992; DePaulo et al., 2003; Mohr et al., 2017). The online presentation of the false self (deception) may reflect diffuse-avoidant identity style (Berzonsky & Ferrari, 2009), (Elliott, 1986; Rosenberg, 1979), which contributes to the uncertainty that a person is already experiencing during identity integration, and may increase risky behaviours, indicative of severe emotional and behavioural problems (Berzonsky & Ferrari, 2009). Some reasons have been identified under the choice to deceive others: advancing self-interest (Berzonsky & Ferrari, 2009), avoiding social embarrassment, perceived threat, or hostility (Goffman, 1956; Keltner & Anderson, 2000), protecting and enhancing self-worthiness (Wood et al., 2008) and positive self-image ( Baumeister, 1982). However, youth who have already consolidated their identity tended to display deceptive and idealized aspects of their self to a lesser extent (Harter et al., 1996). Finally, for users in a state of uncertainty, false self-presentation may also be motivated by comparing oneself with others and the desire to impress them (Festinger, 1954). According to the self-discrepancy theory (Higgins, 1987), perceived discrepancies between the actual and ideal selves increase the likelihood of negative emotions, while discrepancies between real and ought self (i.e., who the individual thinks others expect his/her to be) (Strauman, 1996) increase chances of social anxiety. To answer the question of who people are, the reactions of others are of crucial importance (Cooley, 1902).

### **3.4 Others are doing better: self-concept unclarity promoting comparison orientation with other users**

Individuals who are more uncertain about aspects of their lives, and who experience a feeling of inadequacy regarding their self-concept and are more sensitive to the behaviour of others, are more likely to engage in social comparisons (Campbell et al., 1996; Gibbons & Buunk, 1999; Miao et al., 2018). On social networking sites, users are constantly exposed to information about others' activities and, thus, social comparisons are particularly likely. In line with the social comparison theory (Festinger, 1954), which describes how individuals learn about themselves through comparison with others, social comparison orientation represents the tendency to engage in social comparisons with other people (Gibbons & Buunk, 1999). Social comparisons can be automatic whenever individuals are confronted with information about how other people behave, think, and feel, and can even occur outside conscious awareness (Mussweiler et al., 2004). Twamley and Davis' research (Twamley & Davis, 1999) highlighted that women who exhibited high self-concept clarity tended less to compare to others, displayed a lower propensity to conform, and were less likely to internalize societal ideals. Moreover, according to Vartanian's study (2009), individual trait characteristics like self-concept clarity, may serve as a buffer or protective factor against internalization of ideal beauty standards and subsequent negative body image outcomes. Those findings gave more weight to claim how self-concept characteristics influence individuals' reactions to social cultural pressures, especially on the broader audience of social networking platforms (Vartanian, 2009). Additionally, the passive use of social networking sites undoubtedly exacerbates this influence. A major experiment (Verduyn et al., 2015) manipulated interactivity on Facebook and found that passive browsing, compared to active communication with others, caused a decrease in emotional well-being over time. Passive browsing of social networking sites exposes individuals to a lot of positive information about others, resulting in upward social comparisons and envy, which are negatively linked to self-concept clarity (Butzer & Kuiper, 2006). A recent study has carried out that individuals characterized by low levels of self-concept clarity were more prone to greater social comparison behaviours, which in turn increase the fear of "being left behind" in social contexts, thus experiencing FoMO (Servidio et al., 2021). Indeed, FoMO, can be taken into account as a response variable of social comparison (He et al., 2020; Schmuck et al., 2019). Although the interconnection between social comparison and FoMO has not yet been empirically investigated, the common definition of FoMO includes an implicit and obvious link to confrontation processes (Reer et al., 2019). As mentioned above, Przybylski and colleagues (2013) defined FoMO as the feeling that others might have more rewarding experiences than oneself. An earlier work defined

FoMO as “the uneasy and sometimes all-consuming feeling that you’re missing out, that your peers are doing, in the know about, or in possession of more or something better than you” (Walter Thompson Intelligence; cited in: Przybylski et al., 2013: 1842). In line with this definition, an extensive theoretical discussion on the roots of the construct identified envy as a key element of FoMO (Reagle, 2015). These understandings of FoMO implicate a comparison of one’s own situation with what others are experiencing, resulting in the feeling that others are doing better or have more rewarding experiences. It therefore seems very plausible that especially people with a high tendency towards social confrontation orientation may develop FoMO, as they expose themselves more often to information that others communicate about themselves. Given the widespread popularity of social media and the positively biased information people present about themselves online (“information asymmetry”, McGinnis, 2020), people who tend to compare themselves to others might form a particular at-risk group for being involved in unintended upward comparisons. As a result, they may feel that others are doing better and have more rewarding experiences, namely, they are experience to miss out on something important (Reer et al., 2019). Thus, although all people tend to process their self-concepts by interfacing with external information, those who are more uncertain about aspects of their lives, such as the perceived feeling of inadequacy concerning their self-concept (Campbell et al., 1996) might be more sensitive to the behaviour of others and are more likely to experience social comparison and feelings of envy. Consequently, users with lower levels of self-concept clarity may experience more FoMO and may develop a dysfunctional use of their smartphones to keep in touch with other people (Alutaybi et al., 2020; Wang et al., 2019).

### **3.5 Self-concept unclarity and fear of being left out: strategic self-presentation and problematic social networking sites use**

Emerging adults might experience a certain degree of social anxiety resulting from the integration of identity in the transition to adulthood (Ritchie et al., 2013). Due to a poorly articulated self-concept, they may present FoMO and ruminate about what they may miss, which makes them feel unable to keep up with their peers (Fuster et al., 2017). Thus, those individuals may spend an inordinate amount of time on social media to watch updates and check others’ profiles on their screens, to the extent that high levels of FoMO have been associated with passive browsing on social networking sites (Buunk & Gibbons, 2007) and problematic social networking

sites use (Buglass et al., 2017; Przybylski et al., 2013). According to Wright and colleagues (Wright et al., 2018), emerging adults spent around 14 hours per week on Facebook even though they posted on it less than once a week. Through passive browsing, the observers satisfy their need to connect with others' activities (Burke et al., 2010). Moreover, others' information provides stimuli for social comparison (Festinger, 1954), and self-evaluation is often made with one or more targets of comparison in mind gauging the similarities and differences on a salient dimension, such as the notion of desirability (e.g., intelligence or attractiveness) (Festinger, 1954). Since people with a low self-concept doubt themselves and suffer from feelings of inadequacy (Campbell et al., 1996), they are also more sensitive to external information and making upward comparisons with others fosters the concern of being "left behind" in social contexts (Butzer & Kuiper, 2006; Carter & Vartanian, 2022; Servidio, Sinatra, et al., 2021). Moreover, exposure to a relatively large online audience may intensify the social anxiety that emerging adults may already be experiencing (Crocetti et al., 2009; Harter, 2012). FoMO is related to the willingness to participate and consume activities that have been shaped by social media shares (Argan & Argan, 2019). Exposure to other people's content may lead young adults to recognise the risks associated with marginalisation and identity-based harassment in the online context, and consequently to engage in a specific type of online misrepresentation: hiding aspects of one's identity by presenting a false self-image (Michikyan et al., 2014). In order to gain positive reactions and social acceptance from others and to maintain and enhance a positive self-image, emerging adults may strive to present themselves in a strategic and socially desirable manner (Baumeister, 1982; Schlenker & Leary, 1982). The online presentation of the false self may function as an adaptive online strategy for self-protection and self-enhancement during the development process (Ritchie et al., 2013). Social networking sites may serve as a community where those "posters" (i.e., people who publish contents) receive supportive comments or feedback from their online audience only on selected self-related domains of their identities (Hillier & Harrison, 2007). Positive feedback (comment, like, view, etc.,) act as social validation that might legitimize those online self-presentations. Indeed, individuals who have difficulties in some areas of their offline identity may find it easier to present themselves online, because social networking sites offer a greater sense of control to reveal some aspects of oneself and to hide others (Manago et al., 2008; Rubin & McClelland, 2015). In doing so, emerging adults engage in various self-representations (Elliott, 1982; Schlenker & Wowra, 2003), carefully selecting and editing their identity presentation according to the social context to ensure the smooth flow of interaction (Schlenker & Wowra, 2003). It is worth noting that impressing others does not always reflect deliberate deception (Pontari & Schlenker, 2006; Wilson & Ross, 2003). False self-presentation

may involve presenting oneself in a desirable and somewhat realistic manner (Sezer et al., 2018) with the purpose of protecting one's self-worth. To maintain and enhance a positive self-image, a person may engage also in self-monitoring (Snyder, 1974). People engage in self-monitoring (i.e., observing and controlling self-presentation) for a variety of reasons, such as expressing or concealing what they think and feel based on a given situation (Snyder, 1974). The extent to which people engage in self-monitoring may depend on the level of identity integration (Kumru & Thompson, 2003). For instance, emerging adults experiencing identity conflict may engage in high-level self-monitoring because they might be concerned about the impressions they make on others (Kumru & Thompson, 2003). In this way, they might select parts of their ideal self, to maintain a positive self-image, even though this may result in a less realistic self-presentation (e.g., enhancing positive images of oneself). People who wish to continuously stay in touch with what others are doing, improve their self-presentation on social media, such as updating self-descriptive profiles and sharing content within the circle of friends (Yau & Reich, 2019), facilitating the problematic use of those platforms (Zhu & Xiong, 2022). That is, users experience higher levels of positive social feedback to their strategic self-presentation, which in turn is reflected in increased engagement on social media, a process that can be interpreted by considering the desire for positive social interactions (Monacis et al., 2021; Shen et al., 2015). Individuals may also compare themselves to their peers, and then decide how to present themselves on social networking sites, as online self-presentation helps individuals gain peer acceptance and validation (Chua & Chang, 2016). Through deliberate design, planning and editing, individuals are able to bring out their best features and hide their imperfections in front of others. Therefore, their self-presentation on social media is focused on pleasing the public and displaying the best self-image (Baumeister & Hutton, 1987). Social networking sites create new exhibition spaces in which individuals have maximum control over the production, selection and display of edited images. Between the presentation of the real self and the ideal self, social networking sites enable the production of a self-image that comes close to the ideal and maintains authenticity at a socially acceptable level (Chua & Chang, 2016).

## Chapter 4

### 4. Social capital, FoMO and online self-presentation in promoting problematic social networking sites use

#### 4.1 Online social capital: Bridging and Bonding ties on social networking sites

In his book *Bowling Alone*, Putnam (2000) defines social capital as a network of relationships with associated norms of reciprocity. Its functioning is similar to that of financial capital insofar as it can generate new capital and value. However, instead of goods and services, the things that are used and created are personal social connections and the benefits derived from them: some social actors interact and form a network of individuals, a “social network”, resulting in positive emotional ties (Williams, 2006). These benefits in turn provide emotional support or the ability to mobilize other people. The notion of social capital implies both the network itself and the effect it produces. Putnam’s (2000) conceptualization distinguishes between “bridging” and “bonding” social capital, which result from the presence of different norms and networks respectively. Those networks are related but not equivalent, neither mutually exclusive. Bridging social capital is inclusive, it occurs when individuals from different backgrounds make connections between social networks. Often these individuals have only provisional relationships, but what they lack in depth they make up for in breadth. Consequently, bridging social capital may broaden social horizons or worldviews, or open opportunities for information or new resources. On the other hand, it provides little emotional support (Putnam, 2000). Differently bonding social capital can be exclusive, and it occurs when strongly bonded individuals, such as family and close friends, provide emotional or substantial support to one another. Individuals with bonding-type social capital have little diversity in their background but have stronger personal ties (Putnam, 2000). In coining “bridging” and “bonding” terms, Putnam touched on the work of sociologist Mark Granovetter (1973) who defined the strength of ties as the product of the amount of time, emotional intensity, intimacy and mutual services. Granovetter and other researchers (1973) also defined two types of ties: strong and weak. Strong ties trust each other and have overlapping social circles, while weak ties are acquaintances who provide access to useful information that is not circulating in the network of strong ties (Gilbert & Karahalios, 2009). Upon studying who found jobs and who did not, Granovetter (1974) noted that the most successful jobseekers were those with diffuse and weaker relationships, which derive from bridging social capital. In fact, since weaker connections tend to be with people who are less similar to the first person, they bring individuals into different life situations and thus to a broader set of information and opportunities.

Nowadays, a new type of “connected presence” (Licoppe, 2004) intertwined with the flow of everyday activities, allows close ties (bonding social capital) to maintain a sense of continuous accessibility. As a result, communication with relatives and close friends is also increasingly mediated. In previous years, some scholars have argued that the opportunity to remain always in contact raises the concern of limiting personal exposure to other new, weak, and diverse ties (Turkle, 2017). As attention to close ties take away from engaging with diverse others, researchers suggested that it also may promote the withdrawing from civil life (Campbell, 2020). However, the most widely accepted thesis claims that online communication is a means of expanding social ties instead of restricting them (Wilken, 2011). Moreover, Wilken (2011) suggested, following in Putnam's footsteps, that “bonding and bridging are not “either/or” categories into which social networks can be neatly divided, but dimensions along which we can compare different forms of social capital”(Wilken, 2011, p. 23). Therefore, users rather than being socially “cocooned” (i.e., locked inside their homes, isolated from perceived danger, instead of going outside) through smartphones (Ito et al., 2005) users of social media are “connecting to the broader fabric of society” (Rainie et al., 2006, p. 13). Schrock (2016) for example, carried out that the asynchronous nature of posting on social networking sites offers opportunities for connecting with new and different others. Additionally, studies have demonstrated the generalizability of the Granovetter’ s tie strength model to social media (Gilbert, 2012), arguing that young users' self-exposure may vary for friends compared to acquaintances or strangers. By building capital-rich networks, social networking sites users may later be able to draw instrumental or social resources from connections. Studies have shown that social networking sites, such as Facebook, can help people develop bridging social capital and obtain resources, particularly information support (Ellison et al., 2007, 2014). In fact, on social networking sites, users can build relationships with other individuals with common interests, overcoming physical obstacles that might otherwise prevent a relationship from developing, such as geographical distance or demographic dissimilarities (Baym & Boyd, 2012). Thanks to the accessibility of social networking sites, users can ask anyone and anywhere for support, also seeking for those providers they do not have in offline situations, such as people who share a similar health or work condition (Rains & Brunner, 2018).

Overall, social networking sites allow relational maintenance (Ellison et al., 2007) and help individuals in greatly increase their number of weak ties (Donath & Boyd, 2004): not only direct relationships with their offline friends, but also with people connected to those relationships (Ellison et al., 2014).



## **4.2 Self-presentation in the context collapse of bonding and bridging ties**

According to Goffman (1959), self-presentation in everyday social situations is a continuous process of impression and performance management. Because of the human need to belong (Przybylski et al., 2013), individuals typically seek to communicate in a way that presents themselves favorably during social interactions (Goffman, 1959). Social networking sites offer users the opportunity to manage aspects of their appearance which are impossible to change offline, and that have sustained the success of these platforms in recent years (Manago et al., 2008). Research regarding self-presentation on Facebook (Manago et al., 2008) suggests that members present themselves by adjusting their profiles, including their descriptions and photos. Indeed, individuals can strategically exploit these platforms to manage their self-presentation as compared to what they might do in face-to-face interactions. Unlike offline settings and other interactive media, self-presentations on social networking sites are not adapted to each conversation, as they are always expressed in the form “one-to-many” (DeAndrea & Walther, 2011). The audience of one's self-presentation on social networking sites usually consists of a wider range of members: dozens, hundreds, thousands, and even millions of people ((Michikyan & Subrahmanyam, 2012; Wängqvist & Frisén, 2016). Therefore, individuals tend to modify their self-presentations for the public, taking into account the information the public network has on the user and adapting their content to the expectations of other members of the social network (Goffman, 1959). For instance, university students use the online services predominantly, but not exclusively, to keep in touch with old friends or communicating with fellow undergraduates (Ellison et al., 2007). As a tool for maintaining existing relationships with one's bonding capital, online profiles are expected to present honest presentation of oneself, consistent with what friends know to be true about oneself through previous offline experiences (Ellison et al., 2007). Since no one wants to appear misleading in their self-presentation, emerging adults strive to look genuine in their content on social networking sites, showing that they do not try too hard to achieve a particular self-image. Posting very frequently, especially on trivial topics, may threaten authentic self-presentation. In a recent study of Danish teenagers, too many posts about entries at a fitness center were perceived as too much effort by the online community. One study participant said: “... for me you can hear the need for attention screaming from all those updates” (Bertel, 2016, p. 169). However, when observers detect inconsistencies between online and offline impressions, they tend to judge friends rather benevolently, more so than acquaintances (DeAndrea & Walther, 2011). DeAndrea and Walther (2011) conducted an experiment in which Facebook users identified and rated inconsistencies in the presentation of themselves, their acquaintances and their friends. Participants rated their

acquaintances' inconsistencies as more intentionally misleading and felt that they indicated more hypocrisy and untrustworthiness than their friends' incoherencies. However, friends were also judged more harshly than participants' own inconsistencies (DeAndrea & Walther, 2011).

Today, social networking sites users have increasingly diverse social networks, consisting of both bonding and bridging ties: close friends, family members, acquaintances and strangers (Hampton, 2011), and these different audiences are in the same space where temporal, spatial, and social boundaries are disrupted (Boyd, 2010). Consequently, effective self-presentation can be challenging because different social spheres have different (and sometimes conflicting) expectations of individual' ideal self, which may lead to undesirable public impressions or relational intentions (Binder et al., 2009; Tokunaga, 2011). When different viewers of a person's profile on Facebook have different impressions and knowledge of the person depicted, there is a strong likelihood that the published content will be viewed equally differently (Boyd, 2010). For example, a photo of an underage individual drinking alcohol may be acceptable to friends, but it would likely be inappropriate for his parents. This phenomenon, known as “the multiple audience problem” (Leary, 1995), is associated with diverse audiences due to the complexity of balancing expectations of multiple social spheres. In social networking sites this might result in the “context collapse”, namely “the flattening out of multiple distinct audiences in one’s social network, such that people from different contexts become part of a singular group of message recipients” (Vitak, 2012, p. 451). The invisible audience makes it impossible to fully assess the social context and background of the real audience, presenting challenges for social networking sites users (Boyd, 2010). As Boyd ((Boyd, 2010) explained, context collapse increases self-presentation concerns for social networking sites users: “In networked publics, contexts often collide such that the performer is unaware of audiences from different contexts, magnifying the awkwardness and making adjustments impossible” (Boyd, 2010, p. 51). Davis and Jurgenson (2014) proposed two different types of context collapse: context collusion and context collision. Context collusion consists of intentionally bringing different audiences together, which can have positive effects on social capital ( Davis & Jurgenson, 2014). Context collision describes situations in which the unintended flattening of one's social network leads to “potentially chaotic results” (Davis & Jurgenson, 2014, p. 481). Since a heterogeneous audience obscures expectations of appropriate behavior, individuals may be more motivated to engage in protective self-presentation to avoid the violation of expectations of certain audience segments (Arkin, 1981).

A common strategy on social networking sites is to only disclose information that is acceptable to all members of one's network, defined as the “lowest common denominator” (Hogan, 2010). By using this strategy, users post in ways that are socially appropriate for even the most socially distant person in their network (Hogan, 2010). Those users choose to reveal specific fragments of personal information that they feel safe to share with everyone, constructing a “public” online identity (to the extent that it is visible to the entire network) (Gil-Lopez et al., 2018). For instance, Twitter users responding to Marwick and Boyd’s (2011) survey reported refraining from topics that could be potentially controversial or too personal for some members of the imagined audience. However, different strategies are possible to compensate for the context collapse. In Marder and colleagues’ (2016) study Facebook users adjusted their disclosures based on the part of the audience imagined as the main target group. Evidence from Litt and Hargittai’s (2016) research reveal that although users often interact with a broad and diverse audience when posting, they tend to imagine as either a very broad abstract audience or a more targeted specific audience consisting of personal, professional, and community ties. In addition, users employ social networking sites’ tools to target posts only to certain members of their network, implementing audience restriction strategies (Litt & Hargittai, 2016). Otherwise, users can recur to self-censorship (Marwick & Boyd, 2011; Vitak et al., 2015), audience-specific message adaptation (Bazarova et al., 2015; Lin et al., 2014), or advanced privacy settings (Vitak, 2012). Furthermore, past research has shown associations between the use of privacy controls and perceived bridging social capital (Ellison et al., 2011; Vitak, 2012), suggesting that technological knowledge, in combination with the understanding and application of self-disclosure norms, were important new social skills of young adults.

Nevertheless, the use of privacy controls to limit the audience for self-presentation can also hinder the maintenance of relationships with weak ties, thus limiting the diffusion of social capital resources (Manago & Melton, 2020). Indeed, those users who are willing to give up privacy concerns in favor of other benefits of public disclosure are more likely to generate bridging social capital. For instance, college students who gravitated to Twitter had the highest bridging social capital, precisely because they were less likely to use privacy settings on this platform (Phua et al., 2017; Shane-Simpson et al., 2018). That is the “privacy paradox”, which refers to the way privacy concerns do not always translate into placing restrictions on social networking sites when users weigh the risks and benefits of self-disclosure (Norberg et al., 2007). Research has also shown that people modify their self-presentations to be more favorable with strangers (who lack basic information) and more modest with friends (who possess background information) (Tice et al.,

1995). This perspective suggests that rather than presenting the whole truth in their online profiles, individuals might strategically exploit social networking sites for impression management, just as they might do in face-to-face interactions. As social networks increase in size and heterogeneity, users may experience more apprehension because managing impressions becomes more difficult as social spheres collide in the same online space (Gil-Lopez et al., 2018). One strategy to mitigate such apprehension is to reduce the frequency with which information is shared on social networking sites: by presenting their identity less regularly, people reduce the risk of sharing an aspect of their identity to an inappropriate part of their network, thus minimizing the possibility of embarrassment. Thus, as network size and heterogeneity increase, people will post less on social networking sites (Gil-Lopez et al., 2018). Although the above explanation has a clear intuitive appeal, empirical results do not always support this thesis. In fact, according to some research, the number of disclosures increases as the size and diversity of the audience becomes greater (Vitak, 2012), whereas other studies revealed mixed results (Wang et al., 2016). Moreover, as networks grow in size and heterogeneity, the number of motives to stay in contact with different groups of people increases, providing new opportunities to posting behaviors, characterized by positive valence and emotions (Gil-Lopez et al., 2018). These findings are consistent with past literature (Vitak, 2012) that challenges the belief that people with larger, fragmented social networks reveal less information than users with smaller, tightly connected networks. In fact, users with larger and more heterogeneous networks show more frequent posting behaviors and more outgoing communication (such as likes and comments to friends' posts and tagged posts), which have a positive influence on access to social capital (Bohn et al., 2014; Gil-Lopez et al., 2018). Additionally, the number of partners with whom users interact is a more reliable indicator for access to social capital than the number of friends (Bohn et al., 2014). With respect to university students, the perceived benefits motivating trade-offs in the direction of personal disclosure concerns self-expression and motivations for social validation (Bazarova & Choi, 2014). A possible explanation is that a large and diverse audience can generate more opportunities for communication and access to information. Moreover, self-presentation to bridging social capital is rewarding, given the greater chance of obtaining feedback from a wider and more diverse audience (Granovetter, 1973). In conclusion, personal disclosure on social networking sites brings new risks but also advantages over basic social capital, as it offers social resources such as connection and investment in broader, heterogeneous networks, which are important to develop during the transition to adulthood (Manago & Melton, 2020).

### **4.3 Missing opportunities to gain social resources: from bridging social capital to problematic social networking sites use**

The accessibility of social networking sites through smartphones allows individuals to manage a large volume of communication with many people during their daily activities. By simply installing the applications of social networking sites on their mobile phones, people can be always on their social networking sites to communicate with their numerous online friends, thus satisfying their need to belong (Przybylski et al., 2013). Social network platforms are used by individuals to collect very large networks of “friends”, often in the order of hundreds and even thousands of people (Dunbar, 2016). This is possibly due to the ease with which people can add new members to their online networks. For instance, a greater social capital accumulated through sharing and liking others’ posts on Facebook was associated to an increase in the number of Facebook friends (Bohn et al., 2014). Past studies suggested that the size of the social network was an important predictor of individuals participation on social networking sites (Ganley & Lampe, 2009) and the intensity of their use (Salehan & Negahban, 2013). For instance, Makki and colleagues (2018) suggested that Snapchat was associated with individuals’ innate desire to be accepted, affiliated, and connected with others, and thus it helps in explaining individuals’ immersive and even excessive use of social networking sites (Alt, 2015; Baker et al., 2016). Moreover, the high percentage of weak ties in one's network and the significant effect of network size on engagement in social networking sites confirms the desirability of using social networking services to connect to a wider audience than individuals have in their everyday lives (Donath & Boyd, 2004). In fact, the high prevalence of extensive online social networks often far exceeds the amount of close social relationships, including tenuous and superficial ties, which are important to an individual insofar as they can be capitalized upon as social resources (Putnam, 2000). Larger networks characterised by less social support and stability may lead to greater susceptibility to anxiety about missed opportunities for social gratifications (Classen et al., 2020). Specifically, social networking sites users with high rate of online bridging social capital may be more likely to see posts, videos or photos while using the site, which make them aware of missed opportunities to strengthen or capitalise on their bridging relationships, thus stimulating feelings of FoMO (Classen et al., 2020). In addition, as aforementioned, FoMO acts as a predictor of problematic social networking sites use (e.g., Blackwell et al., 2017; Casale et al., 2018) and might also predict a greater tendency to self-presentation behaviors (Sultan, 2021; Zhu & Xiong, 2022). Indeed, emerging adults having higher levels of FoMO are more likely to increase self-disclosure activities on social networking sites and to develop problematic social networking sites use (Sultan, 2021). Researchers argued that individuals with high levels of FoMO tend to display themselves on social networking sites to keep

in touch with others (Bayer et al., 2016; Ryan et al., 2014). The high visibility of one's behavior, which can be easily identified by others, can lead users to engage in positive self-presentation (Kimmerle & Cress, 2008), selectively revealing highly socially desirable images of oneself (Zhao et al., 2008). This has considerable relevance for individuals who have reached adulthood and have abstract concepts about themselves, and through their social interactions, including self-presentation activities, help each other consolidate their identity (Nurmi, 2004). However, the orientation of having more online friends, seeking the friendship of people met online and spending more time on screens has been correlated with an increased risk of problematic social networking use (Smahel et al., 2012).

## Chapter 5

### 5. Research questions and overview of the empirical studies

#### 5.1 From literature gaps to research questions

The path outlined in the theoretical part (Chapters 1- 4) started from the psychological conceptualization of Fear of Missing Out. Following the Self-Determination Theory (Deci & Ryan, 1985), Przybylski and colleagues (2013) suggested that FoMO might be promoted by unmet psychological needs in people's personalities. Recent studies have shown that high levels of FoMO have been associated with problematic social networking sites use (Fioravanti et al., 2021 for a review) (Chapter 1). In line with the I-PACE model (Brand et al., 2016), we presented the literature in support of the FoMO hypothesis as a mediating mechanism between personality predisposing variables (neuroticism, self-concept clarity) and problematic social networking sites use, and between context-related vulnerability factors (bridging social capital) and problematic social networking sites use (Chapters 2-3-4 ). Additionally, we reported on the role of FoMO and motivations for social networking sites use (escapism and self-expression) in individuals' selection of the “first choice” social networking site to gratify unmet social needs. According to the I-PACE model, the interaction of those cognitive and affective factors may also contribute in explaining the potential development of specific problematic social networking site use (Brand et al., 2019) (Chapter 2). Subsequently, we broadened the scope of research on interacting factors in the development of problematic social networking sites use to specific behaviors related to the motive of self-expression, i.e., different types of users' self-presentation on social networking sites. Developmental theory was presented to support the relationship between self-concept clarity, FoMO and types of self-presentation on social networking sites in emerging adulthood (Chapter 3). We also discussed the effect of bridging social capital on FoMO and self-presentation behaviors of emerging adults (Chapter 4).

#### 5.1.2 The mediating role of FoMO and usage motives between neuroticism and problematic Instagram use

In Chapter 2 we presented the Interaction of Person Affect-Cognition-Execution (I- PACE) model (Brand et al., 2016), a recent conceptualization which proposed an interaction process for Internet addiction. Specifically, as regard problematic social networking sites use, Wegmann and Brand (2019) proposed the *fear driven/compensation seeking hypothesis*, suggesting that people with social deficits, such as social anxiety and low social competences, can be vulnerable to

problematic social networking sites use. Those individuals could resort to social networking sites to compensate for their social needs. As these predisposing variables may not be directly related to problematic social networking sites use, scholars have suggested that this relationship may be mediated by, among other characteristics, maladaptive cognitions (e.g., FoMO) and different motivations for choosing the social networking site that best meets these needs (the “first choice” social network site) (Wegmann & Brand, 2019). Moreover, motives associated with problematic social networking sites use may relate to both positive expectations (e.g., experiencing pleasure) and avoidance expectations (e.g., escaping reality) (Brand et al., 2014).

While much research over the past decade has focused on the study of these variables, even separately, in relation to the problematic use of Facebook, little is known about Instagram, which seems to be increasingly used and potentially addictive, especially among young users (e.g., Kircaburun et al., 2020). Although neuroticism, among Big Five personality traits (Costa & McCrae, 1992) has been identified as the main predisposing variable for developing problematic social networking sites use and other Internet addictions (e.g., Huang, 2022), few studies have explored the relationship between this personality trait and problematic Instagram use (Balta et al., 2020; Ershad & Aghajani, 2017; Kircaburun & Griffiths, 2018).

Moreover, Kircaburun and Griffiths (2018), who found no direct effect of neuroticism on Instagram addiction in their study, suggested in line with the I-PACE model, that subsequent research explore the mediating role of motivations between personality and Instagram addiction (Kircaburun & Griffiths, 2018). However, to date, studies have investigated motives related to problematic Instagram use (e.g., Kircaburun & Griffiths, 2019; Kircaburun et al., 2020; Nikbin et al., 2022; Sun, 2022), but not in relation to the personality predisposing variables.

Escapism was found to be a relevant motive for problematic Instagram engagement (Kircaburun & Griffiths, 2019), and previous research highlighted that people high in neuroticism, who are emotionally unstable (McCrae & Costa, 1997), may log on social networking sites for mood management (e.g., depression or anxiety symptoms) (Gao et al., 2017; Orchard et al., 2014) or to avoid negative thoughts (Hartmann, 2010).

Expressing a popular self was also a key motivation for problematic Instagram use (Kircaburun et al., 2020). Given that users high in neuroticism show anxiety in their face-to-face relationships, they might prefer online communication (Blackwell et al., 2017) and present themselves in a positive way to gain the social recognition they may lack (Ponnusamy et al., 2020).

Furthermore, individuals high in neuroticism may be concerned about being socially excluded, thus experiencing high levels of FoMO (e.g., Stead & Bibby, 2017). This connection seems confirmed



by a previous research, that has revealed the mediating role of FoMO between neuroticism and Instagram addiction (Balta et al., 2020). Lastly, FoMO seems to influence self-presentation activities on Instagram, that can promote addictive behavior (Salim et al., 2017) as users who feel excluded may want to express themselves on Instagram to gain social recognition. However, to the best of our knowledge, research to date has not yet investigated whether and how neuroticism, FoMO and motivations for use may interact sequentially in promoting problematic Instagram use.

Accordingly, the first empirical study addressed the following research hypothesis:

- (i) to investigate the direct effect of neuroticism on problematic Instagram use;
- (ii) to explore the indirect effects of neuroticism on problematic Instagram use through FoMO and the motivations for escapism and self-expression in Instagram use;
- (iii) to examine the role of escapism and self-expression motives in developing problematic Instagram use;
- (iv) to investigate the role of FoMO in promoting problematic Instagram use.

To test these hypotheses, we carried out an exploratory quantitative and cross-sectional study on a sample of Italian university students, who had an Instagram account. To analyze the data, descriptive statistics and Pearson correlation tests were conducted through SPSS 23.0 software application. Confirmatory factor analyses and path analyses were applied using R 4.2.0 software.

### **5.2.2 The mediating role of FoMO and self-presentation types between individual and social predisposing variables and problematic social networking sites use**

In Chapter 3 we introduced the construct of self-concept clarity (SCC) i.e., the extent to which the contents of the self are clearly defined, consistent and stable over time (Campbell, 1990). In the previous literature, SCC has been associated to Internet-related problematic use (e.g., Israelashvili et al., 2012; Quinones & Kakabadse, 2015). As emerging adults face multiple transitions (e.g., from school to university, from family life to independent or semi-independent life), the exploration of identity alternatives and the reconsideration of their previous commitments may increase, which may lead to a temporary decline in self-concept clarity (Lodi-Smith & Crocetti, 2017). Emerging adults are among the population groups with the highest social presence on social networking sites (Greenwood et al., 2016). As a result of the uncertainty of their self-concept, through their posting activities, besides presenting their real self on social networking sites

(aspects that are authentic), emerging adults can project an ideal self (who one wishes/desires to be) or resort to a false self-presentation (features that are not fully truthful) (Michikyan et al., 2014). In this regard, some of them might show a socially desirable self-presentation oriented to impress other users of the social network sites in social comparison processes (compare/impress self-presentation) (Michikyan, Subrahmanyam, et al., 2014). Indeed, those individuals are more likely to engage in social comparison as they are more sensitive to others' behaviours (Monacis et al., 2021) and tend to fear of missing out on other's rewarding experience (Servidio et al., 2021). However, the manipulation of online self-presentation (e.g., selfies) has been associated to problematic social networking sites use (Monacis et al., 2021).

In light of the previous findings, the second empirical study addressed the following research hypothesis:

- (i) to investigate the direct effect of self-concept clarity on problematic social networking sites use;
- (ii) to explore the indirect effects of self-concept clarity on problematic social networking sites use through FoMO, real, ideal, and impression-oriented self-presentations;
- (iii) to examine the role of FoMO in promoting the problematic social networking sites use;
- (iv) to examine the role of real, ideal, and impression-oriented self-presentations in the development of the problematic social networking sites use.

In Chapter 4, we proposed Putnam's (2000) conceptualisation of social capital, which defined "bridging" ties as connections from different contexts and linked between social networks (as opposed to "bonding" ties, i.e. close, emotional supportive relationships). According to the scholar, individuals are interested in building bridging relationships as they may broaden social horizons and can be capitalised on for social gains (Putnam, 2000).

Nowadays, individuals use social networking sites to connect to a wider audience than they have in their everyday lives (Dunbar, 2016), and social networking sites allow users to gather and collect very large networks of "friends", often in the hundreds and even thousands (Dunbar, 2016). Social capital theory suggests that the various and articulate connections with acquaintances and strangers offer greater opportunities for individuals to experience FoMO. Indeed, watching videos or photos whilst using social networking sites can make them aware of a missed opportunity to strengthen or capitalise on their bridging relationships (Classen et al., 2020). Moreover, because of the different and tenuous relationships one can establish on social networking sites, those platforms

are usually marked by context collapse, or “the flattening out of multiple distinct audiences in one’s social network, such that people from different contexts become part of a singular group of message recipients” (Vitak, 2012, p. 451). Collapsed networks require more careful management of one’s self-presentation. In particular, when imaging their audience, users tend to self-enhance their presentation to strangers (Giacalone & Rosenfeld, 1986), especially when anticipating future interactions with their social media audience (Danheiser & Graziano, 1982). To garner positive reactions and social acceptance from others and to maintain and enhance a positive self-image, emerging adults may present the self in a strategic and socially desirable manner (Baumeister, 1982; Schlenker & Leary, 1982), like recurring to self-censorship (Marwick & Boyd, 2011) or audience-specific message adaptations (Bazarova et al., 2015; Lin et al., 2014).

Finally, in accordance with the Interaction of Person-Affect-Cognition-Execution (I-PACE) model (Brand et al., 2016), we hypothesize that problematic social networking sites use may be promoted by environmental factors (bridging ties) and personality features (self-concept clarity) that may trigger cognitive bias response (FoMO). This, in turn, may lead emerging adults to use social networking sites for ideal or impression-oriented self-presentation activities in order to gratify/compensate their underlying needs. In the long term, this behaviour alters the development of stimulus responsiveness and the desire for social networking sites, which can lead to problematic use of social networking sites (Brand et al., 2019).

In consideration of these contributions, we proposed to add two more research hypothesis to the second study:

- (v) to investigate the direct effect of bridging social capital on problematic social networking sites use;
- (vi) to explore the indirect effects of bridging social capital on problematic social networking sites use through FoMO, real, ideal, and impression-oriented self-presentations.

To test these hypotheses, we carried out an exploratory quantitative, cross-sectional and cross-cultural study on a sample of Italian and Hungarian university students, who were social networking sites users.

To analyze the data, descriptive statistics, ANOVA analysis and Pearson correlation tests were conducted through SPSS 23.0 statistical software package. Confirmatory factor analyses and path analyses were applied using Mplus 7.3 software.

## 5.2 Overview of the empirical studies

The two empirical studies have been conceived as independent research, with their theoretical background, methodology and discussion. Each study focused on different samples of university students gathered through two separate data collections. An overview of the features of the studies is presented in Table 1.

**Table 1.** Characteristics of the Empirical Studies. Approach, Aims, Sample, and Methodologies are described.

Chapter	Approach	Main aims	Sample	Methodology
6	Quantitative (experimental)  Cross-sectional	(i) To investigate the direct effects of neuroticism on problematic Instagram use;  (ii) to explore the indirect effect of neuroticism on problematic Instagram use through FoMO and the motivations for escapism and self-expression in Instagram use;  (iii) to examine the role of escapism and self-expression motives in developing problematic Instagram use;  (iv) to investigate the role of FoMO in promoting problematic Instagram use.	Italian college students who have an Instagram account  (N=362)	Italian online questionnaire (Feedback Server)
7	Quantitative (experimental)  cross-sectional and cross-cultural	(i) To investigate the direct effect of self-concept clarity on problematic social networking sites use;  (ii) to explore the indirect effects of self-concept clarity on problematic social networking sites use through	College students from Italian and Hungarian universities, social network sites users  (N=1.411;	Italian and Hungarian versions of the same online questionnaire  (Qualtrics)

FoMO, real, ideal, and impression-oriented self-presentations;

(N=967 Italians and N=266)<sup>a</sup>

(iii) to examine the role of FoMO in promoting the problematic social networking sites use;

(iv) to examine the role of real, ideal, and impression-oriented self-presentations in the development of the problematic social networking sites use.

(v) to investigate the direct effect of bridging social capital on problematic social networking sites use;

(vi) to explore the indirect effects of bridging social capital on problematic social networking sites use through FoMO, real, ideal, and impression-oriented self-presentations.

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<sup>a</sup> sample size refers to the number of participants included in the path analysis models, since the subsamples are affected by missing values.

**Note.** *FoMO = Fear of Missing Out.*

## Chapter 6

### 6. #Neuroticgrammers: the mediating role of Fear of Missing Out, escapism and self-expression motives between neuroticism and problematic Instagram use.

#### Abstract

Although Instagram is widely used among young people, it has only recently caught researchers' attention. Following the perspective of the I-PACE model, the present study examined the relationship between neuroticism and problematic Instagram use in Italian university students who had an Instagram account. We assumed that the relationship between neuroticism and problematic Instagram use could be explained by direct and indirect paths, passing through Fear of Missing Out (FoMO) and some motives for Instagram use. 362 Instagram users (72.1% female;  $M_{age} = 25.35$ ,  $SD = 4.25$ ) filled out a questionnaire assessing demographics, Instagram use features, the influence of Covid-19 pandemic on motivations to use Instagram, Neuroticism, Instagram Addiction, FoMO, and Motivations for Using Instagram. Results showed that neuroticism affected problematic Instagram use only indirectly through FoMO, escapism and self-expression motives. Additionally, FoMO promoted higher levels of escapism and self-expression motives, increasing participants' risk of problematic Instagram use. This is the first study testing the mediating role of motives for using Instagram between personality predisposing factor and addictive behavior. The findings provide novel insights on the interrelationship of factors promoting Instagram addiction.

Keywords: problematic Instagram use; Neuroticism; FoMO; Motives for using Instagram.

#### Introduction

Social networking sites (SNSs) are a sub-category of social media and have been defined by Hamm and colleagues (2013) as a medium that “enables users to connect by creating personal information profiles, that can be accessed by friends and colleagues, and by sending emails and instant messages between each other” (Hamm et al., 2013, p. 2). During the past decade, SNSs use has evolved rapidly (Carr & Hayes, 2015; Kuss & Griffiths, 2017), becoming an extremely popular online behavior, thanks to the ubiquity and range of opportunities that these platforms offer. Unfortunately, for a minority of users, the widespread diffusion has led to the development of a problematic social network sites use (PSNSU) (Kuss & Griffiths, 2017). PSNSU could be defined as “being overly concerned about social networking sites [or online communication applications], to be driven by a strong motivation to log on or to use social networking sites and to devote so much

time and effort [...] that it impairs other social activities, studies or job, interpersonal relationships and/or psychological health and well-being” (Schou Andreassen & Pallesen, 2014). Even if there is no official diagnosis regarding PSNSU within the DSM-5 (APA, 2013), or widely accepted diagnostic criteria for social networking sites disorders (Spada, 2014), PSNSU, which is a specific type of problematic Internet use (Griffiths et al., 2014), has been conceptualized as a potential behavioral addiction within a biopsychosocial framework, including core addiction components (Griffiths, 1996). These comprise withdrawal (e.g., becoming irritable when not using social media), conflict (e.g., experiencing negative consequences of social media use in real life), tolerance (e.g., the need to spend increasing time on social media), salience (e.g., to spend a lot of time and be totally preoccupied with social media), mood modification (e.g., to forget about problems), and relapse (e.g., unsuccessful attempts to stop using social media) (Griffiths, 1996).

In recent years, Brand and colleagues (2016) proposed an Interaction of Person-Affect-Cognition-Execution (I-PACE) model in an attempt to explain how different variables concur and interact in the process of developing problematic Internet use (Brand et al., 2016). Following the *fear-driven/compensation-seeking hypothesis* (Wegmann & Brand, 2019) individuals with social deficits, such as social anxiety and low social competence, might use social networking sites to satisfy their unmet need for belonging. In particular, according to the researchers’ view, individuals’ addiction to specific social networking sites can be explained through the interaction process between different predisposing features as individuals’ core characteristics (e.g., personality traits and specific use motivations), and cognitive and affective factors influencing addictive behaviors in using those platforms (Elhai et al., 2019; Wegmann & Brand, 2019). Moreover, although SNSs have become increasingly similar, each platform has unique tools, characteristic design, and different motives and gratifications underlying its use (Alhabash & Ma, 2017). Therefore, in recent times, several studies have specifically investigated the predisposing factors of problematic and addictive use of different SNSs, such as Facebook (Biolcati et al., 2018; Satici, 2019), Twitter (Kircaburun, 2016) Snapchat (Meshi et al., 2020; Rozgonjuk et al., 2021) and YouTube (Balakrishnan & Griffiths, 2017) and Instagram (Balta et al., 2020; Kircaburun & Griffiths, 2018). Nonetheless, Facebook has tended to dominate the social networking sites landscape for many years. Nowadays, this situation seems to have shifted, since Instagram, which has particularly drawn the attention of younger generations, has recently surpassed one billion active users (Statista, 2022). In addition, more than 95 million photos and videos are posted on the site every day (McCormick, 2022). Because of its attractiveness, Instagram has been considered one of the social

networking sites with the greatest addictive potential among young people (Alhabash & Ma, 2017; Kircaburun et al., 2020).

### *Neuroticism, motives for using Instagram and problematic Instagram use*

According to the I-PACE model, certain individual's characteristics (including personality, cognitions, and motives for social network sites) make people vulnerable to problematic social networking sites use (Wegmann & Brand, 2019). Following a recent meta-analysis (Huang, 2022), neuroticism is the strongest risk factor among the Big Five personality traits (Costa & McCrae, 1992) for the development of PSNSU. Neuroticism is characterized by the frequent experience of negative emotions and inadequate coping strategies, including abnormal reactions to stress situations and interpersonal problems (Kirkegaard Thomsen, 2006; Suls & Martin, 2005). Therefore, neurotic users may over-involve themselves on platforms as a maladaptive coping strategy with respect to pre-existing problems (Marciano et al., 2020). Few studies have also suggested neuroticism as a predisposing factor for problematic Instagram use (Balta et al., 2020; Ershad & Aghajani, 2017). However, Kircaburun and Griffiths (2018), who found no direct effect of this personality trait on Instagram addiction tendency in their study, suggested, for a better understanding, to examine the mediating role of motivations between personality and Instagram addiction (Kircaburun & Griffiths, 2018). Motives refer to thoughts about the concrete effects that the use of a specific application or site is likely to have in a certain situation (Brand et al., 2016). Moreover, motives related to problematic use can relate to both positive expectations (e.g., experiencing pleasure) and avoidance expectations (e.g., escaping reality) (Brand et al., 2014). Some previous research has focused on exploring the different motivations for Instagram users to become addicted to the social networking site (Kircaburun et al., 2020; Kircaburun & Griffiths, 2019; Nikbin et al., 2022; Sun, 2022). Escapism was found to be a relevant motive for Instagram excessive engagement (Kircaburun & Griffiths, 2019). Yee (2006) defined escapism as “the use of the online environment to avoid thinking about real-life problem” (Yee, 2006, p. 774). Those problems may be psychological, such as depression, anxiety and low self-esteem (Lee, 2017). Specifically, people high in neuroticism may resort to Instagram in order to manage their negative affections (e.g., depression or anxiety symptoms) (Gao et al., 2017; Orchard et al., 2014), or to avoid unpleasant thoughts (Hartmann et al., 2010). With the aim of distracting themselves from their own problems, these users spend a lot of time watching other people's videos and live streams, looking at their photos and interacting with other users by liking or commenting on posts, in some



cases developing a problematic use of Instagram (Kırcaburun & Griffiths, 2019). However, past research has revealed that also expressing a popular self was a key motivation for problematic Instagram use (Kırcaburun et al., 2020). Specifically, some people tend to present themselves in a positive way to gain social validation, that was also associated to problematic behaviors towards the platform (Ponnusamy et al., 2020). The self-expression motive refers to the possibility for Instagram users to present their personality, lifestyle, and tastes in their posting activities ( Lee et al., 2015). In fact, Instagram allows a very immediate opportunity to self-express through pictures, manipulating self-image with a credibility that text can lack (Marwick, 2015). One of the more popular kinds of contents are “selfies” that elucidate user’s individuality, while hashtag (#) functions allow users to tag their posts and stories so that other people can easily find them. Instagram users upload pictures of all sorts of things, even by using filters and music, with the aim of expressing one's personality at its best, sharing lifestyles and tastes ( Lee et al., 2015). Given that users high in neuroticism show anxiety in their relationships, it can be easier for them to communicate through a screen (Blackwell et al., 2017). For example, those who fear a negative evaluation from others might be particularly interested in using Instagram's stories functions, where people can share more mundane, dissolvable content that will disappear in 24 hours (Kocak et al., 2020). Moreover, previous research has shown that neurotic individuals use Facebook to express different aspects of themselves (Seidman, 2013). Indeed, as people with a high level of neuroticism also experience low levels of social support in face-to-face relationships (Hughes et al., 2012; Swickert et al., 2002), these individuals may turn to SNSs to show themselves to others and create relationships (Andreassen et al., 2014). Consequently, through their activities on SNSs, neurotics can achieve social recognition of their self-image (Marshall et al., 2015) and satisfy their need to belong (Butt & Phillips, 2008).

#### *Neuroticism, Fear of Missing Out and problematic Instagram use*

Fear of missing out (FoMO) refers to a strong tendency not to miss information, such as others’ activities and social events that happen in one’s social network site (Przybylski et al., 2013). Individuals with high levels of FoMO are concerned that other people might have fun without them, and thus feel fear of being socially excluded from others in their social experiences. This attitude may lead to problematic Instagram use because of the platforms' ability to offer real-time updates on the status and information of others (Roberts & David, 2016). Thus, FoMO is related to social networking sites engagement, and individuals with higher levels of FoMO are more likely to

present PSNSU (Blackwell et al., 2017; Przybylski et al., 2013). Moreover, researchers have highlighted that FoMO also plays a major role in problematic Instagram use (Sheldon et al., 2021; Sun, 2022).

In agreement with Przybylski and colleagues (2013), some researchers have speculated that FoMO might act as a mediator variable in the relationship between individual differences (e.g., personality traits) and problematic social networking sites use. Indeed, following the Self-Determination Theory (Deci & Ryan, 1985), Przybylski and colleagues (2013) suggested that FoMO might be driven by unmet psychological needs of people's personality, concerning competence, autonomy, and relatedness. A recent metanalysis carried out that FoMO was linked with neuroticism, and PSNSU might arise as a result of an effort to mitigate emotional frustration (Fioravanti et al., 2021). Research highlighted that neurotic individuals have a generally anxious predisposition and tend to worry (Mehroof & Griffiths, 2010). Consequently, vulnerable, insecure, and emotionally unstable individuals may experience more concerns about being socially excluded, thereby causing them to experience high levels of FoMO (Alt & Boniel-Nissim, 2018; Blackwell et al., 2017; Stead & Bibby, 2017). Specifically, Alt and Boniel-Nissim (2018) evidenced that those with high levels of neuroticism were more likely to experience FoMO and, consequently, tended to compulsively use SNSs to fulfil their psychological need for social belonging.

Additionally, FoMO promotes Instagram users' self-presentation behavior, as users who feel excluded from the rewarding experience of their friends may be more likely to seek social recognition (Salim et al., 2017).

Ultimately, according to the framework of the I-PACE model (Brand et al., 2016), FoMO has been conceptualized as a maladaptive cognitive bias that is driven by unsatisfied needs in predisposing variables, and which in turn contributes to the problematic use of the social network site (Wegmann et al., 2017; Wegmann & Brand, 2019; Wolniewicz et al., 2020). Furthermore, the personality features of individuals promote different motivations (Kircaburn et al., 2018), leading users to select specific "first choice" social networking sites (Brand et al., 2016) through which to satisfy (or compensate for) their social needs (Everitt & Robbins, 2016; Piazza & Deroche-Gamonet, 2013).

In light of previous research, following the I-PACE model, the aim of the present study was (i) to investigate the direct effects of neuroticism on problematic Instagram use, which is the personality

trait most strongly associated with problematic Instagram use in the literature; (ii) to explore the indirect effect of neuroticism on problematic Instagram use through FoMO and motives for using Instagram; (iii) to explore the role of the main usage motives in developing problematic Instagram use; (iii) and to investigate the role of FoMO in promoting problematic Instagram use.

## Methods

### *Participants and procedure*

Participants were recruited through an online survey using Feedback Server software, and the questionnaire was promoted via social networking sites groups (e.g., Facebook) among Italian university students. Thus, the study was conducted using a snowball sampling technique. The final sample comprised 362 Instagram users, 261 females (72.1%), aged between 18-39 ( $M = 25.35$ ,  $SD = 4.25$ ). The only inclusion criterion for participation in the study was to have an Instagram account. Data were collected in 2020 during the Covid-19 pandemic restrictions. The Ethics Commission of the university where the authors work approved the research project (No: 0245603). The study was conducted in agreement with the ethical norms laid down by the Italian National Psychological Association, and in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki. All participants were informed about the aim of the research, and they all provided informed consent. No personal identifying information was collected, and no fee was offered.

### *Measures*

The questionnaire comprised (i) basic sociodemographic information (i.e., age, gender, and academic level) (ii) questions about the use of Instagram, and (iii) four psychometric scales. Furthermore, as the data were collected during the Covid-19 pandemic, the respondents were asked whether the pandemic condition had influenced their motivation to use Instagram (see Table S1 in the Supplementary Materials).

*Daily Instagram use.* We asked users “*In your opinion, on average, how much time do you spend on Instagram every day?*” Six possible categorical response options were proposed: “*I don't use it every day*”; “*Less than 30 minutes*”; “*Between 30 minutes and 1 hour*”; “*Between 1 hour and 3 hours*”; “*Between 3 hours and 5 hours*”; “*More than 5 hours*”.

*Instagram Addiction Scale (IAS)*. The IAS was developed by Kircaburun and Griffiths (Kircaburun & Griffiths, 2018) and it is a modified version of the Internet Addiction Test (Young, 1998). The IAS has 15 items and two factors: social effect (eight items, e.g., “*How often do you prefer the excitement of Instagram instead of being with your close friends?*”) and compulsion (seven items, e.g., “*How often do you try to cut down the amount of time you spend on Instagram and fail?*”). The social effect subfactor refers to negative consequences of addictive use of Instagram to individuals’ real life social relations and situations. The compulsion subfactor refers to the increasing need for Instagram use, the frequency of forgetting about time while logged on to Instagram, and the avoidance of real-life troubles using Instagram. The scale comprises a 6-point Likert scale from “*ever*” to “*always*” and scores can range between 15 and 90. The cut-off points of the scale are: non-addiction (15–37), mild addiction (38–58), moderate addiction (59–73), and severe addiction (over 73). According to CFA, robust goodness of fit indices generated good and acceptable values in the present study [ $\chi^2/df = 2.67$ , RMSEA = .07 (90% CI [.06, .08]), SRMR = .07, CFI = .96, GFI = .99]. Cronbach alpha coefficient was  $\alpha = .89$  for the total scale,  $\alpha = .76$  for the social effect subfactor, and  $\alpha = .85$  for the compulsion subfactor.

*Fear of Missing Out Scale, (FoMOs)*. The scale was developed by Przybylski and colleagues (Przybylski et al., 2013), and adapted in Italian by Casale and Fioravanti (2020). The instrument includes 10 items (e.g., “*When I go on vacation, I watch what my friends are doing*”; “*when I do something fun, it is important that I share details online*”). To answer, a five-step Likert scale was used (1 = “*Not true for me*”; 5 = “*Extremely true for me*”). The scale produced an average score of 10 to 50, with higher scores indicating higher levels of FoMO. In the present study, the Cronbach alpha of the scale was  $\alpha = .83$ .

*Motivations for Using Instagram*. The scale was developed by Lee and colleagues (2015c) and comprises 28 items and five dimensions of motives for using Instagram. Respondents were asked how often they access Instagram for different motivations: social interaction (e.g., “*To keep in touch with friends far away*”), archiving (e.g., “*To record daily events through photos*”), self-expression (e.g., “*To be noticed by others*”), escapism (e.g., “*To forget about troubles*”), and peeking (e.g., “*To browse daily lives of celebrities*”). Respondents indicated how much they agree or disagree with each item on a 7-point Likert type scale (1 = “*strongly disagree*”, 7 = “*strongly agree*”). As a result of CFA, robust goodness of fit indices generated acceptable values in our study [ $\chi^2/df = 5.75$ , RMSEA = .12 (90% CI [.11, .12]), SRMR = .08, CFI = .91, GFI = .97]. The Cronbach alpha coefficient for the motives subfactors were respectively:  $\alpha = .86$  for social

interaction,  $\alpha = .88$  for archiving,  $\alpha = .82$  for self-expression,  $\alpha = .76$  for escapism, and  $\alpha = .72$  for peeking motive.

*Big Five Inventory (short version) (BFI-10)*. The BFI-10 assesses personality traits according to the five-factor approach. The scale was developed by Rammstedt and John (2007) and adapted in Italian by Guido and colleagues (2015). For the current study, we administered only the neuroticism subscale (Cronbach's  $\alpha = .70$ ). The personality factor of neuroticism (or if reverse, emotional stability) has two bidirectional items. Response sets are on a five-point scale ranging from 1 “*completely disagree*” to 5 “*strongly agree*”, and scores range are between 2 and 10.

### *Statistical analysis*

To analyze the data, frequency, descriptive statistics, and Pearson correlation tests were conducted through SPSS 23.0 software application. Confirmatory factor analyses and path analyses were applied using R 4.2.0 software (lavaan package v0.6-11). We first examined normality of the data by visualizing histograms and by computing the skewness and kurtosis of the variables. Kim (Chen & Kim, 2013) suggested that data is normally distributed when absolute values of skewness and excess kurtosis are less than 2 and 4, respectively. Then, we used path analysis, or more specifically a sequential mediation model, to examine the mediating role of FoMO and Instagram use motives on the effect of neuroticism on problematic Instagram use. To employ path analysis or structural equation modeling, the sample size should be greater than 200 (Haenlein & Kaplan, 2004; Nasser & Wisenbaker, 2003) which is considered large by Kline’s guidelines (Kline, 2005). The model parameters were estimated by maximum of likelihood and given, for all continuous variables, in the standardized form, while for categorical variables standardization was accomplished only with respect to the dependent variable. The standard errors, 95% confidence intervals and  $p$ -values of the total effects (direct and indirect) of independent and mediator variables on the outcome variable were calculated using 5000 bootstrap samples, in order to accommodate the potential non-normality of the distributions and consider the effect of non-normality of the coefficient products (Montoya, 2022). Moreover, for the path analysis, the criterion of parsimony was used, *i.e.* the smallest number of parameters necessary to answer our main research questions was introduced into the model (Weston et al., 2008). To assess the role of neuroticism on problematic Instagram use removing the effect of known potential confounders, we controlled all the paths with sex, whereas paths having FoMO and Instagram addiction as dependent variables

were adjusted for daily Instagram use, as a categorical variable. Additionally, we used the likelihood-ratio test (Vuong, 1989) to assess the goodness of fit of two competing models: the fit of our final model was compared with that of a model including a variable which tried to assess the Covid-19 influence on motivations of using Instagram on the problematic Instagram use. Finally, in the CFA and path analyses, goodness of fit criteria determined by Hu and Bentler (Hu & Bentler, 1999) were used to designate model fit and the most appropriate estimation algorithm was used, following (Li et al., 2016), i.e. robust unweighted least square for CFA and maximum of likelihood with unbiased covariance matrix.

## **Results**

### *Descriptive Statistics*

The main characteristics of the sample are shown in Table 1. Overall, in our sample 18.2% of the participants were risky Instagram users, but none resulted severely addicted to the social network site. Most of respondents had a private Instagram account, around one-third of the sample spent between 30 minutes and 1 hour a day on the platform, whereas another one-third spent between 1 and 3 hours daily on it. Therefore, around 64% of the respondents spent between 30 minutes and 3 hours daily on Instagram. At the same time 71.8% of participants log on Instagram more times a day. Therefore, on average most of users seems to have many short-term accesses.

**Table 1.** Characteristics of the participants included in the study sample ( $N=362$ ).

		<i>n</i>	(%)
Academic status	High school diploma	126	34.8
	Bachelor's degree	150	41.4
	Master's degree	66	18.2
	Postgraduate or doctorate degree	20	5.5
Instagram account	Private profile	208	57.5
	Public profile	154	42.5
Instagram access	More times a day	260	71.8
	At least once a day	60	16.6
	At least once a week	22	6.1
	Less than once a week	20	5.5
Daily Instagram use	Not everyday	34	9.4
	Less than 30 minutes per day	68	18.8
	Between 30 minutes and 1 hour per	112	30.9
	Between 1 and 3 hours per day	119	32.9
	Between 3 and 5 hours per day	25	6.9
	More than 5 hours per day	4	1.1
Instagram addiction	Severely addicted	0	0
	Moderately addicted	3	0.8
	Mildly addicted	63	17.4
	Non addicted	296	81.8
Instagram users	Total sample	362	100

**Note.** Cut-off points of Instagram addiction: non-addicted (15–37), mild addicted (38–58), moderate addicted (59–73), and severe addicted (> 73).

### *Data analysis*

For an exploratory analysis, mean scores, standard deviations, score ranges, and Pearson correlation coefficients were presented in Table 2. Bivariate correlation coefficients indicated that Instagram addiction was moderately and positively correlated with FoMO, and with all the motives for using Instagram: socializing, archiving, self-expression, escapism, and peeking. Additionally, Instagram addiction was moderately and positively correlated to neuroticism. Fear of missing out was moderately and positively correlated with all the motives for using Instagram and with

neuroticism. As regards motives for using Instagram and neuroticism, all the motivations were weakly and positively correlated with neuroticism. Bigger effect sizes were found between neuroticism and escapism, and secondly between neuroticism and self-expression. For this reason, and in accordance with the literature, only these two motives for using Instagram were included in the path analysis. The skewness and excess kurtosis of all the variables were fully acceptable and univariate normality is verified.

**Table 2.** Score ranges, mean scores, standard deviations, skewness, excess kurtosis, and Pearson correlation coefficients of the study variable.

	1.	2.	3.	4.	5.	6.	7.	8.
1.Instagram	1							
2. FoMO	.60**	1						
3. Socializing	.50**	.51**	1					
4.Archiving	.40**	.34**	.65**	1				
5.Self-Expression	.47**	.44**	.63**	.79**	1			
6. Escapism	.63**	.51**	.55**	.40**	.51**	1		
7. Peeking	.40**	.38**	.57**	.54**	.42**	.51**	1	
8. Neuroticism	.31**	.32**	.17**	.14**	.19**	.31**	.17**	1
Score ranges	15-90	10-50	8-56	6-42	5-35	5-35	4-28	2-10
Mean	28.12	23.82	31.62	20.66	14.29	14.99	17.44	6.42
SD	10.42	8.05	10.67	9.16	7.46	6.68	5.42	1.73
Skewness	.86	.05	-.39	.06	.68	.06	-.23	.15
Excess Kurtosis	.40	-.77	-.47	-.81	-.30	-.37	-.61	-.77

*Note.* \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ; FoMO =Fear of Missing Out.



### *Mediation analysis*

To test the hypothesized model (Figure 1), path analysis was applied. In the model, all variables were observed variables. Our model was overidentified, with 8 remaining degrees of freedom and therefore it is of great value to question if the model is a good fit of the data. Goodness of fit indices of the model (Figure 2) pointed out good or acceptable fit to the data, indicating that the model was acceptable ( $\chi^2/df = 3.2$ , root mean square residuals (RMSEA) = .092 (90% CI [.06, .13]), standardized root means square residuals (SRMR) = .019, Comparative Fit Index (CFI) = .97, Goodness of Fit Index (GFI) = .96). As our sample size was less than 500, we used a cut-off for an acceptable fit for RMSEA of .10, as suggested by (Weston et al., 2008), while all other parameters showed a good fit to the data, regardless of the size effect.

Neuroticism had a significant association with FoMO ( $\beta = .28, p < .001$ ; CI [.37, .18]) and with the escapism motive ( $\beta = .12, p = .01$ ; CI [.21, .02]), but not with the self-expression motive, nor directly with problematic Instagram use. Comparing direct with indirect effects (Table 4), we found that escapism and FoMO fully mediated the effect of neuroticism on Instagram addiction, accounting for 58% of its total effect on the outcome variable. Furthermore, the sequential mediation path from neuroticism through FoMO and the two motivations was significant and accounted for 23% of the total effect. The effect of FoMO on both motives was moderate ( $\beta = .46, p < .001$ ; CI [.37, .55] for escapism and  $\beta = .45, p < .001$ ; CI [.35, .54] for self-expression), and the direct effect of FoMO on Instagram addiction was slightly smaller on average, but significant ( $\beta = .28, p < .001$ ; CI [.19, .37]). Escapism and self-expression were significantly associated with Instagram addiction and the effect of escapism was on average around 50% more than the one of self-expression (respectively  $\beta = .25, p < .001$ ; CI [.14, .36] and  $\beta = .16, p < .01$ ; CI [.06, .25]). Considering the role of the two selected Instagram use motives as sequential mediators between FoMO and Instagram addiction, both were weak partial mediators of the effects of FoMO on Instagram addiction, accounting globally for 41% of the total effect, with escapism having larger mediation role (25% vs 16%). Escapism and self-expression motives showed a positive correlation  $r = .38, p < .001$ .

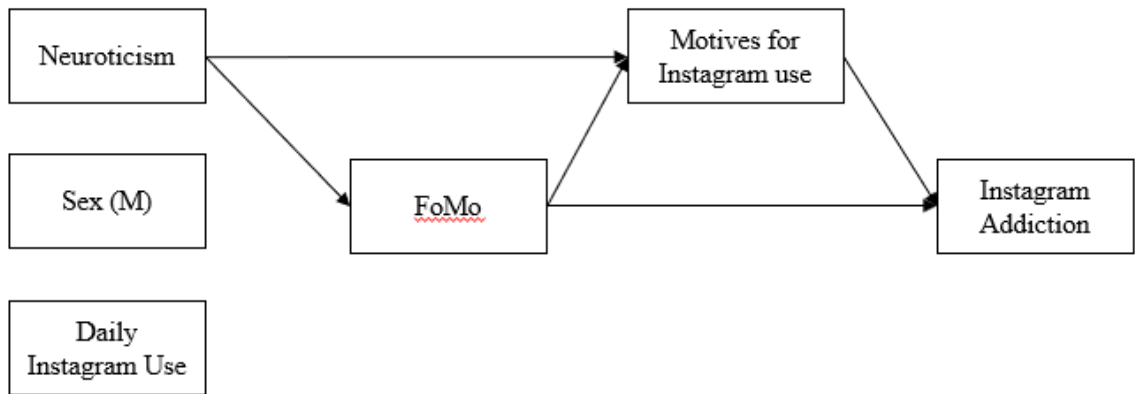
Concerning the control variables, sex (Males vs Females) was only associated with the escapism motive ( $\beta = -0.36, p < .001$ ; CI [-.57, -.16]), implying that, on average, males had a score of escapism motive of 2.15 points less than females. Daily Instagram use was included in the analysis merging the 2 last categories of daily Instagram use, resulting in one category of “*more than 3 hours*”. This was done because only 4 people belongs to the “*More than 5 hours*” category,

resulting in very low power for the corresponding category. The reference category of the variable was the category “*I don’t use it every day*”. The global significance of the association with the dependent variable was assessed by the likelihood ratio test (Vuong, 1989), giving a significant association ( $p < .001$ ) with both, FoMO and Instagram addiction. Looking separately at each category, on average, compared with the reference, participants using Instagram between 30 minutes and 1 hour daily had an IAS score 7.61 points larger ( $p = .003$ ); respondents who use it between 1 and 3 hours had 12.63 points more ( $p < .001$ ); those who spent more than 3 hours daily had 34.4 points more ( $p < .001$ ). Individuals using Instagram less than 30 minutes daily did not have a significantly different score with respect to the reference. Regarding the association between daily time spent on Instagram with FoMO, on average, compared with the reference category, participants using Instagram less than 30 minutes had FoMO score 9.19 points larger ( $p = .01$ ); those who used it between 30 minutes and 1 hour had 14.30 points more ( $p < .001$ ); those who used it between 1 and 3 hours had 17.03 points more ( $p < .001$ ); those who used it more than 3 hours had 20.39 points more ( $p < .001$ ).

Of all the paths in the analysis from personality traits to Instagram addiction, the greatest effect, although weak in absolute terms, was that of neuroticism on Instagram addiction through FoMO ( $\beta = .08$ ,  $SE = .02$ ). The largest partial effect on Instagram addiction was the path from FoMO through escapism ( $\beta = .12$ ,  $SE = .03$ ). The fitted model explained 21% of the variance of FoMO, 31% of escapism, 24% of self-expression and 57% of Instagram addiction (Table 3).

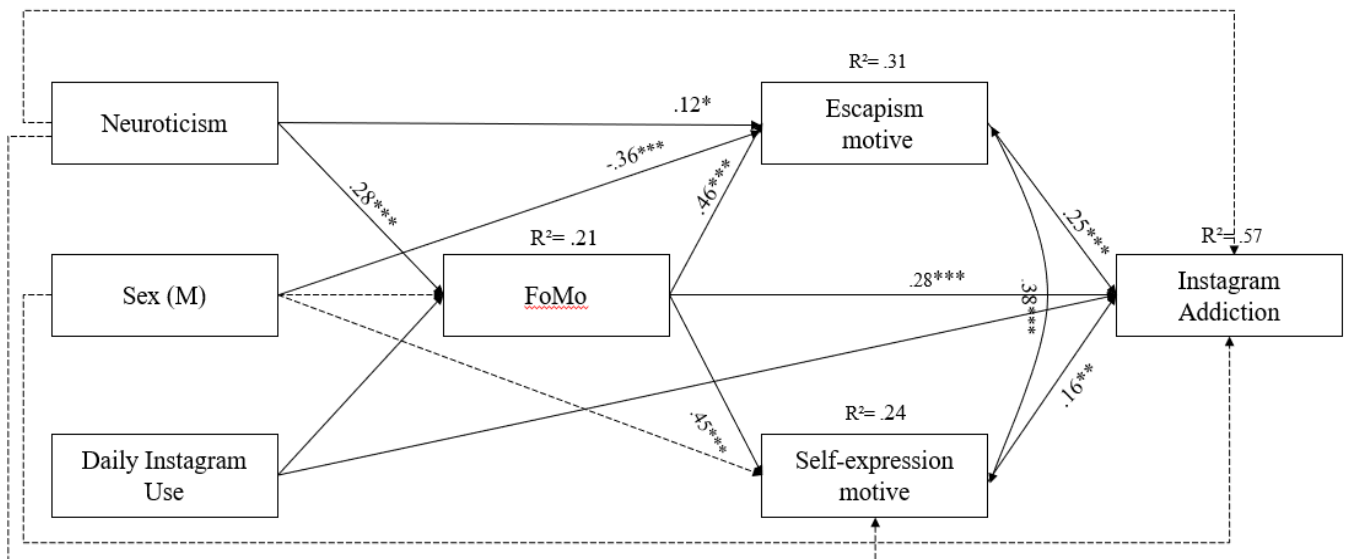
Moreover, since our data were collected during the Covid-19 pandemic (although the impact of Covid-19 on motivations for using Instagram was not the main focus of the study), the final model presented in Figure 2 was compared with a model including a variable which tried to assess the Covid-19 influence on motivations for using Instagram. For this purpose, the influence of the Covid-19 pandemic on motivation to use Instagram was considered in the analysis merging the 2 last categories of the response set, resulting in one category of “*No, it has neither increased nor decreased my motivation to use Instagram*”. This was done because only 12 people belongs to the “*I don’t know*” category, resulting in very low power for the corresponding segment (see Table S1 in the Supplementary Materials). Therefore, the reference category of the overall variable was the category “*No, it has neither increased nor decreased my motivation to use Instagram*”. The addition of this variable as a possible confounder of the problematic Instagram use did not significantly improve the fit of the model (likelihood ratio  $p = 0.23$ ). Therefore, the influence of Covid-19 on motives for using Instagram was not included in the final model.

**Figure 1.** Hypothesized model.



*Note.* Fomo= Fear of Missing Out.

**Figure 2.** Final model of the path coefficients between variables.



*Note.*  $*p < .05$ ;  $**p < .01$ ;  $***p < 0.001$ ; FoMO= Fear of Missing Out.

**Table 3.** Standardized estimates of total, direct and indirect effects from Neuroticism to Instagram addiction and mediating variables (N=362).

	Hypothesis	Effect	SE.	% Explained total effect
<i>Effects from FoMO to IA</i>				
Total effect	Supported	.47***	.04	-
Direct effect	Supported	.28***	.06	60%
Total indirect effect	Supported	.19***	.03	40%
via Escapism	Supported	.12***	.03	25%
via Self-expression	Supported	.07**	.02	15%
<i>Effects from Neuroticism to IA</i>				
Total effect	Supported	.23***	.04	-
Direct effect	Not supported	.07	.04	29%
Total indirect effect	Supported	.16***	.03	71%
via FoMO	Supported	.08***	.02	34%
via Escapism	Supported	.029*	.015	13%
via Self-expression	Not supported	.01	.01	5%
via FoMO and Escapism	Supported	.032**	.009	14%
Via FoMO and Self-expression	Supported	.020**	.007	9%

**Note.** Effect sizes were provided as standardized betas. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ . IA = Instagram Addiction; FoMO= Fear of Missing Out.

## Discussion

In line with the I-PACE model, this study aimed to explore the relationship and the process of interaction between neuroticism, problematic Instagram use, FoMO and motives for using Instagram. To the best of our knowledge, the present research is the first to examine the sequential mediating role of FoMO and motives for using Instagram in promoting problematic Instagram use among users high in neuroticism. Escape and self-expression motivations were selected on the basis of their link to neuroticism and previous literature on problematic Instagram use (Kircaburun et al., 2020; Kircaburun & Griffiths, 2018). Consistently, the statistical selection of variables on

problematic Instagram use, with the appropriate adjustment variables, was tested to obtain the same choice, making it statistically robust.

Contrary to our hypothesis, and despite the moderate positive correlation between neuroticism and problematic Instagram use, in the present study neuroticism had no direct effect on problematic Instagram use, but it had an indirect negative effect on problematic Instagram use passing through escapism. The lack of a significant direct path between the two variables was also found by Kircaburun and Griffiths (2018), who first assessed the problematic Instagram use through the *Instagram Addiction Scale* in a sample of university students. Furthermore, according to the I-PACE model, personality factors as predisposing variables for PSNSU may promote the problematic use of social networking sites even only indirectly (Brand et al., 2016). In our view, a possible explanation is that since neurotic people differ in their core characteristics, such as anxiety predisposition and tendency to worry (Mehroof & Griffiths, 2010), difficulties in their face-to-face interactions, and poorer emotional regulation abilities (Blackwell et al., 2017), they may also have different motivations for engaging in Instagram. Therefore, the lack of a direct effect between neuroticism and problematic Instagram use may suggest that this kind of addictive behavior is not simply generalizable to all people with neurotic traits, but, in line with the I-PACE model (Brand et al., 2016) other factors, i.e., escaping motives, come into play.

In fact, our evidence suggests that users high in neuroticism, who were more inclined to engage on Instagram mainly to escape from their problems, resulted in a more problematic Instagram use. Differently from other individuals with similar personality traits, those users resort to Instagram activities as a compensation strategy (*Fear driven/compensation-seeking hypothesis*; Wegmann & Brand, 2019), to distract themselves from negative thoughts (e.g., neurotic ruminations) (Hartmann et al. 2010), or as a strategy for mood management (Gao et al., 2017).

Additionally, in this study neuroticism resulted positive related to higher levels of FoMO, that in turn promoted higher levels of problematic Instagram use. Moreover, our results showed that FoMO led to both higher levels of escapism and self-expression motives for Instagram use, which in turn promoted higher levels of problematic Instagram use. People high in neuroticism may have a lot of anxiety about personal relationships, and they are supposed to be more vulnerable to experience FoMO and social exclusion (Alt & Boniel-Nissim, 2018; Blackwell et al., 2017; Stead & Bibby, 2017). Therefore, their sensitivity to Instagram notifications and updates might stress their tendency to check the social networking site compulsively and maladaptively. In our view, the fear of missing out plays an important role in fostering motivations with respect to Instagram

engagement. On the one hand, it amplifies the tendency to monitor activities for those who use the social networking site for reasons of escapism from reality and mood management. On the other hand, higher levels of FoMO promote pressure on people to update their content in order not to feel socially excluded and to be seen by others, thus promoting motivation for self-expression. This finding is particularly interesting since motives related to behaviors on Instagram may act as a means of controlling and regulating the fear of missing out and in alleviating negative emotions experienced by neurotic individuals. This evidence supports the mediator role hypothesis of FoMO, according to Przybylski's view (Przybylski et al., 2013). Indeed, FoMO acts as a specific distinct social cognition (Wegmann & Brand, 2019), which can modulate users' expectancies and motivations in using Instagram, with the risk of addictive consequences. Specifically, in line with the *Fear-driven/compensation-seeking hypothesis* (Wegmann & Brand, 2019), the maintenance of this maladaptive use might be promoted by negative reinforcements, such as mood management and reduction of the fear of being socially excluded.

Furthermore, our results showed that self-expression motive was only indirectly related with neuroticism through higher levels of FoMO. Indeed, since neurotic users are anxious and might have some difficulties in social relationships, they are not expected to use Instagram to present their self, but it is possible that they resort to self-expression (e.g., by posting content) just to counter the fear of being excluded from the gaze of their followers (*Fear-driven/compensation-seeking hypothesis*, Wegmann & Brand, 2019). This result appears to be in line with a previous study suggesting the influence of FoMO on users' self-presentation behavior (Salim, 2017). However, self-expression motive as a response to compensate the perceived social exclusion of neurotic promoted by FoMO seems partially in contrast with Wegmann and Brand's (2019) conceptualization. Indeed, scholars tend to consider self-expression as a predisposing motive for the problematic use of social networking sites, particularly for users with high social skills who resort to SNSs to gratify their need for belonging and popularity (see the *Reward-driven hypothesis*, Wegmann and Brand, 2019). Differently, our evidence highlights that self-expression might be a key predisposing motive for Instagram addiction also in people with unmet psychosocial needs, such as neurotics, but only when they also experience high levels of fear of missing out.

Regarding control variables, sex differences did not affect self-expression motive and problematic Instagram use, whereas in line with previous literature, females resorted to escapism motives more than males, to prevent their negative emotions (Chae et al., 2018; Scherr & Wang, 2021). With respect to self-expression motive, the perceived attitude towards online self-presentation might be the same for both sexes, since neurotics are generally socially anxious when

in online social interactions, with similar outcome in addictive use (Caplan, 2005a). With regard to daily time spent on Instagram, the more hours users spend on Instagram, the higher levels of FoMO they experience. This result appears consistent with what is postulated by the I-PACE model: the more time individuals spend on Instagram to gratify (or compensate for) their needs, the more they will tend to reinforce their maladaptive cognitions with respect to the use of social networking sites (i.e., FoMO) (Brand et al., 2016).

Finally, we cannot fail to consider that the Covid-19 pandemic has had a clear impact in terms of the relevance of individuals' psychological needs. Past research has shown that people who were usually very focused on their interpersonal needs, and who had unmet basic needs, have suffered particularly as a result of the Covid-19 pandemic and the resulting conditions of imposed social isolation (Casale and Flett, 2020). Furthermore, during Covid-19 restrictions, FoMO levels may have reinforced attitudes towards online communication which, in turn, may have put some individuals at risk of problematic use of social networking sites (Gioia et al., 2021). For these reasons, our aim was to control the influence of Covid-19 on the motivations for use in the problematic use of Instagram, in order to make the results more general, extendable to non-pandemic periods. Within the limits of the information gathered, we can conclude that the Covid-19 influence was not a confounding factor in the relationship between motivations for Instagram use and problematic Instagram use in the present study. Nevertheless, we still cannot rule out a hidden, unmeasured effect of Covid-19 influence, which remains a limit of this research.

Indeed, the present study is not without limitations. Findings were unrepresentative of people addicted to Instagram, as they were taken from a sample of university students in which less than 20% were slightly addicted to Instagram and 0.8% were moderately addicted to the social networking site. Second, the sample was cross-sectional, and consequently, the results may not indicate causal relationships between variables. For this purpose, longitudinal studies are needed to demonstrate causal relationships between all the variables included in the study. Data were collected using self-report questionnaires; therefore, several biases may be affecting the results, such as social desirability. Future research could use qualitative or mixed methods to collect more triangulated data for more reliable in-depth results. Moreover, the forthcoming studies might consider the interaction between motives for using Instagram and the use of different Instagram features (i.e., watching and posting live streams and videos, liking, and commenting others' posts) in promoting problematic Instagram use. Finally, future studies should also consider the role of other predisposing factors according to the I-PACE model, such as psychopathological

characteristics (e.g., anxiety and depressive symptoms) in explaining the development process of problematic Instagram use.

Despite its limitations, the present research has also several merits. The study is the first to investigate how the interaction of Fear of Missing Out and motives for using Instagram affect individuals' problematic Instagram use scores of people high in neuroticism. Finally, in line with the *fear driven/compensation seeking hypothesis*, our evidence pointed out that self-expression motive might also promote problematic Instagram use in people with unmet social needs like neurotics, when content uploading activity is promoted by the desire to reduce the feeling of being excluded by other members (negative reinforcement process).

### **Conclusion**

Evidence contributes to explaining the mechanisms of the I-PACE model related to the problematic Instagram use. In our study, neuroticism, a strong predisposing variable for problematic social networking sites use, was not directly associated with the problematic Instagram use. However, people high in neuroticism might develop a problematic Instagram use when they use the social networking site to escape from reality. Moreover, those individuals may also present higher levels of Fear of Missing Out, a maladaptive social cognition (Przybylski et al., 2013; Wegmann et al., 2017), which in turn can foster users escapism and self-expression motives to use Instagram, thus favoring a greater risk of problematic Instagram use. In fact, a possible explanation is that individuals with a high neurotic personality trait may be more prone to experience FoMO, and this could encourage their use of Instagram as a means to distract themselves from negative thoughts (escapism motive), as well as to counter the fear of being excluded from the gaze of their followers (self-expression motive), ultimately putting them at a higher risk of developing Instagram addiction. Findings have important clinical implications in prevention and treating of people high in neuroticism at risk for problematic Instagram use. In terms of a possible intervention, this is good news, as working on users' motivations and cognitions, such as FoMO, might be easier than working on personality factors predisposing to addictive behavior (Brand et al., 2014).



## Supplementary Materials

**Table S1**

**TS1.** Categorical responses regarding the influence of the Covid-19 pandemic on motivation to use Instagram and related frequencies (N=362).

Do you think the Covid-19 pandemic has affected your motivation to use Instagram?	<i>n</i>	(%)
Yes, it has increased my motivation to use Instagram	171	47.2
Yes, it has decreased my motivation to use Instagram	23	6.4
No, it has neither increased nor decreased my motivation to use Instagram	156	43.1
I don't know	12	3.3

## Chapter 7

### **7. How do clarity of self-concept and bridging ties influence the problematic use of social networking sites? Fear of missing out, idealised and impression-oriented self-presentations as mediators.**

#### **Abstract**

The present study examined the sequential mediating role of fear of missing out (FoMO) and real, ideal and impression oriented self-presentations between self-concept clarity (SCC) and problematic social networking sites use (PSNSU) and between bridging social capital and PSNSU. A total sample of 1.411 Italian and Hungarian university students ( $M_{age} = 23.98$ ; 71.3% females) completed an online questionnaire including the Self-Concept Clarity Scale, the Internet Social Capital Scales, the Fear of Missing Out Scale, the modified version of Self-Presentation on Facebook Questionnaire, and the Bergen Social Networking Addiction Scale. Findings revealed that SCC was negatively associated with PSNSU and this relationship was partially and sequentially mediated by FoMO and impression oriented self-presentation; whereas bridging social capital was positively related to PSNSU and partially and sequentially mediated by FoMO and ideal self-presentation and by FoMO and impression-oriented self-presentation. In conclusion, both internal (self-concept) and external (social) factors may predispose emerging adults to the development of PSNSU, while FoMO and ideal and/or impression-oriented self-presentations may interact sequentially in fostering these connections. Clinical implications and limitations are discussed.

**Keywords:** Problematic social networking sites use; Self-concept clarity; Bridging social capital; FoMO; Online self-presentation.

#### **Introduction**

Emerging adults are among the population groups with the highest social presence on social networking sites (SNSs)(Greenwood et al., 2016). Studies have suggested that social networking sites provide important developmental contexts for identity research, enabling young people to engage in multifaceted self-presentation activities (Manago et al., 2008a; Michikyan, Subrahmanyam, et al., 2015). Indeed, social networking sites offer users unlimited opportunities to perform and test their self-conceptions in front of different audiences (Hollenbaugh, 2021). Specifically, individuals with lower self-concept clarity are more likely to present parts of their

ideal selves online, which reflect more positive self-presentations (Higgins, 1987). Further, those people may also feel socially anxious during emerging adulthood transition (Ritchie et al., 2013), and thus are more prone to establish online social comparisons with other people (Carter & Vartanian, 2022). As a result of their feeling of inadequacy (Campbell et al., 1996), those individuals may experience others having more rewarding experiences than oneself, i.e., FoMO (He et al., 2020; Przybylski et al., 2013; Schmuck et al., 2019). Overall, given that users with high levels of FoMO are usually considerably concerned with their interpersonal network (Jang et al., 2018), emerging adults who are more confused about their self-conceptions may present themselves in a less authentic way to minimize negative evaluations by others, avoid social rejection and maintain and increase social acceptance (Fernandez et al., 2012; Kamalou et al., 2019). Since social networking sites allow users to control and edit their own presentations, in some circumstances this opportunity can lead to problematic engagement with platforms (Griffiths, 2005). Specifically, a minority of users may involve in a problematic social network sites use (PSNSU), defined as the maladaptive and excessive use of social network sites, resulting in symptoms associated with chemical and other behavioral addiction such as tolerance, salience, mood modification, withdrawal, conflict, and relapse (Griffiths, 2005). According to the Interaction of Person-Affect-Cognition-Execution (I-PACE) model (Brand et al., 2016), situational factors (bridging ties) or personality characteristics (clarity of self-concept) may trigger a cognitive bias response (FoMO), causing individuals to use social networking sites for ideal or impression-oriented self-presentation activities in order to gratify/compensate for underlying needs. In the long term, this alters the development of stimulus responsiveness and social networking sites desire, which can lead to problematic use of social networking sites (Brand et al., 2019).

*Self-concept clarity and bridging social capital as predisposing variables for problematic social networking sites use*

Self-concept clarity (SCC), i.e., the extent to which self-concept content is clearly defined, consistent and stable over time (Campbell, 1990), is unlikely to be fully achieved by emerging adults (Lodi-Smith & Crocetti, 2017), and is an indicator of the maturation of identity content at the level of personality traits (Lodi-Smith et al., 2017). Self-concept clarity has been associated with problematic Internet use (Israelashvili et al., 2012; Quinones & Kakabadse, 2015), problematic online gaming (Šporčić & Glavak-Tkalić, 2018) and smartphone addiction (Kong et al., 2022; Servidio et al., 2021). Although studies on the relationship between self-concept clarity and

problematic social networking sites use are still lacking, previous findings suggested that this personality feature should be considered, according to the I-PACE model, as a predisposing variable for problematic Internet-related uses (Servidio et al., 2021).

Moreover, one important way that emerging adults engage in self-exploration is through peer interactions (Manago et al., 2008). Individuals use social networking sites to connect to a wider audience than they have in their everyday lives (Donath & Boyd, 2004), and platforms such as Facebook allow users to gather very large networks of “friends”, often in the hundreds and even thousands (Dunbar, 2016). Past studies have shown that social network size is an influential predictor of individuals' participation in social networking sites activities (Ganley & Lampe, 2009) and intensity of platform use (Salehan & Negahban, 2013). Putnam (2000) defined “bridging” ties, the connections from different contexts linked by social networks, as opposed to “bonding” ties, i.e., close relationships providing emotional support. Individuals may be interested in building bridging relationships as they broaden social horizons and can be exploited for social benefits (Putnam, 2000). By building capital-rich networks, young people can obtain resources, particularly information support (Ellison et al., 2007, 2014). Social capital theory suggests that online social support influences problematic social networking sites use (Yang et al., 2016), and the network size of social networking site can mediate people's need to belong to the problematic use of the platform (Rashid et al., 2019).

#### *The mediating role of Fear of Missing Out, ideal and impression-oriented self-presentations*

Emerging adults with a coherent and articulate self-concept can openly express their thoughts and emotions, without worrying about adapting their self-representation to social situations (Kumru & Thompson, 2003). On the contrary, young people with an unclear self-concept are more attentive and vulnerable to external social information and may be concerned to be “left behind” in social contexts (Servidio, Sinatra, et al., 2021). As a result, they are more likely to establish social comparison with other users (Butzer & Kuiper, 2006; Campbell et al., 1996; Miao et al., 2018; Servidio et al., 2021) and experience feelings of envy (Smith & Kim, 2007), which is a central component of Fear of Missing Out (FoMO) on social networking sites (Reagle, 2015). FoMO is a psychological state experienced by 69% of Millennials (7 out of 10) (ATD, 2022), involving a comparison of one's own situation with what others are doing and experiencing,

resulting in a feeling that others are doing better or have more rewarding experiences (Reer et al., 2019).

Research suggested that social comparisons may elicit users' self-enhanced presentation (Lockwood, 2002), and the higher an individual's FoMO, the more immersed the person will be in self-presentation activities (Alt, 2015; Baker et al., 2016). For instance, individuals may wish to impress the audience if they feel envious of other people who appear better in their profiles on social networking sites (van de Ven, 2017). Indeed, due to the uncertainty of their self-concept, young people besides presenting their real self (aspects that are authentic), they can project an ideal self (who they want to be) or may resort to false self-presentation (characteristics that are not entirely true) on social networking sites (e.g., Facebook) (Michikyan, Subrahmanyam, et al., 2014). Self-presentation involves "attempting to control images of self to others" (Schlenker, 1985, p. 67) and is used by actors to try to influence audiences' perceptions of one's identity (Goffman, 1959). At a time of transition when the inconsistency of the self-concept increases (Rosenberg, 1979), the attempts of some emerging adults to develop a more positive self-concept may result in the presentation of the ideal self (Meeus, 2011). Some others may tend to have a high level of self-monitoring in their representations, as they may be concerned about the impression they make on other members on social networking sites (Kumru & Thompson, 2003b). Consequently, they may display a socially desirable self-image, oriented towards impressing other users in social comparison processes (compare/impress self-presentation) (Michikyan, Subrahmanyam, et al., 2014). However, the manipulation of online self-presentation (e.g., selfies) has been associated with the problematic use of social networking sites (Monacis et al., 2021). Moreover, compared to offline situations, self-presentation on social networking sites can rely on a larger and more heterogeneous audience, including close friends, but also free affiliations and casual acquaintances. Bridging social capital offers greater opportunities for individuals to experience FoMO, as watching videos or photos whilst using social networking sites, can make them aware of a missed opportunity to strengthen or capitalise on their bridging relationships (Classen et al., 2020). With the aim to be socially appropriate even for the most distant person in their collapsed networks (Hogan, 2010), users require more careful management of their self-presentation, like recur to self-censorship (Marwick & boyd, 2011) or audience-specific message adaptations (Bazarova et al., 2015; Lin et al., 2014). Consequently, individuals may tend to particularly enhance their presentation to strangers (Giacalone & Rosenfeld, 1986), especially when anticipating future interactions with the audience of their social networking site (Danheiser & Graziano, 1982).

In light of previous empirical findings, the current study aimed to explore the relationship and the process of interaction between self-concept clarity, bridging social capital, FoMO, real, ideal, and impression-oriented self-presentation and problematic social networking sites use, in two different subsamples of Italian and Hungarian university students. Specifically, we hypothesized that both low levels of self-concept clarity and high levels of bridging social capital would promote problematic social networking sites use. We also assumed that such relationships would be sequentially strengthened by higher levels of FoMO, and ideal and/or impression-oriented self-presentation.

## Methods

### *Participants and procedure*

In 2022 a total of 1.411 university students,  $M_{\text{age}} = 23.98$ ;  $SD = 4.60$ , 71.3% females, filled out an online survey provided both in Italian and Hungarian language, using Qualtrics software. The questionnaire was completed by emerging adults attending universities in Italy and Hungary. The only inclusion criterion for participation was to use social networking sites. All participants were informed about the aim of the study, and they all provided informed consent. No personal identifying information was collected, and no fee was offered. The research project was approved by the Ethics Committee of the University of Bologna (No. 0069841), and by the Institutional Review Board of the Eötvös Loránd University in Budapest (No. 2022/131).

### *Measures*

The questionnaire comprised (i) basic sociodemographic questions (ii) questions on the use of social networking sites and (iii) five psychometric scales: Self-Concept Clarity Scale, Internet Social Capital Scales, Fear of Missing Out scale, and Self-Presentation on Facebook Questionnaire, Bergen Social Networking Addiction Scale.

*Self-Concept Clarity Scale (SCCS)*. The 12-item version of the SCCS (Campbell et al., 1996) was used to assess the extent to which self-beliefs are clearly and confidently defined, internally consistent, and stable. The scale comprises two non-reversed items (e.g., “In general, I have a clear sense of who I am and what I am”) and 10 reversed items (e.g., “On one day I might have one opinion of myself and on another day, I might have a different opinion”) rated on a five-

point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). However, in the present research item 6 (“I seldom experience conflict between the different aspects of my personality”) was removed as there was no clear indication of the SCC. Higher scores indicate greater SCC. Cronbach’s alpha of SCC in the present study was  $\alpha = .89$ .

*Online Bridging Social Capital.* The Online Bridging Social Capital is a subscale of the Internet Social Capital Scale (ISCS) (Williams, 2006). The ISCS assesses levels of bridging and bonding social capital both on and off the Internet (40 item). The 20-item subscale about online social capital consisted of two 10 item dimensions which assess a participant’s perceived bridging social capital (e.g., “Interacting with people online makes me want to try new things”) and bonding social capital (e.g., “When I feel lonely, there are several friends online I can talk to”) respectively. In the present study, only the bridging subscale of the online version was included. Participants responded using a 5-point Likert-type scale ranging from 1 (*Not at all true of me*) to 5 (*Extremely true of me*). Scores were then averaged to create an overall bridging score for each participant. Possible scores ranged from 1 to 5, with higher scores indicating a higher degree of online bridging capital. As a result of CFA, robust goodness of fit indices generated good and acceptable values in our study [ $\chi^2/df = 7.08$ , RMSEA = .07 (90% CI [.065, .072]), SRMR = .06, CFI = 0.91, TLI = 0.90]. In the present study bridging subfactor Cronbach’s alpha was  $\alpha = .90$ .

*Fear of Missing Out Scale (FoMOS).* The 10-item version of the FoMOS (Przybylski et al., 2013) was used to assess disposition towards fear of missing out. The scale comprises 10 items (e.g., “I fear others have more rewarding experiences than me”) rated on a five-point Likert-type from 1 (*not at all true of me*) to 5 (*extremely true of me*). Higher scores indicate higher levels of FoMO. Cronbach’s alpha in the present study was  $\alpha = .82$ .

*Self-presentation Facebook Questionnaire (SPFBQ).* The scale was originally developed by Michikyan, Dennis, and Subrahmanyam (Michikyan, Dennis, et al., 2015) to detect self-presentation on Facebook. Authors distinguished five types of self-presentation on Facebook: real, ideal, deception (false), compare/impress (false), and exploration (false) self-presentation. In the present study, to detect self-presentation on social networks in general, the term “Facebook” was changed to “social networking sites”. The 17-item scale was used to capture the different types of online self-presentation on a 5-point Likert-type scale, from 1 (*strongly disagree*) to 5 (*strongly*

*agree*). In this research we focused only on three types of self-presentation: real (5 item) (e.g., “I like myself and I am proud of what I stand for, and I show it on my social networks sites profile”), ideal (2 item) (“I post things on my social network sites to show aspects of who I want to be”), and compare/impress self-presentation (3 item), (e.g., “I try to impress others with the photos I post of myself on my social network site profile”). The raw scores were obtained, and the mean for the specific type of online self-presentation was computed. The SPFBQ has shown good reliability. As a result of CFA, robust goodness of fit indices generated good and acceptable values in our study [ $\chi^2/df = 10.82$ , RMSEA = .08 (90% CI [.074, .083]), SRMR = .014, CFI = .97, TLI = .96]. The Cronbach’s alpha of the total scale was  $\alpha = .82$ , for the real self-presentation factor  $\alpha = .75$ , for the ideal self-presentation factor  $\alpha = .69$ , for the compare/impress self-presentation was  $\alpha = .67$ .

*Bergen Social Networking Addiction Scale (BSNAS)*. The scale is an adaptation of the Bergen Facebook Addiction Scale (BFAS) (Andreassen et al., 2012), and contains six items reflecting core addiction elements (i.e., salience, conflict, mood modification, withdrawal, tolerance, and relapse) (Griffiths, 2005). Each question is answered on a 5-point Likert-type scale ranging from 1 (*very rarely*) to 5 (*very often*), thus yielding a composite score from 6 to 30, concerning experiences during the past year (e.g., “How often during the last year have you tried to cut down on the use of social media without success?”). A one-factor solution has been found for the BFAS (Andreassen et al., 2012)). The BFAS has been translated into several languages and has shown acceptable psychometric properties across studies (e.g., Wang et al., 2015). In the present study BSNAS Cronbach’s alpha was  $\alpha = .78$ .

### *Statistical analysis*

All the analysis were conducted separately on the two subsamples of Italian and Hungarian university students, since each group filled out the questionnaire in its own mother tongue. To analyze the data, descriptive statistics, ANOVA analysis (to check whether the time spent daily on the most used social networking site and the problematic social networking sites use levels may change depending on the number of contacts/friends/followers on the social networking site), and Pearson correlation tests were conducted through SPSS 23.0 statistical software package. Confirmatory factor analyses and path analyses were applied using Mplus 7.3 software. We first examined normality of the data by visualizing histograms and by computing skewness and kurtosis of variables. Kim (2013) suggested that data is normally distributed when absolute values of



skewness and kurtosis are less than |2| and |4|, respectively. As regards CFA, goodness of fit criteria determined by Hu and Bentler (1999) were used to designate model fit and estimated with MLR method. Since they were all continuous observed variables, we performed path analysis, or more specifically a sequential mediation model to test the direct and the indirect effects, via FoMO and different types of online self-presentation, between self-concept clarity and problematic social networking sites use and bridging social capital and problematic social networking sites use respectively. The model parameters were calculated using the MLR estimator and given in the standardized form. Moreover, for the path analysis, the criterion of parsimony was used, *i.e.* the smallest number of parameters necessary to answer our main research questions was introduced into the model (Weston et al., 2008).

## **Results**

### *Descriptive Statistics*

The main characteristics of the total sample and the two Italian and Hungarian subsamples were shown in Table 1. Bivariate correlations coefficients between variables were shown in Table 2.

**Table 1.** Demographics and social networking sites-related information.

Demographics	Total sample (N=658-1411) <sup>a</sup>	Italian subsample (N= 510-1113) <sup>a</sup>	Hungarian subsample (N= 148-298) <sup>a</sup>
Gender, women	1006 (71.3%)	790 (71%)	216 (72.5%)
Age, years; mean ( <i>SD</i> )	23.98 (4.60)	24.47 (4.9)	22.09 (2.66)
Time spent daily on social network sites			
I don't use social network sites every day	23 (1.7%)	19 (1.8%)	4 (1.4%)
Less than 1 hour a day	117 (8.6%)	99 (9.3%)	18 (6.1%)
1:00 – 1:59 hours a day	394 (29%)	323 (30.3%)	71 (24.2%)
2:00 – 2:59 hours a day	399 (29.4%)	311 (29.2%)	88 (30%)
3:00 – 3:59 hours a day	238 (17.5%)	187 (17.5%)	51 (17.4%)
4:00 – 4:59 hours a day	109 (8%)	75 (7%)	34 (11.6%)
5:00 – 5:59 hours a day	45 (3.3%)	31 (2.9%)	14 (4.8%)
More than 6 hours daily	34 (2.5%)	21 (2%)	13 (4.4%)
Used social network sites <sup>b</sup> (more than one answer was possible)			
Facebook	869 (61.6%)	595 (53.5%)	274 (91.9%)
Instagram	1227 (87%)	977 (87.8%)	250 (83.9%)
Twitter	235 (16.7%)	185 (16.6%)	50 (16.8%)
LinkedIn	168 (11.9%)	139 (12.5%)	29 (9.7%)
YouTube	1052 (74.6%)	785 (70.5%)	267 (89.6%)
TikTok	466 (33%)	333 (29.9%)	133 (44.6%)
Snapchat	147 (10.4%)	43 (3.9%)	104 (34.9%)
Pinterest	370 (26.2%)	229 (20.6%)	141 (47.3%)
Tumblr	61 (4.3%)	35 (3.1%)	26 (8.7%)
Other	71 (5%)	48 (4.3%)	23 (7.7%)
Most used Social Network Site <sup>b</sup> (only one answer was possible)			
Facebook	159 (11.8%)	95 (9%)	64 (22.3%)
Instagram	827 (61.6%)	715 (67.7%)	112 (39%)
Twitter	23 (1.7%)	21 (2%)	2 (.7%)
LinkedIn	-	-	-

YouTube	176 (13.1%)	122 (11.6%)	54 (18.8%)
TikTok	126 (9.4%)	86 (8.1%)	40 (13.9%)
Snapchat	3 (.2%)	1 (.1%)	2 (.7%)
Pinterest	7 (.5%)	3 (.3%)	4 (1.4%)
Tumblr	3 (.2%)	1 (.1%)	2 (.7%)
Other	19 (1.4%)	12 (1.1%)	7 (2.4%)
<b>Time spent daily on the most used SNS according to respondents' perception<sup>c</sup></b>			
I don't use Social Network Sites every day	25 (1.9%)	21 (2%)	4 (1.4%)
Less than 1 hour a day	266 (19.8%)	211 (20%)	55 (19.2%)
1:00 – 1:59 hours a day	633 (47.2%)	496 (47%)	137 (47.7%)
2:00 – 2:59 hours a day	270 (20.1%)	216 (20.5%)	54 (18.8%)
3:00 – 3:59 hours a day	85 (6.3%)	64 (6.1%)	21 (7.3%)
4:00 – 4:59 hours a day	37 (2.8%)	30 (2.8%)	7 (2.4%)
5:00 – 5:59 hours a day	10 (.7%)	8 (.8%)	2 (.7%)
More than 6 hours daily	16 (1.2%)	9 (.9%)	7 (2.4%)
<b>Number of contacts/ friends/ followers on the most used SNS</b>			
Less than 100	223 (16.6%)	148 (14%)	75 (26.1%)
Between 100 and 500	577 (43%)	447(42.3%)	130 (45.3%)
Between 500 and 1000	353 (26.3%)	297 (28.1%)	56 (19.5%)
Between 1000 and 2000	155 (11.5%)	135 (12.8%)	20 (7%)
More than 2000	35 (2.6%)	29 (2.7%)	6 (2.1%)

<sup>a</sup> Sample size for the analyses varied due to missing values. <sup>b</sup>Excluding messaging apps (e.g., WhatsApp). <sup>c</sup>The time spent daily on the most used SNS according to the perception of the respondents was also recorded through the data of the users' smartphone well-being app and the two measures were highly correlated (Spearman's Rho= .60\*\*).

**Note.** Gender refers to roles, behaviours and identities of women, men and people of different genders, which occur in a historical and cultural context; SNS= *Social Networking Site*; SNSs= *Social Networking Sites*.

**Table 2.** Pearson correlation coefficients between variables in the Italian subsample ( $N=893-965$ ) and the Hungarian subsample ( $N=242-264$ ). Score ranges, Means, Standard Deviations, Skewness and Kurtosis of the measures are also presented.

	1.	2.	3.	4.	5.	6.	7.
1.PSNSU	1	.18*	-.41**	.42**	-.06	.23**	.46**
2.Bridging social capital	.35**	1	-.06	.23**	.19**	.31**	.13*
3.Self-concept clarity	-.42**	-.21**	1	-.44**	.25**	-.17**	-.33**
4.FoMO	.49**	.38**	-.41**	1	-.05	.26**	.53**
5.Real self-presentation	.05	.29**	.12**	.07*	1	.23**	.00
6.Ideal self-presentation	.37**	.30**	-.30**	.36**	.30**	1	.38**
7.Comp./Imp. self-presentation	.43**	.32**	-.35**	.41**	.14**	.60**	1
Score ranges	6-30	1-5	11-55	10-48	1-5	1-5	1-5
Mean	14.34	2.79	34.43	23.20	3.50	3.04	2.80
SD	4.84	0.86	9.15	7.04	0.72	1.00	0.90
Skewness	0.23	0.003	0.22	0.49	-0.55	-0.45	-0.21
Kurtosis	-0.46	-0.61	-0.37	-0.05	0.979	-0.42	-0.63

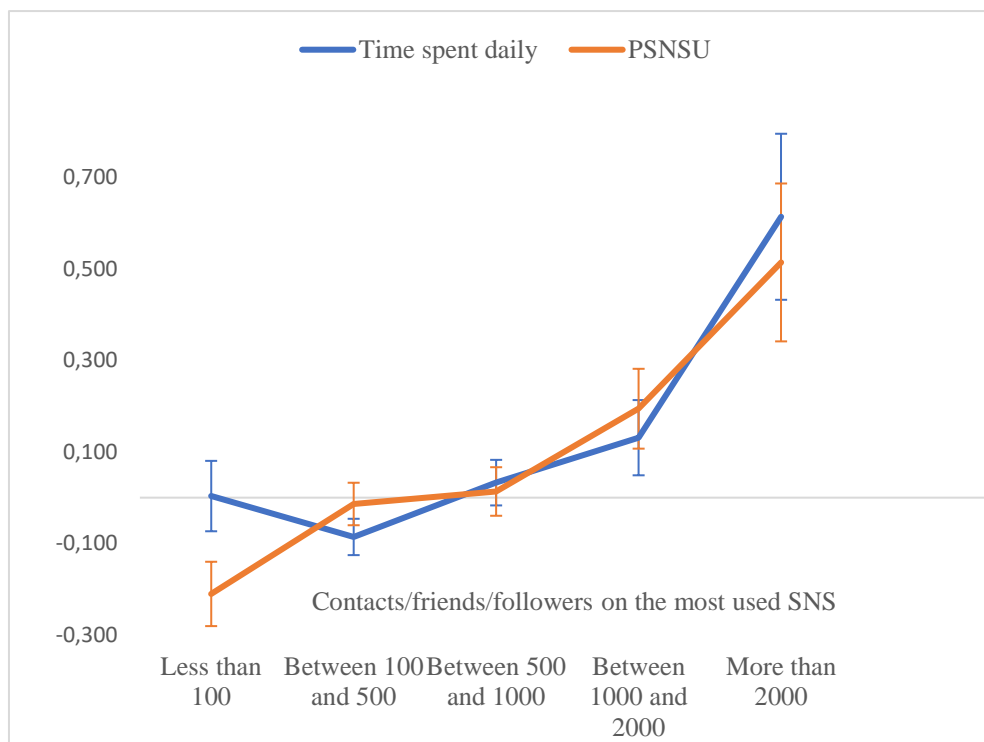
*Note.* \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ; PSNSU = *Problematic social network sites use*; FoMO = *Fear of Missing Out*; Comp./Imp. self-presentation = *Compare/Impress self-presentation*; Values under the diagonal indicate coefficients belonging to the Italian subsample, values above the diagonal indicate coefficients belonging to the Hungarian subsample.

### Data analysis

A one-way between subjects ANOVA was conducted to compare the effect of different numbers of contacts/friends/followers that users had on their most used social networking site on the time spent daily on the platform, and on problematic social networking sites use respectively. There was a significant effect of numbers of contacts/friends/followers on time spent daily [ $F(4, 1337) = 5.17, p < .001$ ]. Post hoc comparison using Bonferroni test indicated that users who had more than 2000 contacts ( $M=3.89 DS=1.51$ ) significantly differed in time spent daily from those who had less than 100 contacts ( $M=3.03 DS=1.61; p = .008$ ), from those who showed between 100 and 500 contacts ( $M=2.90 DS=1.34 p=.001$ ) and from those who had between 500 and 1000 contacts ( $M=3.07 DS=1.3; p=.010$ ), but they didn't differed from who had between 1000 and 2000 contacts. As regards problematic social networking sites use, a significant difference for different

numbers of contacts/ friends/followers was also found [ $F(4, 1158) = 5.41, p < .001$ ], and respondents with more than 2000 contacts ( $M=16.70 DS=4.47$ ) significantly differed from those who had less than 100 contacts ( $M=13.27 DS=4.53; p=.002$ ), and between 100 and 500 contacts ( $M=14.20 DS=4.88; p=.048$ ). Moreover, users who showed between 1000 and 2000 contacts ( $M=15.19 DS=4.78$ ) also differed from who had less than 100 contacts ( $M=13.27 DS=4.47; p=.003$ ). Taken together, these results suggest the existence of a significant relationship between number of contacts/friends/followers and time spent daily on the individuals' most used social networking site, and number of contacts/friends/followers on the social networking site and problematic social networking sites use. Users who had more contacts on the most used social networking site showed both higher average scores in the time spent per day on the social networking site and a higher level of problematic use of social networking sites (Figure 1).

**Figure1.** Means of time spent daily on the most used social networking site and means of problematic social networking sites use for different numbers of contacts/friends/followers.



**Note.** Time spent daily scores and BSNAS scores were standardized in  $z$  scores in the figure; SNS= Social Network Site; PSNSU= Problematic Social Network Sites Use.

### *Mediation analysis*

To test the hypothesized model paths analysis were applied in the Italian (N=967) and Hungarian (N=266) subsamples respectively. Results of the sequential mediation analysis were presented below (Figure 2 for the final model, Table 2 for the mediation pathways, and Table 3 for the correlation coefficients between the variables included in the analysis).

#### *Mediation analysis in the Italian subsample*

With regard to the Italian subsample, bridging social capital had a significant direct effect on PSNSU ( $\beta = .135, p < .001$ ), on real ( $\beta = .032, p < .001$ ), on ideal ( $\beta = .179, p < .001$ ), and on compare/impress self-presentations ( $\beta = .180, p < .001$ ), as well as on FoMO ( $\beta = .302, p < .001$ ). This latter had a direct effect on PSNSU ( $\beta = .261, p < .001$ ), on ideal self-presentation ( $\beta = .218, p < .001$ ) and on compare/impress self-presentation ( $\beta = .262, p < .001$ ). Regarding the association between self-presentation types and PSNSU, both compare/impress self-presentation ( $\beta = .164, p < .001$ ), and ideal self-presentation ( $\beta = .087, p < .05$ ) had significant effects on the outcome variable.

In relation to the indirect effect between bridging social capital and PSNSU, three paths were statistically significant at the  $p < .001$  level: (a) bridging social capital  $\rightarrow$  FoMO  $\rightarrow$  PSNSU ( $\beta = .079$ ); (b) bridging social capital  $\rightarrow$  compare/impress self-presentation  $\rightarrow$  PSNSU ( $\beta = .029$ ); and (c) bridging social capital  $\rightarrow$  FoMO  $\rightarrow$  compare/impress self-presentation  $\rightarrow$  PSNSU ( $\beta = .013$ ). Moreover, weak but significant effect at  $p < .05$  level were also found: bridging social capital  $\rightarrow$  ideal self-presentation  $\rightarrow$  PSNSU ( $\beta = .016$ ) and bridging social capital  $\rightarrow$  FoMO  $\rightarrow$  ideal self-presentation  $\rightarrow$  PSNSU ( $\beta = .006$ ). The mediation pathways added up to a total standardized indirect effect size of  $.132$  ( $p < .001$ ). The proportion of the mediated effect in the total effect was 49%. Therefore, a greater extent of bridging social capital was associated with higher levels of FoMO, that were associated with higher score of PSNSU. Moreover, higher levels of FoMO were also related with higher compare/impress and ideal self-presentations, that in turn, were associated with higher score of PSNSU.

Regarding Self-concept clarity, it had a negative direct effect on PSNSU ( $\beta = -.201, p < .001$ ), on ideal and compare/impress self-presentations ( $\beta = -.182, p < .001$ ;  $\beta = -.216, p < .001$ ), as well as on FoMO ( $\beta = -.349, p < .001$ ). SCC had a considerable and positive effect on real self-presentation ( $\beta = .205, p < .001$ ). In relation to the indirect effect between Self-concept clarity and PSNSU, three paths were statistically significant at the  $p < .01$  level, even with small effect sizes:

(a)  $SCC \rightarrow FoMO \rightarrow PSNSU$  ( $\beta = -.091, p < .001$ ); (b)  $SCC \rightarrow \text{compare/impress self-presentation} \rightarrow PSNSU$  ( $\beta = -.035, p < .001$ ); and (c)  $SCC \rightarrow FoMO \rightarrow \text{compare/impress self-presentation} \rightarrow PSNSU$  ( $\beta = -.015, p < .001$ ). Additionally, weak but significant effect at  $p < .05$  level were also found:  $SCC \rightarrow \text{ideal self-presentation} \rightarrow PSNSU$  ( $\beta = -.016, p < .05$ ), and  $SCC \rightarrow FoMO \rightarrow \text{ideal self-presentation} \rightarrow PSNSU$  ( $\beta = -.007, p < .05$ ). The mediation pathways added up to a total standardized indirect effect size of  $-.170$  ( $p < .001$ ). The proportion of the mediated effect in the total effect was 46%. Thus, higher levels of SCC were associated with higher levels of FoMO, that were associated with higher score of PSNSU. In addition, higher levels of FoMO were also associated with higher levels of compare/impress and ideal self-presentations, that in turn, were related to higher scores in PSNSU. Further, the association between bridging social capital and SCC was  $-.213$  ( $p < .001$ ). Finally, the relationship between real self-presentation and ideal self-presentation was  $.300$  ( $p < .001$ ), between real self-presentation and compare/impress self-presentation was  $.121$  ( $p < .01$ ), and between ideal self-presentation and compare/impress self-presentation was  $.495$  ( $p < .001$ ). The fitted model explained 26% of the variance of FoMO, 12% of real self-presentation, 19% of ideal self-presentation, 25% of compare/impress self-presentation and 36% of PSNSU.

#### *Mediation analysis in the Hungarian subsample*

As regards the Hungarian subsample, bridging social capital had a significant direct effect on FoMO ( $\beta = .205, p = .001$ ), and on real and ideal self-presentation respectively ( $\beta = .202, p = .001$ ;  $\beta = .273, p < .001$ ). FoMO had a direct effect on ideal ( $\beta = .161, p < .01$ ) and on compare/impress self-presentations ( $\beta = .477, p < .001$ ). This latter had a significant direct effect on PSNSU ( $\beta = .295, p < .001$ ). Moreover, bridging social capital had only one significant indirect path on PSNSU: bridging social capital  $\rightarrow$  FoMO  $\rightarrow$  compare/impress self-presentation  $\rightarrow$  PSNSU ( $\beta = .029, p < .01$ ). The total standardized indirect effect size was of  $.132$  ( $p < .001$ ). The proportion of the mediated effect in the total effect was 36.4%. Therefore, a greater extent of bridging social capital was associated with higher levels of FoMO, that were associated with higher score of PSNSU. Moreover, higher levels of FoMO were also related with higher levels of compare/impress self-presentation, that in turn, was associated with higher score of PSNSU.

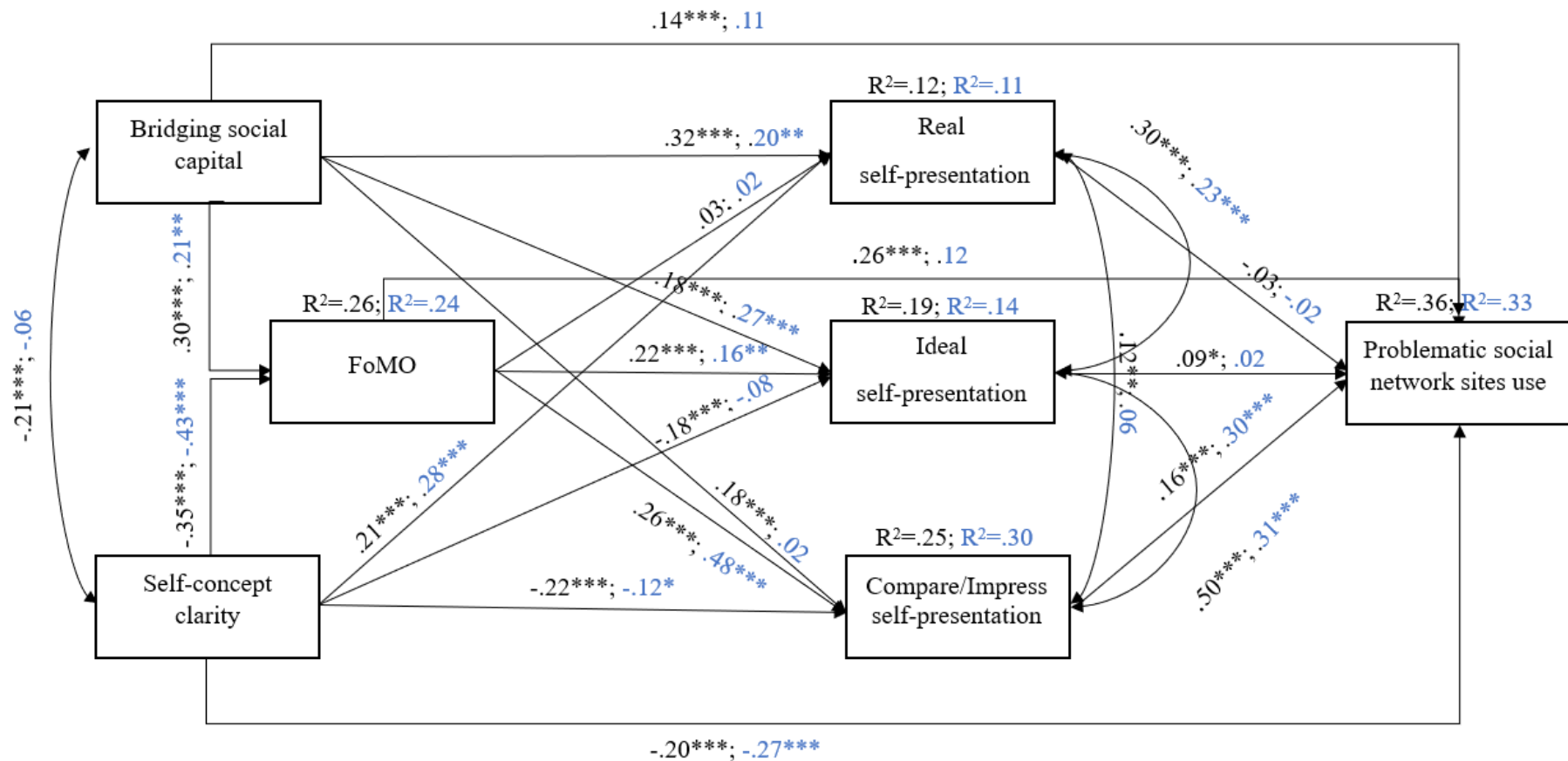
Regarding self-concept clarity, it had a significant and negative direct effect on PSNSU ( $\beta = -.266, p < .001$ ), a positive and significant direct effect on real self-presentation ( $\beta = .0279, p <$

.001), a negative and significant direct effect both on compare/impress self-presentation ( $\beta = -0.121$ ,  $p < .001$ ) and on FoMO ( $\beta = -.433$ ,  $p < .001$ ). Self-concept clarity had only one significant indirect path on PSNSU: SCC  $\rightarrow$  FoMO  $\rightarrow$  compare/impress self-presentation  $\rightarrow$  PSNSU ( $\beta = -.061$ ,  $p < .01$ ). The mediation pathways added up to a total standardized indirect effect size of  $-.154$  ( $p < .001$ ). The proportion of the mediated effect in the total effect was 36.7%. Thus, higher levels of SCC were associated with higher levels of FoMO, that were associated with higher score of PSNSU. In addition, higher levels of FoMO were also associated with higher levels of compare/impress self-presentation, that in turn, was related to higher score in PSNSU. Finally, the relationship between real and ideal self-presentations was  $0.23$  ( $p < .001$ ), and between ideal and compare/impress self-presentations was  $0.31$  ( $p < .001$ ). The fitted model explained 24% of the variance of FoMO, 11% of real self-presentation, 14% of ideal self-presentation, 30% of compare/impress self-presentation and 33% of PSNSU.

Differently from the Italian subsample, some paths tested among the Hungarian respondents were not significant. Specifically, bridging social capital, FoMO and ideal self-presentation had not a direct effect on the problematic social networking sites use. Additionally, self-concept clarity had not a direct effect on ideal self-presentation and bridging social capital had not a direct effect on compare/impress self-presentation. Further, neither the association between bridging social capital and self-concept clarity nor that between real and compare/impress self-presentations resulted significant in the Hungarian subsample.



**Figure 2.** Mediation model between bridging social capital, self-concept clarity, FoMO, real, ideal and compare/impress self-presentation and problematic social networking sites use in the Italian subsample ( $N=967$ ) and Hungarian subsample ( $N=266$ ) respectively.



**Note.** Effect sizes are provided as standardized betas.  $*p < .05$ ,  $**p < .01$ ,  $***p < .001$ ; FoMO= Fear of Missing Out; Black color indicates coefficients belonging to the Italian subsample, blue color indicates values belonging to the Hungarian subsample.

**Table 3.** Mediation pathways between bridging social capital and problematic social networking sites use and self-concept clarity and problematic social networking sites use respectively in the Italian subsample ( $N= 967$ ) and Hungarian subsample ( $N=266$ ).

	Italian subsample	Hungarian subsample
	<i>PSNSU</i>	
<i>Effects from FoMO to PSNSU</i>		
Total effect	.322***	.259***
Total direct effect	.261***	.116
Total indirect effect	.061***	.143***
via real self-presentation	-.001	.000
via ideal self-presentation	.019*	.003
via compare/impress self-presentation	.043***	.141***
<i>Effects from Bridging social capital to PSNSU</i>		
Total effect	.267***	.165**
Total direct effect	.135***	.106
Total indirect effect	.132***	.060*
via FoMO	.079***	.024
via real self-presentation	-.010	-.003
via ideal self-presentation	.016*	.005
via compare/ impress self-presentation	.029***	.005
via FoMO and real self-presentation	.000	.000
via FoMO and ideal self-presentation	.006*	.001
via FoMO and compare/impress self-presentation	.013***	.029**
<i>Effects from self-concept clarity to PSNSU</i>		
Total effect	-.371***	-.420***
Total direct effect	-.201***	-.266***
Total indirect effect	-.170***	-.154***
via FoMO	-.091***	-.050
via real self-presentation	-.006	-.004
via ideal self-presentation	-.016*	-.002
via compare/ impress self-presentation	-.035***	-.036
via FoMO and real self-presentation	.000	.000

via FoMO and ideal self-presentation	-.007	-.001
via FoMO and compare/impress self-presentation	-.015 ***	-.061**

*Note.* Effect sizes are provided as standardized betas. \* $p < .05$ , \*\* $p < .01$  \*\*\* $p < .001$ ; PSNSU= *Problematic Social Network Sites Use*; FoMO= *Fear of Missing Out*.

## Discussion

The current study aimed to explore the relationship and the process of interaction between self-concept clarity, bridging social capital, FoMO, real, ideal, and compare/impress self-presentation and problematic social networking sites use, among two different samples of Italian and Hungarian university students. To the best of our knowledge, the present research is the first to investigate the relationship between self-concept clarity and problematic social networking sites use and social capital and problematic social networking sites use, exploring in both the connections the sequential mediating roles of FoMO and real, ideal, and compare/impress online self-presentation.

All the assumptions tested in the model were supported by evidence in the Italian subsample, except for the relationship between self-concept clarity and problematic social networking sites use via FoMO and ideal self-presentation. With regard to the model tested on the Hungarian respondents, some relationships were non-significant. However, all paths in the Hungarian model showed the same direction (but not the same strength of effect) as the Italian subsample model. Therefore, in our view, the variability in significance and effect sizes of the direct and indirect effects may be due to the lower size of the Hungarian subsample. Data were discussed according to this perspective.

FoMO resulted the strongest direct effect on problematic social networking sites use, confirming its main role as a psychological driver of users' excessive engagement and device checking (Przybylski et al., 2013). Moreover, FoMO promoted problematic social networking sites use through the mediating role of ideal self-presentation and through the mediation of compare/impress self-presentation. Indeed, when emerging adults perceive the risk of being "left behind" in their social network (Servidio et al., 2021), they become more active on SNSs to reduce FoMO, referring to the fear of missing the ability to be popular and interesting to others (Alutaybi et al., 2020). As a result, they can recur to a more self-enhanced presentation (Lockwood, 2002).

As regards bridging social capital, it had a direct effect on problematic social networking sites use. Indeed, the wide range of information resources provided by acquaintances and strangers makes social networking sites potentially more varied and interesting for people (Ellison et al., 2007), offering constant site updates and favouring potential over-involvement of users. Moreover, bridging social capital promotes both ideal and impression-oriented self-presentations, which in turn, increased levels of problematic social networking sites use. Indeed, having a large online social network can foster people's need for impression management, as communicating with wide groups encourages people to focus on themselves rather than on their audience (Barasch & Berger, 2014). Therefore, emerging adults might present online parts of their ideal self to maintain and enhance a positive self-image and gain social acceptance (Leary, 2010); alternatively, broadcasting to a wider audience may increase people's motivation to manage their impressions and self-censor (Marwick & boyd, 2011), as broader groups often promote conformity and the desire to be liked (Insko et al., 1985). For instance, users with more social capital connections on Facebook tend to share more positive and less negative emotions, suggesting greater selectivity in curating status updates for a positive self-image as network size increases (Gil-Lopez et al., 2018). When also considering the mediating role of the fear of missing out, we found significant indirect effects from bridging social capital to problematic social networking sites use resulted through the interaction of FoMO and compare/impress self-presentation and through FoMO and ideal self-presentation. In both cases FoMO increases the tendency to problematic use of social networking sites. In fact, the greater the number of contacts on social networking sites owned, the greater the stimuli and opportunities for comparison with the lives of others. In particular, a broader audience of people met almost exclusively on social networking sites might increase the concern of social comparison unfavourable to the individual.

Regarding self-concept clarity, it had a negative direct effect on problematic social networking sites use. In other words, low levels of self-concept clarity promoted higher scores of problematic social networking sites use. Emerging adults with poor self-concept clarity might see social networking sites as a safer source for self-clarification and for controlling conflicting aspects of the self in their presentation (Michikyan, 2020). Furthermore, in line with a previous study (Michikyan, 2020), self-concept clarity positively affected the real self-presentation, as emerging adults with a more integrated and coherent sense of the self may be more authentic in how they present themselves in social contexts due to increased knowledge about the self (Kumru & Thompson, 2003). Moreover, the real self-presentation did not influence levels of the problematic social networking sites use. Differently, according to our findings, social networking sites resulted

addictive for emerging adults low in self-concept clarity, who presented an ideal and/or impression-oriented self-presentation, to compensate for a developmental task, namely the lack of a clearly defined, coherent and stable self-concept. Additionally, our evidence revealed that people with inner self-confusion experienced higher levels of FoMO, as they perceived a feeling of inadequacy with respect to their own self-concept and greater sensitivity to the behaviour of others (Campbell et al., 1996). Nevertheless, contrary to our hypothesis, the self-concept clarity promoted the problematic social networking sites use via FoMO and compare/impress self-presentation, but not through FoMO and the presentation of ideal self. One possible explanation is that people who are more uncertain about certain aspects of their lives and who experience FoMO avoid exploring and expressing ideal aspects of themselves online, because they may feel more exposed than their peers to negative comments and feedback, such as online discrimination, marginalisation and harassment. Most probably, as a consequence of social comparison (Festinger, 1954) and envy of others' rewarding experience (Reer et al., 2019b). they would tend to please other users through impression-oriented self-presentation, resulting in more problematic social networking sites use.

Overall, in accordance with the I-PACE model, the results suggested that clarity of self-concept and bridging social capital may function as predisposing variables for the problematic social networking sites use, as people experience for different reasons (internal or external factors) a specific anxiety of belonging and a need for acceptance. In order to satisfy these needs, emerging adults may present manipulated self-presentations that, in turn, may increase the problematic social networking sites use, especially when individuals also experience fear of missing out, which fosters their comparison tendencies, resulting in the need for even more enhancing self-images.

Although the present study has some strengths, it is not without limitations. Despite the advantage of a large sample size, the self-selected and self-reported nature of the data need to be taken into consideration when generalizing the results. Furthermore, 70% of the respondents were women and the different sizes of the Italian and Hungarian samples precluded comparison of the results in the path analysis due to low statistical power. The cross-sectional study design should be also borne in mind when applying the findings because causation and directionality of evidence cannot be confirmed. Furthermore, considering that FoMO and self-presentation may change over time and situations (Boyce et al., 2013; Kelly & Rodriguez, 2006), and probably also according to different social networking sites, longitudinal data are needed to capture such variations. Future works would also benefit from the use of multiple methods to exclude potential biases, including social desirability, especially when referring to false types of self-presentation. Forthcoming studies should also examine how different real, ideal, and compare/impress self-presentations manifest

themselves in online behaviors (e.g., whether false self-presentation involves the use of filters in published photos of oneself). Finally, due to the transition to adulthood, other research should explore whether younger emerging adults (18-25 years) present themselves differently from older emerging adults (26-29 years).

The present study has some direct implications for prevention and treatment. Given the widespread prevalence of social networking sites in contemporary society and the negative outcomes for a minority of emerging adults, this study argues the importance of viable interventions, that could help young people develop a clear and cohesive sense of self in their daily lives. The findings also suggest the need for treatment strategies to reduce maladaptive use of social networking sites, as well as the likelihood of problematic use of social networking sites for those individuals who, being highly engaged in social comparison with publicly promoted standards, may experience envy or frustration, but also self-censorship and conformist behaviour.

### **Conclusion**

In conclusion, access to a large and diverse audience on social networking sites can shape the self-presentation in ways that are exclusive to the online context (Davis, 2013). On one side, the results suggest that a large network of virtual contacts - exceeding offline friends - would seem to favour the problematic social networking sites use, offering incentives to be more involved in social networking sites. Such a bridging social capital would also encourage emerging adults to present themselves in accordance with the ideal self (e.g., “I post things on my SNSs to show aspects of who I want to be”), or through an impression-oriented self-presentation (e.g. “I only show the aspects of myself on SNSs that I know people would like”), which can lead to excessive social networking sites use in order to obtain acceptance and recognition by others (Fernandez et al., 2012; Kamalou et al., 2019). Furthermore, the fear of experiencing fewer rewarding experiences and “being left out” by other members on social networking sites (Reagle, 2015) may increase individuals' tendency to display manipulated self-presentations and, in turn, may foster the problematic social networking sites use.

On the other side, emerging adults low in self-conceptions are more likely to develop problematic social networking sites use and more prone to present ideal and impression-oriented self-presentations which increase problematic social networking sites use, as they are more worried about being negative evaluated in their online posting behaviours (Tynes et al., 2012). In addition,

young adults with a high level of self-doubt would also be more susceptible to concern about the rewarding activities of others (i.e., FoMO) (Servidio et al., 2021), a feeling that would promote impression-oriented self-representations and in turn, the problematic social networking sites use. Emerging adults with an unclear self-concept might use compliant posting behaviours on social networking sites to seek in validation from others the security they lack in real life.

## Chapter 8

### 8. General Discussion

#### 8.1 Highlights of the empirical studies

The main aim of this dissertation was to explore the mediating role of FoMO between different predisposing variables (neuroticism, self-concept clarity and bridging social capital) and the problematic social networking sites use (in the first study we consider in particular the problematic Instagram use). After describing the relevant literature related to the FoMO phenomenon, and its connections with potential predisposing variables for problematic social networking sites use (Chapter 2 – 3 – 4), in the empirical section (Chapters 6 – 7), two different studies were presented. Although conceived as separate, if analysed together, these studies provide a rich overview of the interaction process of variables that support the mediating role of FoMO in relation to problematic social networking sites use according to the perspective of the I-PACE model.

In this section, we summarise the contributions of the two studies separately. Then we discuss the general contributions considering the findings together. Finally, after presenting the limitations of this dissertation, we provide suggestions for practical applications of the results.

##### **8.1.1 The mediating role of FoMO, escapism and self - expression motives between neuroticism and problematic Instagram use.**

The main objective of the first study was to investigate, from the perspective of the I-PACE model, the complex process of interaction between the different components that may contribute sequentially to the development of the problematic Instagram use. This research is among the very few to examine the addictive use of Instagram and the first to explore its association with neuroticism, FoMO and motives for Instagram use through path analysis.

The findings of the present study appear to indicate that a minority of individuals use Instagram problematically, and problematic Instagram use is associated with using the social networking site as an escape from reality, and for self-expressing motive in order to avoid feeling of social exclusion promoted by FoMO.

Firstly, it is worth noting that neuroticism has not a direct effect on the outcome of addiction. This is in line with Kircaburun and Griffiths's (2018) findings and with the notion that predisposing variables are not necessarily related with the outcome of addiction (Brand et al.,



2016). Moreover, this result may also explain why in past research, the evidence on the link between Big Five personality traits and PSNSU has been extremely mixed.

Secondly, our results revealed that people with a high level of neuroticism overuse Instagram to escape reality. The literature suggests that neurotics log on social networking sites for mood management (Gao et al., 2017; Orchard et al., 2014) and avoid ruminations (Hartmann et al., 2010). Instagram, which offers constant updates through pictures and videos in a brightly colored frame, could be a highly immersive platform, acting as an external regulator of emotions for users suffering from emotional instability (McCrae & Costa, 1997). Furthermore, in our research, consistent with previous literature, females resort to Instagram for escapism reasons more than males (Chae et al., 2018; Scherr & Wang, 2021).

Thirdly, neuroticism promoted FoMO, that in turn mediates the relationship between the personality trait and the escapism motive. This finding seems primarily to confirm the close relationship between neurotic trait and FoMO (Przybylski et al., 2013). Despite the increasing focus on the relationship between FoMO and problematic social networking sites use, little attention has so far been paid to understanding these connections in relation to personality traits (Alt & Boniel-Nissim, 2018). Specifically, the emotional problems associated with the characteristics of neuroticism appear to be linked to the negative affective component of this maladaptive cognition (Przybylski et al., 2013). FoMO refers to the feeling of loss that comes from knowing what friends do, and perceiving that they have better experiences (Abel et al., 2016). Of course, for neurotics suffering from FoMO, this feeling is easily aroused by situational signals online. In fact, Instagram is a widely used application to make people aware of news and events in their lives through live streams, reels and stories (Kircaburun & Griffiths, 2018). Consequently, for individuals who have a basic need to regulate their negative moods and use Instagram for this purpose, FoMO can increase engagement with the platform by watching continuous updates from friends, leading users to benefit from great entertainment.

Furthermore, in our study, people with a high level of neuroticism were not spontaneously motivated to use Instagram for self-expression activities (e.g., posting pictures), but this motivation becomes relevant when those individuals experience higher levels of FoMO. Users high in neuroticism, due to their anxiety in face-to-face relationships, may prefer social networking sites to communicate online (Blackwell et al., 2017) and feel closer to friends (Andreassen et al., 2014). However, contrary to our hypotheses, for these individuals, concern about their online image (and,

for example, the consequent fear of not receiving likes) would lead them to be extremely cautious or anxious about the posts they create (Keep & Amon, 2017). In fact, subjects high in neuroticism are likely to be moved towards self-expression behaviors only when fostered by the fear of being out of the gaze of other platform's members, the threat of being socially excluded in their Instagram's audience. For example, they might be unfollowed by their friends because they do not post anything interesting to show other people. Therefore, we can hypothesize that some individuals high in neuroticism resort to posting selfies or other photos of their lives as a coping strategy to reduce the fear of being excluded from attention of other users (negative reinforcement mechanism). By doing so, those people would feel more connected to their friends and could gain the social recognition they often lack. However, this new gratification could become at the root of their problematic Instagram use. Those results seem to confirm previous research, which carried out that FoMO increases self-presentation activities on Instagram and addictive tendencies to the social networking sites (Salim et al., 2017).

Such findings also appear important insofar as they seem to corroborate the mediating role of FoMO as a maladaptive cognition (Wegmann & Brand, 2019), which modulates the relationship between the personality and the motivations of individuals, increasing the risk of problematic Instagram use. In line with the *Fear-driven/compensation-seeking hypothesis* (Wegmann & Brand, 2019), the maintenance of this excessive engagement could be promoted by negative reinforcers, such as mood management and the reduction of the fear of being socially excluded.

It is also remarkable that, as regards self-expression motive, according to Wegmann and Brand's (2019) conceptualization, it contributes to explaining the problematic social networking sites use for individuals who use the platforms to self-enhance and to expand one's network of relationships (*reward driven hypothesis*). Differently, in the present research self-expression motive acts as a coping strategy in order to reduce FoMO in people who are socially anxious (*fear-driven hypothesis*).

In conclusion, although the Big Five model has been used by several studies to assess the relationship between personality and the problematic social networking sites use, as well as specific problematic social networking site use (e.g., Facebook), personality factors as predisposing variables are not exhaustive in explaining the development of problematic Instagram use, which can only be understood as the result of a process of interaction of different variables (e.g., personality, cognitive and affective factors). In fact, according to our evidence, and consistent with the I-PACE model, individuals with the same personality trait may differ in motives for using

Instagram problematically. Further, FoMO influences the use of social networking sites from the perspective of social relationships: meaningful experiences are closely related to personal connections, which is why it is necessary to maintain beneficial and satisfying social relationships (Salim et al., 2017). Therefore, the pressures of relatedness and belonging in the social media arena seem to be powerful on people's cognitions to the extent that they alter their intrinsic motivations for use and exert pressure on their online behaviour. Those findings may contribute to a better understanding of the process of addiction related to Instagram. In fact, the I-PACE model (Brand et al., 2016) is a comprehensive framework, which outlines the higher-order mechanisms involved in problematic Internet use, partially based on previous conceptualization of substance use disorders. Nonetheless, since individuals develop addiction to the content of sites and not to the platforms themselves (Starcevic, 2013), it is one of the most important challenges in problematic Internet use research to understand what needs and mechanisms underlie a certain maladaptive use of a specific platform, such as a determined social network site.

### **8.1.2 The mediating role of FoMO and self-presentation types between individual and social predisposing variables and problematic social networking sites use**

The main objectives of the second study were to explore the relationship between self-concept clarity and problematic social networking sites use, and bridging social capital and problematic social networking sites use in a sample of emerging adults. We hypothesised a mediating role of FoMO and different types of self-presentation behaviours (real, ideal and impression-oriented) between the predictors and the outcome variable. The research aimed to analyse multiple relationships, resulting in a complex and articulated path model. Of course, we could have studied the effects of the two predictors (self-concept clarity and bridging social capital) separately in two different studies, with more linear results. However, with the aim of assessing the strength of these relationships, we decided to test this model as a whole, as we had a large double sample of Italian and Hungarian university students (N=1.411). Following a developmental perspective, we wanted to simultaneously test how, in the transition phase of emerging adulthood, individual factors, such as the clarity of self-concept, and the extension of social relationships, i.e., bridging social capital, may contribute to the development of problematic social networking sites use. Previous literature has suggested that the young adult population is among those who most use social networking sites (Greenwood et al., 2016). These individuals are particularly attracted to online platforms, as these social environments can help them fulfil developmental needs, such as

self-clarification (e.g., Gonzales & Hancock, 2011; Michikyan & Subrahmanyam, 2012) and relationship building and maintenance (e.g., Ellison et al., 2007). We again adopted the perspective of the I-PACE model (Brand et al., 2016), whereby, through path analysis, we hypothesized that the variables self-concept clarity and bridging social capital played an independent role as predisposing factors. FoMO and self-presentation behaviours were respectively cognitions and behaviours that were consequential to background variables and that can promote problematic social networking sites use.

Most of our assumptions were supported by evidence.

Our data suggested that bridging social capital was positively associated with higher problematic social networking site use, and this relationship was promoted by higher levels of fear of missing out on rewarding activities of other users, and by both greater idealized and impression-oriented self-presentation behaviours.

Firstly, ANOVA analysis suggested that users with greater bridging social capital on their social networking sites spent more time daily on their most used social networking sites, and were more likely to use them problematically, with a significant difference when online “friends” were more than 2000. This result was in line with previous research revealing that a larger network size of connections on social networking sites encourages a longer engagement time (Ganley & Lampe, 2009) and a higher intensity of use (Salehan & Negahban, 2013) of these platforms. Moreover, through path analysis we carried out that not only size, but also the quality of relationships can affect the problematic social networking sites use. Indeed, bridging social capital regards superficial relationships of acquaintances and strangers (Putnam, 2000), which through their posting activities offer information, stimuli, and the opportunity to build new friendships. As a consequence, a greater audience of weak ties promoted feeling of missing something important in the environment of social networking sites. Something new and interesting might always appear on the homepage of the social networking site, probably favouring scrolling updates and over-engagement.

Secondly, bridging ties promoted a tendency to alter self-presentation that increased levels of problematic social networking sites use. Moreover, FoMO also seems to encourage individuals to manipulate their self-presentations, that in turn favored problematic social networking sites use. Therefore, FoMO is not only related to passive browsing in enhancing the problematic use of social networking sites (Buglass et al., 2017; Przybylski et al., 2013), and to promote general online self-presentation behaviours (Salim et al., 2017), but it can also foster specific manipulated self-images.

We argued that both ideal and impression-oriented self-presentations represent young adults' attempts to be looked at, arouse interest, and be accepted by other members of the social networking site, and thus alleviate the feeling of being left out by their social network. The evidence supported Przybylski et al.'s (2013) notion that FoMO stems from a human intrinsic need to belong that social network sites evoke. Further, the larger the audience, the harder it is for individuals to satisfy the sense of connection with the extended community. Therefore, emerging adults communicating to a larger audience are more motivated to manage their impressions, as larger groups often promote conformity and the desire to be liked (Insko et al., 1985). Young people can then carefully select aspects of themselves that correspond more to an ideal than to the true self (Leary, 2010) guessing that what they would like to be might find validation in the feedback and comments of their peers and acquaintances. Otherwise, they may also present an other -(impression)-oriented self-presentation, with the aim of reinforcing their presentation in the direction of the standards, rules, and values of their target audience, even resorting to self-censorship (Marwick & boyd, 2011). We argued that matching ideal or other people's standards and gaining the acceptance of "friends" through positive interactions and feedback would increase people's tendency to replicate altered self-images in order to still gain social validation, to the point of becoming addicted to the social network site.

Thirdly, these findings also bring new evidence on how individuals behave in the presence of context collapse in social networking spaces. The context collapse occurs when some spheres of a network, mostly detached in offline contexts, combine online to blur separation boundaries (Boyd, 2010; Davis & Jurgenson, 2014; Meyrowitz, 1986). Context collapse is more prevalent when a user's network increases in size and heterogeneity (i.e., bridging social capital). Social networking sites can connect otherwise segmented groups, encouraging people to share content with the entire network. This can be uncomfortable given the disconnect that can exist between the appropriate behaviour for a subgroup and that for the entire network (Gil-Lopez et al., 2018). Previous research argued that as social networks increase in size and diversity, users experience more apprehension and might reduce the frequency of posting activities (Wang et al., 2016). Otherwise, they cope with context collapse by proposing a "lowest common denominator" presentation (Hogan, 2010), which is based on sharing minimum information suitable for all audience segments. Nevertheless, we claim that with a broader audience the number of reasons to stay in contact with different groups of people increases, providing also new opportunities to post. Indeed, in our model bridging social capital fosters all types of self-presentation, real, ideal and impression oriented. It follows that some people would select and manipulate their self-presentation in order to fit different audience's

expectations. In this way, the strategies of such young adults would also overcome privacy concerns related to self-disclosure behaviour (Debatin et al., 2009). Further, showing an ideal or impression-oriented self-presentation seems in line with studies suggesting that people with a larger audience on social networking sites were more likely to express positive, rather than negative, emotions in status updates (Lin et al., 2014). Weak ties also promoted authentic self-presentation, in line with past research, which has pointed out that people's attitudes towards self-disclosure increase as the size and diversity of the audience increases (Vitak, 2012). Therefore, our findings support both real and manipulated self-presentation in accordance with those different perspective. Arguably, other individuals' factors may explain this variability in self-presentation behaviours in face of context collapse. What is new, however, is that in cases where a user responds to context collapse with self-image manipulation, this strategy may foster problematic use of social networking sites by the individual.

Our findings also supported the hypothesis that low self-concept clarity was associated with greater problematic social networking sites use, and this relationship was promoted by ideal and impression-oriented self-presentation. When considering also FoMO the path resulted significant by the interaction of higher levels of fear of missing out on others' rewarding activities and impression-oriented self-presentation. Nonetheless, the hypothesis about a path towards problematic use promoted by the interaction of fear of missing and ideal self-presentation was not supported.

First of all, to the best of our knowledge this is the first study which explores the association of self-concept clarity with problematic social networking sites use. Indeed, past research have deeply investigated the relationship of self-concept clarity with social networking sites use and online self-presentation behaviours, for instance examining *the fragmentation hypothesis* and the *self-concept unity hypothesis* (Gackenbach & von Stackelberg, 2007; Hertel, 2017; Valkenburg & Peter, 2011). Other studies have revealed the association of self-concept clarity and Internet-related problematic uses (Israelashvili et al., 2012; Quinones & Kakabadse, 2015), such as gaming disorder (Šporčić & Glavak-Tkalić, 2018) and smartphones addiction (Kong et al., 2021; Servidio et al., 2021). According to previous literature, our study confirmed that self-concept clarity should be considered as an important predisposing variable for problematic social networking sites use. Indeed, individuals with a less clear self-concept tended to be more sensitive to socio-environmental feedback and, consequently, much more engaged in the use of social networking sites to elaborate specific self-relevant information and achieve a more stable self-concept. Further, our results suggested that social networking sites can be addictive for emerging adults who manipulate their

self-presentation to impress other people, and that this tendency increases when they experience FoMO. We claimed that those individuals who feel inadequate with respect to self-concept (Campbell et al., 1996) are more likely to engage in social comparisons (Servidio et al., 2021) and fear missing out on others' rewarding activities. A possible explanation is that the resulting negative feeling of FoMO may increase the tendency of individuals to present a socially desirable image, prompting them to increase levels of problematic use of social networking sites. Conversely, as FoMO is related to social anxiety, individuals perceiving confusion about themselves are unlikely to want to experience their ideal self on social networking sites. Indeed, rather than offering them security and gratification, online self-presentation would expose them to even greater anxiety. Only when individuals tend to please others in order to be socially recognised and accepted the resulting gratification can increase their problematic social networking sites use.

In conclusion, those results supported the I-PACE model (Brand et al., 2016), as both self-concept clarity and bridging social capital predispose individuals to over-engage in social networking sites. In particular, our study showed that individuals may resort to manipulated self-representations to compensate for their basic developmental deficits, and this mechanism is facilitated by the cognitive bias of fear of missing out on the rewarding activities of other users.

## **8.2 General contribution of this dissertation**

Beyond the contributions of each study, this dissertation provides a general overview of the role of Fear of Missing Out (FoMO) in paths towards problematic social networking sites use and suggestions for research in clinical and educational psychology. In this section, we outline the three main general contributions of this dissertation.

Firstly, the empirical studies appear to confirm the mediating role of FoMO as a response mechanism to predisposing variables for problematic social networking sites use. Evidence showed that FoMO acts as a self-regulatory limbo arising from situational (e.g., social capital) or chronic deficits in psychological needs (e.g., neuroticism, self-concept clarity), as conceptualized by Przybylski et al. (2013) according to the Self-Determination Theory. Moreover, our results contribute to explaining the Interaction-Person-Affect-Cognition-Execution (I-PACE) model of Internet addiction in relation to problematic social networking sites use (Brand et al., 2016). Specifically, following the *fear-driven/compensation-seeking hypothesis* (Wegmann & Brand, 2019), whether motivated by mood management needs such as neurotics, or by the search for

external feedback to validate beliefs about oneself, or by the pressure of ample social capital, the emerging adults in our samples showed trajectories towards problematic use driven by the need to satisfy a need for belonging and acceptance. Their specific needs were prompted by the bias cognition of Fear of Missing Out (Wegmann et al., 2017), which linked the background factors to motives (e.g. escapism and self-expression) or engagement behaviors (types of self-presentation). FoMO is a maladaptive cognition based on “information asymmetry” (McGinnis, 2020): other users may appear better or more interesting, due to the opportunity for control that everyone has over their own presentation on social networking sites. Therefore, people may log on to social media excessively to alleviate the fear of missing important updates or of being excluded from what is happening online. This might explain why the relationship between FoMO and problematic social networking sites use resulted stronger than the link between FoMO and the social networking sites use as recently carried out (Fioravanti, 2021). Indeed, FoMO, as a cognitive bias, appears to mediate the relationship between psychological needs and problematic social networking sites use by acting as a negative reinforcement mechanism (Dempsey et al., 2019; Wegmann et al., 2017), since whenever people engage on social networking sites they satisfy their intrinsic need to belong and alleviate their fear of missing out or being left out. In the long term, this replicated process of interaction might alter the development of responsiveness to stimuli and the desire to use social networking sites, which can lead to problematic use of them. (Brand et al., 2019).

Secondly, the research presented emphasizes the important role of personality-related social deficits, both in terms of trait (neuroticism) and maturation related to identity content at the personality level (clarity of self-concept). (Lodi-Smith & Crocetti, 2017). Personality consists of stable (behavioral-)tendencies of a person linked to motivational, emotional, and cognitive domains over time and across situations (Baumert et al., 2017). Given that previous findings on the relationship between Big Five personality traits and problematic social networking sites were conflicting, our study on neuroticism and Instagram addiction was interested in examining personality in relation to cognitive and affective mechanisms (FoMO) and motivations for use. Indeed, as reported by Montag and Elhai (2019), it may come as no surprise that extroversion is positively associated with greater use of communication platforms, whereas introverted people, characterized by less socialization, apparently surf online for non-social reasons. More interestingly is to note that research pointed out that introverts are likely to belong to fewer but wider social networks, whereas extraverts tend to develop more frequently on smaller and overlapping audience (Lambiotte & Kosinski, 2014). Such studies show the importance of examining in detail what users do online and why. Therefore, as people are not addicted to the medium itself, but on the activities



they perform on these media (Starcevic, 2013), in our first study we specifically aimed to investigate the problematic Instagram use and analyzed the motives of people high in neuroticism for problematic engagement. We concluded that those individuals might be driven by different motives (escapism and self-expression) and different cognition about the social networking sites (FoMO) in using maladaptively Instagram. Thus, on one side, when considering personality and problematic social networking sites use might not be exhaustive to use a personality dimension per se, but it could be important to explore addictive mechanisms through the lens of the interaction process. On the other side, theory comes into play, (e.g., the I-PACE model perspective) to focus research on a smaller set of variables, so as not to artificially inflate error rates by trying to relate thousands of variables with each other.

Thirdly, in the second study we carried out the association between different types of self-presentation and problematic social networking sites use and how these tendencies can arise from internal factors (self-concept) and external factors (bridging social capital). Social networking sites can be seen as arenas for self-presentation, both through the profiles people create and the posts they publish. According to Goffman (1959) self-presentation is the process of interaction between individuals. The author compares everyday life to a theatre scene: people play roles, follow the script, adapt their performance to the audience and change their movements behind the scenes. The way people perceive themselves is important since they adopt identities to create an image that others will like (Goffman, 1959). The emphasis is on the effort to create a positive image in the eyes of others, as people tend to always show themselves in a positive way and in all environments, trying to put flaws to the background. The possibilities of creating different presentations using multiple functions, such as editing profile photos, making pictures more attractive through filters, fuel a sense of control over self-presentation that is unique and unrepeatable in other contexts, as evidenced by numerous studies (e.g., Gonzales & Hancock, 2011; Gosling et al., 2007). Moreover, previous research has found some connections between self-concept clarity and different types of self-presentation (Michikyan, 2020), and between the size of social capital and the positive self-presentation (Gil-Lopez et al., 2018). However, this is the first study that combines those connections and investigates their link with the problematic use of social networking sites. The chain of connections studied (antecedent variables, real, ideal, impression-oriented self-presentations and problematic social network use) suggests that unrealistic, idealized, or socially desirable self-images are prompts by need of belongingness and acceptance. The immediacy of the feedback mechanisms on social networking sites (e.g., likes, views and comments) provides individuals with clues about the social desirability of the information they are providing on these

platforms. This feedback can then be used to adjust their future posts to bring them more in line with the self-presentation they would like to project to others. Consequently, the never-ending opportunity to test self-images in search of thumbs up from other users appears addictive and seems at odds with the need to develop autonomy from others, that is typical of the transition to adulthood. Together, these results provide evidence that self-presentation is a function of self-audience and is also influenced by self-concept clarity at the trait level.

### **8.3 Limitations and future directions**

Besides the limits of each study reported in the related chapters, this dissertation has some general limitations that should be addressed. We list and explain these limitations and provide suggestions for further investigation.

Firstly, this thesis aimed to investigate the role of FoMO in the perspective of the I-PACE model with regard to the development and maintenance of problematic social networking sites use. In particular, we considered FoMO as a response mechanism to personality and online social relationships. However, as illustrated in Chapter 2, other variables may also predispose the individual to the rise of problematic social networking sites use. For example, psychopathological factors, such as anxiety and depression symptoms, which have been previously associated with this problematic behavior (Yildiz Durak & Seferoğlu, 2019; Lee-Won, Herzog, and Park, 2015; Casale & Fioravanti, 2015; Eraslan-Capan, 2015). Indeed, those clinical aspects might influence also neurotic people behaviors and attitude towards social networking sites (e.g., Evren et al., 2019). Future research could replicate the study by also collecting data on anxiety and depression levels, which could better explain the relationship between personality and motivation to overuse Instagram.

Further, in the second study we analyzed self-presentation with respect to bridging social capital and discussed how weak ties can affect self-presentation behaviors. Moreover, we also aimed to reflect in this chapter the implications that context collapse might have on individuals' choices of self-presenting. However, the audience of social networking sites is generally an overlay of bridging and bonding social capital and the latter was not taken into account in the study. Further, we must observe that previous research has evidenced that bonding relationships, which refer to strong ties that provide kinship, trust, and social support (Putnam, 2000), have also been related to social networking sites excessive use (Classen, Wood and Davies, 2020). Bonding social

capital satisfies individual needs for emotional support, thereby increasing the chances of addiction (Malloch & Hether, 2019; Soh & Smith, 2022). For example, Andreassen et al. (2016) found that single individuals and females have a higher dependency on social media most likely due to their tendency to seek greater amounts of emotional support through technology. Moreover, researchers suggested that subjects use social networking sites to engage in self-disclosure activities, which enhance the intimacy of their social connections (Buglass et al., 2017; Ma et al., 2014; Whitty & Joinson, 2009). Therefore, future research should consider both bridging and bonding-type social capital in order to identify differences in people's behavior in response to different audiences and possibly compare them. Given that social networking sites provide several opportunities for youth to access a diverse group of peers (Tynes, Garcia, Giang, & Coleman, 2011), forthcoming studies should also examine how peers' (friends and strangers) feedback moderates online self-presentation for emerging adults with different self-concept clarity.

Furthermore, previous research has found that emerging adults with traits of neuroticism may be strategic in their online self-presentation, perhaps seeking reassurance, and those with self-doubt further explore their identity online (Michikyan et al., 2014). Research suggested that young adults high in neuroticism are more selective in their self-presentation (Ross et al., 2009; Wang et al., 2012), choosing not to present one's true self on social networking sites, as sharing such aspects of their self (e.g., emotional, anxious, moody) may lead to decreased levels of perceived social support. Instead, they may present less truthful information about themselves or even lie, use social comparison in their online self-presentation to impress others, and present aspects of who they want to be to perhaps increase their social connections and their perceived level of social support (Swickert, Hittner, Harris, & Herring, 2002). Future research should replicate this first study by also considering users' self-presentation activities and social capital in order to examine whether their tendency to express ideal, impression-oriented self-presentations is involved in the problematic use of Instagram addiction, as self-presentation also depends on state-level variables such as audience characteristics (Goffman 1959).

#### **8.4 Practical implications**

The findings of the presented studies have important implications for Internet addiction-related prevention programmes, such as school-based interventions aimed at the responsible and conscious use of social networking sites. Our evidence suggests that personality and social

environment play an important role as antecedents of problematic social networking sites use, as individuals may over-engage with social networking sites in order to satisfy their unmet psychosocial needs. Furthermore, the cognitive bias of FoMO and the negative emotions associated with it, such as fear, envy, frustration, and anxiety, may influence the motivation to use social networking sites to contrast these adverse feelings. For instance, we proposed that individuals high in neuroticism might be over-involved in Instagram for self-expression motives to reduce feeling of being left out by other users. Our attention to motives in relation to personality and cognitions appears in line with a recent panel for the Future of Science and Technology (Fernandez & Kuss, 2019) drafted for the European Parliamentary Research Service. Specifically, this international report indicated as main risk factors for the problematic use of the Internet those motivations and cognitions that systematically prioritise online activities over pastime habits, and which respond to inadequate coping strategies, such as avoiding offline life difficulties and social problems. A literature review on school-based Internet use disorders prevention programs identified 20 studies from Germany, the Netherlands, Italy, Australia, Korea, Hong Kong, USA, and Turkey (Throuvala et al., 2019) revealing that current interventions are predominantly based on universal prevention programmes instead of Internet Addiction-related plans, and their effectiveness has mixed results. Therefore, our studies in this dissertation can contribute to the planning of new, more specific intervention plans in education, which should consider the important process of interaction between affect and cognition in the exposure to the excessive use of social networking sites, especially in population groups that are in a transitional age of life, such as adolescence and emerging adulthood, which makes them more exposed to the need for recognition by others and the need for affiliation with peers. In fact, in line with previous studies, our research evidenced that individuals who are more vulnerable to external (social) factors exhibit different and more problematic behaviour than others when using social networking sites (Bevan, Gomez, & Sparks, 2014). Those people tended to a cognitive bias, FoMO, which drives them to passive consumption of others' posts, promoting social comparison processes and invidious emotions (Krasnova, et al., 2013). Moreover, our evidence showed that besides excessive passive browsing, some users may react to others' displays of beauty or success with even more enhanced self-presentation content, leading to a "spiral" of manipulated self-presentation and envy (Chou and Edge 2012; Varga, 2016). Therefore, due to FoMO, some young adults are inclined to show "the best face" in front of others, which leads them to strive to appear through online posts as if they are not missing anything (Mc Dermott, 2017). Indeed, besides the fear of missing out, there is also the fear of being perceived as missing. Consequently, individuals strive to dissociate themselves from the emotional state of FoMO, which

can be negatively evaluated by others, and struggle to create a mediated version of the ideal self, that expresses socially desirable traits, often triggering a FoMO cycle for other individuals as well (Mc Dermott, 2017). These observations suggest the urgency of targeted school interventions to explicate the peculiar mechanisms of social media and to deconstruct the illusions of perfection, happiness, success, and beauty that are possible due to “information asymmetry” (McGinnis, 2020) provided by social networking sites. Those illusions are in fact at the root of the concern about missing out on rewarding experiences of other users. Nonetheless, in view of the spread of the phenomenon, articles and publications have focused on methods to counter FoMO, all of which have in common the attempt to contrast the sense of a social lack that might be deceptive. For example, some manuscripts suggest the opportunity to overcome envy on social networking sites by learning to discern how behind every snapshot there are probably both joys and unseen sorrows (Mcleod, 2014; McKay, 2013). Other research on prevention recommends introducing daily breaks from the phone and controlling the time spent on the screen with special apps that teach digital balance (Modzelewski, 2020). Alutaybi and colleagues (2020) have developed a FoMO Reduction method (FoMO-R), which provides educational material explaining how FoMO occurs and how it can be dealt with, such as through checklists, self-talk and expectation management. The aim is to build the users’ digital resilience and help them to prevent and face different kinds of FoMO (e.g., “Fear of losing popularity”, “Fear of missing the opportunity to know others’ impressions”). In a second step, the researchers suggest users to adopt some countermeasures, such as setting the status on the smartphone, managing expectations, talking about themselves, and self-monitoring. Relapse prevention strategies are also indicated to prevent the help-seeker from returning to his old habits. The use of a diary can also be helpful, since through diaries exercises those who present symptoms of FoMO will focus more on their own positive experiences rather than the events, purchases and information that are experienced by others (Gordon, 2019). However, it is particularly noteworthy that picking up the phone to unlock it and check something on social networking sites is already an important predictor of FoMO (Modzelewski, 2020). Treating FoMO as a social and educational challenge, it is worth developing an awareness in young people that the impulsive and uncritical use of social networking sites can lead to habits that are difficult to eliminate and that undermine psychological well-being and the ability to succeed at school, university or work (Stošić & Stošić, 2015).

Additionally, our findings have important implication in education as well as in clinical, developmental and educational psychology. In fact, using the multiple-self-presentation framework (Michikyan et al., 2014) our findings highlighted the relationships between the unclear self-concept

of some emerging adults and their tendency to present a manipulated self-presentation on their social networking sites, which might promote problematic social networking site use. While the online self-presentation characterized by greater authenticity may reflect a clearer self-concept at a cognitive level, and thus, fewer challenges in identity integration, the online self-presentation marked by lower authenticity and higher social desirability may express difficulties in identity integration during the emerging adulthood transition (Harter, 2012). Challenges in identity integration may contribute to psychosocial adjustment concerns, such as social anxiety, and, according to our results, may predispose emerging adults to strategic online behaviour (e.g., impressing, lying). Therefore, it is necessary that psychologists and educators, especially when caring for young people with mental distress, consider online self-presentation as an essential part of the way adolescents and young adults express themselves and relate. In the *onlife* era (Floridi, 2015), in which individuals constantly switch from the offline to the online world and vice versa, these signals should be taken into account in the assessment and psycho-educational interventions with youth, as indicators of difficulties in identity integration.

Finally, our results seem to confirm that an extended network of online contacts makes it more difficult for users to face the expectations of other members on social networking sites, as individuals may disclose information that conflicts with the perspectives of certain segments of their audience. Therefore, the social pressure may then lead individuals to engage in protective behaviors in their online self-presentation. In particular, some young people who rely on audience ratings (such as views or thumbs up) to support their self-esteem and self-concept clarity, and who have heterogeneous social networks, can be more strategic in handling tagged photos and textual or visual updates. As a result, they may develop a problematic use of social networking sites, and at the same time they may feel pressured to put forward an idealized or conformist self-image in order to seek the approval of others, risking to repress one's most authentic self. As emerging adults are often social media users (Anderson et al., 2019), and their offline and online worlds are interconnected (Michikyan & Subrahmanyam, 2012), mental health professionals should seek to develop new assessments and interventions that also take into account users' online emotions and experiences. Among these, our findings suggest considering the importance of social comparison processes, feelings of envy, and apprehension of not matching the expectations and feedback of the broader online social capital, peculiar and unique to the virtual life on social networking sites. in which contemporary new generations are growing up.

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