Italian Sociological Review
ISSN 2239-8589
DOI: 10.13136/isr.v14i10S.780 2024, 14(10S), pp. 671 – 696

The Digital Vortex: Exploring Contemporary New Addictions Among Young People in Italy*

Felice Addeo[a], Valentina D'Auria[a], Vincenzo Esposito[b], Rocco Perrone[a]

Abstract

In recent years, the study of behavioural addictions has increased dramatically (Sixto-Costoya et al., 2021) in the number and variety of topics. Behavioral addiction is caused by repetitive behaviours providing short-term pleasure that may turn harmful in the long run and negatively affects other areas of people's daily life. Among behavioural addictions, we can take into account those related to the digital field, for example, gambling, gaming, shopping, binge-watching, and above all using social networks (Meng et al., 2022). Of all the population groups, young people seem to be the most susceptible to the overuse of digital resources and the most vulnerable at the same time (Wang et al., 2020). For instance, negative early childhood experiences can have lifelong consequences on individuals and make them more vulnerable than others to developing Internet addiction, particularly if they experienced early traumas, emotional or physical abuses, social isolation, and even if parents massively exposed them to the use of the Internet and social media (Dalbudak et al., 2014).

Based on previous findings (Addeo et al., 2023) our study intends to explore the main factors (e.g. age cohort, gender, geographical area) lead to develop digital addictions, and deepen the quality of life of younger users in Italy.

Keywords: digital addictions, young, FoMO, smartphone addiction, Internet addiction.

* This paper results from a conjoined effort. However, in the final draft Felice Addeo wrote Sect. 3; Valentina D'Auria wrote Sects. 4 and 5; Vincenzo Esposito wrote Sects. 1 and 6; Rocco Perrone wrote Sect. 2.

[a] Department of Political and Communication Sciences, University of Salerno, Italy.

[b] Department of History Anthropology Religions Arts Entertainment, University of Rome, Italy.

Corresponding author:
Felice Addeo
E-mail: faddeo@unisa.it

Received: 21 December 2023
Accepted: 15 February 2024
Published: 26 July 2024

1. Introduction

The progress of technology and the rise of social media platforms have significantly altered various aspects of human existence, affecting one's overall well-being (Wrzus et al., 2013), socialization patterns (Ibáñez-Cubillas et al., 2017), and daily routine (Pang, 2022).

Among the many aspects of life that have evolved because of social media we also have that related to addictions (Chen & Kim, 2013). We must distinguish addictions into two types. The first type of addiction is that which results from the immoderate and repeated use of a substance that causes it. According to Goodman (1990), addiction defines a condition whereby a problematic behavior is characterized by (a) recurrent failure to control the behavior and (b) continuation of the behavior despite significant negative consequences. These types of addictions include that of alcohol and different types of drugs (Volkow et al., 2005;Tinghino et al., 2021) or food (Vasiliu, 2022).

The second type of dependency is referred to as behavioral dependencies. These are characterized by repeated behaviors that lead to a decline in the overall quality of life and health of those affected (De Martino et al., 2020; Petry, 2016). According to Griffiths (2005), a behavioral addiction can be identified on six criteria: the behavior takes precedence over all other thoughts, feelings, and actions, it has emotional consequences, it requires increased intensity to achieve the desired effect, it causes unpleasant withdrawal symptoms, it creates interpersonal conflicts or competing personal tasks and activities, and there are often multiple relapses in attempts to quit the addictive behavior. Among the various ones, we can find dependencies on studying (Andreassen et al., 2017) to tanning (Nolan et al., 2009) to cosmetic surgery (Suissa, 2008) to Argentinean tango (Targhetta, et al., 2013), Harry Potter (Rudski et al., 2009), food (Praxedes et al., 2022)

Digital addictions, a subset of behavioral addictions, have emerged as a concerning issue in the era of the web. These addictions, as described by Meng et al. (2022), stem from various digital platforms and have been thoroughly examined. Examples of digital addictions include addiction to: Internet (Young, 1998), smartphones (James et al., 2023), Facebook (Wong et al., 2023), FoMO - Fear of Missing Out (Brailovskaia et al., 2023; Przybylski et al., 2013), Instagram (Kircaburun & Griffiths, 2018), YouTube (De Bérail et al., 2019), WhatsApp (Addeo et al., 2023; Bernal-Ruiz et al., 2019), and TikTok (Roberts & David, 2023).

According to recent studies, adolescents amid emotional and personal development are particularly vulnerable to digital addictions (Evci, 2022). Research suggests that excessive reliance on social and digital platforms can lead

to a range of issues, such as sleep disturbances (Sakamoto et al., 2022), which are prevalent among young people who struggle with type of addiction.

The concept of "FoMO", or the fear of missing out, is associated with other addictions as it intensifies with the use of online and social platforms. Several studies indicate that a lack of interaction with friends or social networks can lead to emotional stress spikes, as Chan et al. (2022) and Eitan and Gazit (2023) noted.

This paper discusses the results of a survey among young Italians covering various types of digital addictions, including Internet addiction according to Young (1998), Smartphone addiction based on Kwon et al. (2013), FoMO addiction as per Przybylski et al. (2013).

2. Literature review

The conceptualization and categorization of addictions have evolved over the last decades (West & Brown, 2013, Charmaraman et al., 2020). The Diagnostic and Statistical Manual of Mental Disorders (DSM, 2023) currently identifies pathological gambling as the sole behavioral addiction, not substance-related, included in the compendium of mental disorders. Internet addiction, although not yet fully recognized, is noted as an emerging proposition in the manual, which lists conditions necessitating further study before potential classification as a disorder.

In behavioral addictions, dependency arises not from a substance but from the repetitive nature of actions, which may negatively impact other aspects of individuals' daily lives (Grant et al., 2010). Internet addiction has been classified as a behavioral addiction (Meng et al., 2022) and was among the first to be examined (Young, 1998). Arguably, internet addiction predates smartphone addiction, which, in turn, precedes social network addiction (Chen & Kim, 2013). Hence, both smartphone and social network addictions can be categorized as behavioral addictions (Meng et al., 2022).

Internet addiction is characterized by excessive and compulsive internet usage, potentially leading to adverse consequences across private, social, and professional life domains (Young, 1998). To better comprehend the nature of internet addiction, researchers have developed the theoretical I-PACE model, an acronym for Interaction of Person-Affect-Cognition-Execution (Brand et al., 2019). This framework aims to analyze the progression of addiction development. According to this model, on one side, predisposing biological and genetic factors might influence the inception of addictive behaviors. On the other, concomitant psychopathologies, including depression, social anxiety, and attention deficit disorder, have been identified as co-occurring with internet use

disorders. Building upon the understanding of internet addiction requires a crucial consideration of the role of early life experiences. Childhood adversities, encompassing emotional and physical abuses, may render specific individuals more susceptible to addiction development (Dalbudak et al., 2014). Within the Five-Factor Model of Personality (McCrae & Costa, 1987), neuroticism is a predictive trait for susceptibility to addiction (Kayiş et al., 2016).

Young adults, in particular, are vulnerable to internet addiction due to significant technology exposure, social and academic pressures, and the developmental stage of personality formation (Adorjan & Ricciardelli, 2021). Studies have reported that youths with internet addiction are more prone to adverse outcomes, including psychological stress, social isolation, and reduced academic performance (Christakis et al., 2011; Yen et al., 2008). Geographical location also appears to be a predictive factor, with marked differences between urban and rural areas (Ko et al., 2022). For instance, in China, an analysis encompassing 77 studies with a cumulative sample of 46,025 students revealed a geographical distinction in the incidence of Internet addiction (Lei et al., 2018). This variance was observed regarding geographical location, such as differences between coastal and inland regions.

The outcomes of a meta-analysis and systematic review on internet addiction in young adults indicate that internet addiction correlates with age, gender, geographic origin, FOMO, and other psychological disorders (Lozano-Blasco et al., 2022). The review encompassed global research and concluded that internet addiction is widespread and likely to increase, considering the growing ease of access. Remarkably, the introduction of smartphones has further deteriorated the situation by significantly simplifying and increasing the frequency of internet access. Evidence suggests a significant correlation between the amount of time spent on smartphones and addiction (e.g., Khang et al., 2013). A seminal experiment found that the mere presence of a smartphone within visual range can impair the quality of human interactions (Przybylski & Weinstein, 2012).

Similar to internet addiction, young adults exhibit a high risk of smartphone addiction due to their increasing exposure and the pervasive nature of the technology (Chóliz, 2012). Geographic origin is a discriminating factor, with stark differences observed between nations (Meng et al., 2022; Olson et al., 2022) and within countries, particularly between urban and rural areas (Jonnatan et al., 2022). An intriguing study conducted during the COVID-19 pandemic and lockdowns in Israel examined the issue of smartphone use among young adults (Zwilling, 2022, Sinclair et al., 2021). The research identified several factors influencing problematic smartphone use, including nomophobia (i.e., anxiety or unease from not having access to digital devices), stress, social belonging, and sleep duration. Notably, problematic use did not

decrease post-lockdown, suggesting that the stressful conditions experienced during COVID-19 may have exacerbated the level of dependency. Similarly, a study in the United Kingdom identified a negative correlation between smartphone addiction and sleep quality (Sohn et al., 2021).

Sleep disturbances related to smartphone use are now considered a significant public health issue globally (Chattu et al., 2018). In 2020, the World Health Organization recognized new digital addictions as a global problem and a risk factor contributing to sleep disturbances (ICD-11 for Mortality and Morbidity Statistics, s.d.). This situation is alarming, considering those young individuals, from infants to teenagers, sleep less than previous generations during a critical period of their brain development due to the accessibility and overuse of the internet via smartphones. The negative correlation between digital addictions and the reduction of sleep hours is well-documented on a global scale (Dresp-Langley & Hutt, 2022).

Associations between smartphone addiction and specific behaviors in young adults include increased duration of use, using the smartphone to access social networks, and shorter time elapsed from waking to first smartphone use (Haug et al., 2015). Overuse of social media negatively impacts individuals' well-being (Kross et al., 2021) and can deteriorate interpersonal and romantic relationships (Krasnova et al., 2016; Muise et al., 2009; Utz & Beukeboom, 2011).

Adolescents who only utilize WhatsApp and YouTube exhibit lower social media dependency than peers who engage with Instagram or TikTok (or both). An Italian study further revealed that time spent on smartphones and using TikTok are strong predictors of social media addiction (Marengo et al., 2022).

The personality traits of extroversion, being female, and being younger have been associated with higher use of WhatsApp (Montag et al., 2015).

In parallel with the proliferation of technological devices, the scientific community has developed analytical tools to investigate the effects on individuals and their interrelationships. The Internet Addiction Test (IAT) (Young, 1998) stands as the initial pioneering instrument for assessing Internet addiction. It has been widely utilized in scholarly research and adapted and validated within the Italian context (Servidio, 2017). Similarly, the study of smartphone addiction has led to the development of the Smartphone Addiction Scale (SAS) (James et al., 2023), which was later adapted for Italian populations in 2017 (De Pasquale et al., 2017). Alongside the SAS, another significant development is the Smartphone Application-Based Addiction Scale (SABAS) (Csibi et al., 2018), further expanding the scope of research in digital addiction. Facebook, the first widely disseminated social network, led to the development of the Bergen Facebook Addiction Scale (BFAS) (Wong et al., 2023), later expanded into the Bergen Social Media Addiction Scale (BSMAS) (Andreassen

et al., 2017) to encompass a broader range of social media platforms. Both scales are structured around six core elements, each crafted to encapsulate one of the six dimensions of addiction: salience, mood modification, tolerance, withdrawal symptoms, conflict, and relapse. The Bergen Facebook Addiction Scale and the Bergen Social Media Addiction Scale have been adapted and validated for the Italian context (Soraci et al., 2020; Monacis et al., 2017), as well as translated and validated in other languages (De Martino et al., 2021; Mahmood et al., 2020; Veiga et al., 2019; Phanasathit et al., 2015).

New measurement instruments are needed with the emergence and widespread adoption of new social networking platforms that shift users from one to another. One approach is to adapt existing scales to new applications, as seen with the transition of the BSMAS to the Bergen Instagram Addiction Scale (Ballarotto et al., 2021). Similarly, the Instagram Addiction Scale (Kircaburun & Griffiths, 2018) was formulated based on the IAT. Initial scales have recently been developed to assess TikTok addiction. WhatsApp is among the most widely used applications globally, yet it remains understudied. Some attempts have been made to create a WhatsApp addiction scale (Bernal-Ruiz et al. 2019), but not in Italy.

3. Method

3.1. Research design

Our study is motivated by the pervasiveness of technology in daily life and the consequent overuse of digital devices by younger people (Addeo et al., 2023; Wang et al., 2020). Younger people seem to be increasingly attracted to entering the "digital vortex" made up of digital platforms, apps, and tools, which makes them more inclined to develop real digital addictions (Wang et al. 2020).

Therefore, the study is driven by the dual objectives of:

RQ1. To explore which factors lead to develop digital addictions in younger users in Italy (e.g. age cohort, gender, geographical area);

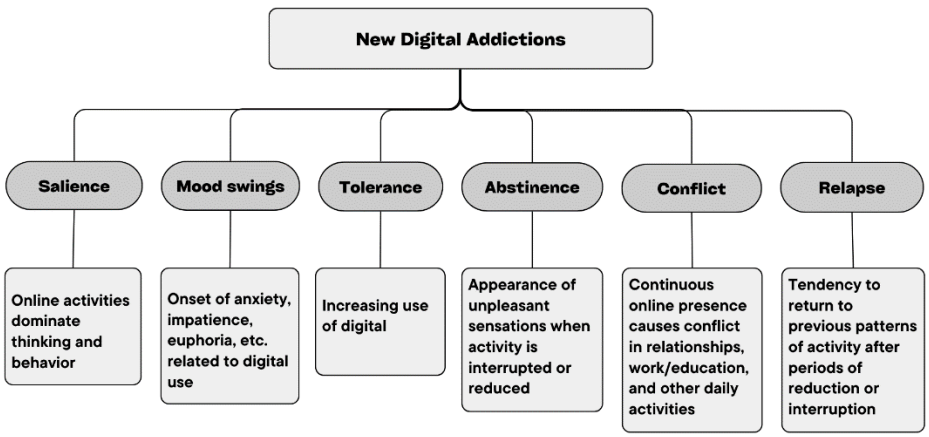
RQ2. To explore the link between predisposition to digital addictions and the quality of life of young users, with a focus on life satisfaction in daily dynamics and activities (specifically, we considered sleep habits).

To approach the study of digital addiction, we started from the addiction concept focusing on some relevant elements (Goodman, 1990) around which the operational definitions of the key variables were performed. The core elements considered are (see Figure 1):

- Salience: The prominence of activity in influencing both thought processes and behavioral actions;

- Mood Swings: The capacity of activity to alter emotional states;
- Tolerance: The phenomenon wherein escalating levels of activity are necessary to achieve previously experienced effects;
- Abstinence: The emergence of adverse feelings resulting from the cessation or interruption of the activity;
- Conflict: The occurrence of conflicts in various spheres of daily life (e.g., relationships, work, school, leisure) due to the engagement in the activity;
- Relapse: The inclination to revert to established patterns of the activity after a period of abstention.

Figure 1. Conceptual map of New digital addictions.



We defined new addictions as those attitudes of attachment to digital resources, starting from tools (such as netbooks and tablets) to digital platforms and apps (social networks, gaming, shopping, etc.). Therefore, our considerations were based on the assumption that new addictions are different forms of a single umbrella concept. The literature review revealed that the specific forms of new addictions share core elements with the concept of addiction (Ding & Li, 2023). We examined the concepts of:

- Smartphone addiction, i.e. the tendency to develop an excessive attachment to smartphones. In addition, smartphones are potentially

harmful tools for the mental and physical health of young users, as they are often ubiquitous as portable devices (Panova & Carbonell, 2018).

- Internet addiction, i.e. the excessive tendency to use the Internet. This addiction is often related to the one described above, as users tend to browse on internet mainly through their smartphones (Lozano-Blasco et al., 2022).
- Fear of Missing Out, i.e. the worry of missing something that one does not experience, or what one cannot see while doing something else. This study considered a *digital FoMO*, that is, anxiety generated by the possible loss of content and events that happen online. FoMO generally triggers the concern to stay connected to keep up to date (Przybylski et al., 2013).

The link between the addictions considered is justified by the fact that users who tend to be highly engaged in smartphone use are at the same time connected to the Internet. Therefore, the desire to stay connected, sometimes dictated by FoMO, is linked to the incessant use of technology.

Indeed, our research work pursues the goal of exploring the tendency on the part of young Italians to develop negative feelings associated with the overuse of digital technology. Feelings of anxiety and negativity were explored in depth by detecting Smartphone and Internet Addiction, and FoMO. The research objectives are therefore: (a) to detect the tendency among young Italians to develop new addictions; (b) to test the results by comparing them with the variables employed in the literature and our previous work (Addeo et al., 2023). Socio-demographic aspects that could act as predictors, such as gender (Bernal-Ruiz et al., 2019), age (Gui & Büchi, 2019), and geographical origin (Ko et al., 2022; Lei et al., 2018), as well as personal aspects that could act as consequences of addiction, such as the general level of life satisfaction (Lachmann et al., 2016), and chronic aspects, such as those related to sleep (Sakamoto et al., 2022) are taken into account.

3.2 Research method, sample, data collection

Based on previous work (Addeo et al., 2023), we adopted a web survey, a method consistent with the stand that social research is taking toward the digital, as both a tool and an object of study (Addeo & D'Auria, 2021; Punziano et al. 2022).

The questionnaire has 4 sections:

- socio-demographical characteristics;
- internet and social media use;

- propensity for new addictions;
- daily life satisfaction.

The first section was included for the purpose to address RQ2. The second section explores young users' habits related to digital devices. The third section investigates the main aspects related to the overuse of digital devices and platforms by young people. This section was created from bibliographic references, as well as three scales widely used in the literature were included and adapted to the Italian context: The Internet Addiction Assessment (Young, 1998), the Smartphone Addiction Scale (Kwon et al., 2013), and the FoMO Scale (Przybylski et al., 2013). In addition, these scales were structured around the core elements described in the research design. Similarly, the fourth section was included since several studies highlighted that an excessive digital media usage hurts life satisfaction and sleep quality, i.e. the preservation of circadian rhythms often causing chronic insomnia problems (Sakamoto et al., 2022).

Table 1. Sample demographics.

		Count	%
Gender	M	190	33.8
	F	382	66.0
	Other or not responding	7	0.2
Age	18-20	94	16.3
	21-25	246	42.6
	26-30	160	27.7
	31-35	78	13.5
Geographical Area	Northern area	210	36.5
	Center area	80	13.9
	Southern area and islands	286	49.7

The data were collected through a professional hosting service offered by SurveyMonkey. The link to the survey was shared mainly on social networks (e.g., Instagram, and Facebook as considered those where is easier to spread a hyperlinked survey). Several posts are published and shared by authors from personal accounts in free Facebook groups and Instagram pages. The responses were collected over four months. A pre-test was conducted on a sample of 25 young people to identify biases and other problems. Some revisions were made based on respondents' feedback. The average time required to complete the survey was 12 minutes. The unit of analysis consists of active online individuals between 18 and 35 years[1]; 785 responses were collected, of which incomplete responses and those from respondents older than 35 years were eliminated, for a net total of 579 complete responses were obtained. The research sample

[1] The age range was defined from the ISTAT source (2023), which defines young people as everyone between 15 and 35. Source: http://dati-giovani.istat.it/

consists of 66.0% females, 33.8% males. The age of the respondents was divided into four brackets: 18-20, 21-25, 26-30 and 31-35. Lastly, 49.7% of respondents come from the southern area or islands (Sicily or Sardinia), 13.9% from the central area, and 36.5% from the northern area (see Table 1).

3.3. Measure

The sociographical section was created from closed and open-ended questions (see previous section). The section examining digital resource use habits was analysed using frequency scales focusing on the following items: Use of digital devices, access to main social networks, and reasons for using digital devices. The section on new addictions was developed from specific items of widely used scales in the literature: Internet Addiction Assessment (Young, 1998), Smartphone Addiction (Kwon et al., 2013), and FoMO (Przybylski, 2013). These items were further tested in our previous research work (Addeo et al., 2023) (see Table 2).

Table 2. Operational definition of the digital habits.

Component	Description	Operational Definition	Modalities	Measures
New Digital Addictions	Internet Addiction Assessment (Young, 1998)	It bothers me when someone disturbs me while I'm online; In the past, I have tried to reduce the time I spend online; In a situation where it is possible to act both online and offline, I prefer using the internet.	Completely disagree Disagree Uncertain Agree Completely agree	Ordinal
	Smartphone Addiction Scale (Kwon et al., 2013)	I would never give up the use of my smartphone; People around me tell me that I use my smartphone too much; When I leave the house without my smartphone I feel anxious; I go out of my way to follow an online conversation with my friends in real-time.		
	FoMO Scale (Przybylski, 2013)	I am afraid that other users (not friends of mine) have more gratifying online experiences than I do; I am afraid that my friends have more gratifying online experiences than I do; I worry when I find out that my friends are having fun online without me		

We asked respondents to indicate their degree of agreement with the statements (in a range from "Completely disagree" to "Completely agree"). FoMO-related items were proposed to respondents by referring to events happening online (group chats, live streaming, and other events that a young user might fear missing).

The last section of the questionnaire, i.e. level of life satisfaction and daily sleeping habits, is shown in Table 3. The two dimensions were analysed with several closed questions and Cantril scales (0-10). However, only the variables described in the operational definition were included in the results section.

Table 3. Operational definition of life satisfaction and sleep habits.

Component	Description	Operational Definition	Modalities	Measures
Life satisfaction	Overall, how satisfied are you with your life today? Where 0 is "not at all satisfied" and 10 is "completely satisfied"	Love relationship Family financial situation Friendship Career/work opportunities Education Social life Family relationships Neighborhood relationships/with my neighbors	Cantril Scale 0-10	Continuous
Sleep habits	Individual sleep habits	After you go to bed at night, how long does it usually take you to fall asleep?	I fall asleep right away After a short time After a long time	Ordinal

3.4. Data analysis

The data analysis was performed in three steps. First, we tested data quality through univariate analysis. The second and third stages were aimed at addressing the research questions. First, several indices were built using Exploratory Factor Analysis (EFA) and other procedures. EFA was performed by a principal component method using the Varimax rotation method. Kaiser's criteria (1960) was applied to decide the number of factors to be considered (i.e., those with an eigenvalue higher than 1), while the selection of variables to represent each extracted factor was done referring to a factor loading cut-off value of ±0.6, as suggested by Comrey and Lee (1992). The KMO test and Bartlett's test were performed to assess EFA's statistical significance, while Cronbach's α was used to test the reliability.

In the third phase, the bivariate analysis was performed to investigate possible predictive factors and consequences to the development of new addictions; specifically, an ANOVA Analysis among the new addictions and the other relevant variables. A bivariate correlation between the indices of new addictions and the level of life satisfaction of young users has been carried out.

4. Results

To answer the research questions, the first step implied building indices to measure the new addictions; to this purpose EFA was used through the principal component extraction method using the Varimax rotation method.

First EFA involved the items included for the detection of Internet Addiction. Table 4 shows the single component extracted from the variables with higher factor loadings: It bothers me when someone disturbs me while I am online (.709); In the past, I have tried to reduce the time I spend online (.748); In a situation where it is possible to act both online (.811). The extracted component accounted for 57.3% of the total variance. The statistical significant tests (KMO and Bartlett) were adequately fulfilled. Next, the extracted component was saved through the regression method and transformed into the Internet Addiction Index. The same procedure was used for the detection of Smartphone Addiction.

Table 4. Factor loadings of the variables included in the Internet Addiction Index.

	Factor loading
	Internet Addiction
It bothers me when someone disturbs me while Iam online	.709
In the past, I have tried to reduce the time I spend online	.748
In a situation where it is possible to act both online	.811

Variance explained = 57.3%; Kaiser–Meyer–Olkin (KMO) test = .626; Bartlett's test, $p < .000$; Cronbach's alpha = .627

Through an EFA, specific items were selected by considering the following factor loadings (see Table 5): I would never give up the use of my smartphone (.843); People around me tell me that I use my smartphone too much (.831); When I leave the house without my smartphone, I feel anxious (.691). The extracted component accounted for 62.6% of the total variance explained. KMO and Bartlett tests were fulfilled.

Table 5. Factor loadings of the variables included in the Smartphone Addiction Index.

	Factor loadings
	Smartphone Addiction
I would never give up the use of my smartphone	.843
People around me tell me that I use my smartphone too much	.831
When I leave the house without my smartphone, I feel anxious	.691

Variance explained = 62.6%; Kaiser–Meyer–Olkin (KMO) test = .632; Bartlett's test, $p < .000$; Cronbach's alpha = .697

Specific items were included to detect FoMO through an EFA. The analysis showed the following factor loadings: I am afraid that others have more

gratifying online experiences than I do (.906); I am afraid that my friends have more gratifying online experiences than I do (.932); I worry when I find out that my friends are having fun online without me (.770). The extracted component accounted for 76.1% of the total variance explained. The statistically significant tests (KMO and Bartlett) were adequately fulfilled (see Table 6). In the last step, both extracted components were saved through the regression method, and transformed respectively into the Smartphone Addiction Index and FoMO Index.

Table 6. Factor loadings of the variables included in the FoMO Index.

	Component
	1
I am afraid that other users (not friends of mine) have more gratifying online experiences than I do	.906
I am afraid that my friends have more gratifying online experiences than I do	.932
I worry when I find out that my friends are having fun online without me	.770

Variance explained = 76.1%; Kaiser–Meyer–Olkin (KMO) test = .644; Bartlett's test, $p < .000$; Cronbach's alpha = .836

Finally, an additive index was created to measure Life Satisfaction (Table 3). The multiple-response questions belonging to this set were treated as dummy variables, and summarized into single variable. Subsequently, the variable was standardized (with scores from 0 to 100) to facilitate the reading of the results.

RQ1. To explore which factors lead to develop digital addictions in younger users in Italy.

Through bivariate analyses, we used a set of variables that, according to the literature, are strictly related to the development of new addictions. The first T-test explored the mean propensity scores for new addictions of young males and females. Consistent with the literature we have delved into (Bernal-Ruiz et al., 2019; Kumar & Sharma, 2017) and with our previous work (Addeo et al., 2023), women showed higher mean scores than men in the development of the following addiction: +10.5 FoMO; +9.5 smartphone addiction; +4.4 internet addiction (see Table 7). Furthermore, the T-test shows that this difference is statistically significant.

Second, we investigated the propensity of young respondents to develop new addictions. Although we focused on young Italians, our age range can still be considered broad, as we included young people aged from 18 to 35. This allowed us to divide the sample into 4 different classes, which we tested under the assumption that each class has a different propensity to develop new addictions. Indeed, more recent studies have pointed to the existence of a

negative correlation between age and the development of digital addictions (Addeo et al., 2023).

Table 8 shows interesting differences in this respect: younger people (18-20) seem more inclined to develop FoMO than young adults (31-35). In contrast, about the propensity to develop Smartphone Addiction and Internet Addiction, the analysis showed mild differences among age groups. These results reported slightly higher scores in younger (18-20) than young adults: +6.7 for Smartphone Addiction and +4.4 for Internet Addiction.

Table 7. Relationship between Gender and new addictions.

Gender		FoMO Index	Smartphone Addiction Index	Internet Addiction Index
Male	Mean	36.4	49.4	41.5
	Std. Deviation	27.2	25.0	20.2
Female	Mean	46.9	58.9	45.4
	Std. Deviation	28.5	25.4	21.2

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Internet Addiction Index	Equal variances assumed	.372	.542	-2.020	547	.044	-3.82	1.89	-7.54	-0.11
	Equal variances not assumed			-2.055	378.0	.041	-3.82	1.86	-7.48	-0.17
Smartphone Addiction Index	Equal variances assumed	.512	.474	-4.111	547	.000	-9.43	2.29	-13.94	-4.93
	Equal variances not assumed			-4.134	366.6	.000	-9.43	2.28	-13.92	-4.95
FoMO Index	Equal variances assumed	.156	.693	-3.335	531	.001	-7.74	2.32	-12.30	-3.18
	Equal variances not assumed			-3.349	346.3	.001	-7.74	2.31	-12.29	-3.20

Finally, the potential influence of geographical location on the tendency to develop new addictions was investigated. According to the literature, people living in urban areas are more likely to be digitally addicted than those residing in rural areas (Ko et al., 2022) or coastal areas (Lei et al., 2018). Table 9 shows that young people living in northern Italy have slightly higher averages than those living in southern Italy (+5.7 FoMO; +5.8 Smartphone Addiction; +6.4 Internet Addiction). Indeed, the ANOVA analysis shows statistically significant results (Sig. < 0.05).

Table 8. Relationship between age cohort and new addictions.

Age		FoMO Index	Smartphone Addiction Index	Internet Addiction Index
18-20	Mean	41.3	58.7	45.9
	Std. Deviation	25.5	24.9	20.6
21-25	Mean	38.8	55.3	45.4
	Std. Deviation	24.7	25.5	19.5
26-30	Mean	38.9	55.8	41.9
	Std. Deviation	26.2	26.1	21.3
31-35	Mean	27.7	52.0	41.5
	Std. Deviation	23.4	26.5	23.7

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Internet Addiction Index	Between Groups	1849.271	3	616.424	1.423	.235
	Within Groups	238243.659	550	433.170		
	Total	240092.930	553			
Smartphone Addiction Index	Between Groups	1843.088	3	614.363	.929	.426
	Within Groups	363707.189	550	661.286		
	Total	365550.278	553			
FoMO Index	Between Groups	8857.669	3	2952.556	4.689	.003
	Within Groups	336237.161	534	629.658		
	Total	345094.830	537			

Table 9. Relationship between geographical area and new addictions.

Geographical Area		FoMO Index	Smartphone Addiction Index	Internet Addiction Index
Northern area	Mean	40.9	59.0	47.5
	Std. Deviation	24.5	23.5	19.2
Center area	Mean	39.3	56.4	45.6
	Std. Deviation	26.7	25.5	24.2
Southern area and islands	Mean	35.2	53.2	41.1
	Std. Deviation	25.3	27.1	20.7

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Internet Addiction Index	Between Groups	5002.420	2	2501.210	5.842	.003
	Within Groups	235470.750	550	428.129		
	Total	240473.170	552			
Smartphone Addiction Index	Between Groups	4022.786	2	2011.393	3.078	.047
	Within Groups	359406.949	550	653.467		
	Total	363429.735	552			
FoMO Index	Between Groups	3899.710	2	1949.855	3.069	.047
	Within Groups	339283.276	534	635.362		
	Total	343182.987	536			

RQ2. To explore the link between predisposition to digital addictions and the quality of life of young users, with a focus on life satisfaction in daily dynamics and activities.

The second research question aims to investigate the areas of life in which the tendency to develop new addictions can have a negative impact. According to several studies, an excessive attachment to digital technologies can lead to negative feelings such as dissatisfaction, anxiety, and social pressure (Adorjan & Ricciardelli, 2021). In this context, we examined the relationship between the life satisfaction of the young people and their tendency to develop new addictions. Table 10 shows the results of a correlation analysis between the life satisfaction index and the new addictions indices. In line with the literature, results show a negative (and statistically significant) relationship between life satisfaction and all indexes: the higher young people tendency to attach to new technologies, the lower their life satisfaction.

Table 10. Relationship between Life satisfaction and new addictions.

		FoMO Index	Smartphone Addiction Index	Internet Addiction Index
Life Satisfaction Index	Pearson Correlation	-.350**	-.168**	-.164**
	Sig. (2-tailed)	.000	.000	.000

**. Correlation is significant at the 0.01 level (2-tailed).

Table 11. Relationship between sleep habits and new addictions.

After you go to bed at night, how long does it usually take you to fall asleep?		FoMO Index	Smartphone Addiction Index	Internet Addiction Index
I fall asleep right away	Mean	38.8	50.8	39.4
	Std. Deviation	27.9	27.1	20.8
After a short time	Mean	43.6	56.9	44.5
	Std. Deviation	27.8	24.8	20.3
After a long time	Mean	48.0	60.2	46.1
	Std. Deviation	29.1	25.9	21.5

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Internet Addiction Index	Between Groups	2734.640	2	1367.320	3.207	.041
	Within Groups	211881.007	497	426.320		
	Total	214615.647	499			
Smartphone Addiction Index	Between Groups	4938.932	2	2469.466	3.797	.023
	Within Groups	323267.225	497	650.437		
	Total	328206.157	499			
FoMO Index	Between Groups	4541.470	2	2270.735	3.588	.028
	Within Groups	314504.110	497	632.805		
	Total	319045.580	499			

Likewise, attachment to digital devices and platforms can negatively affect young users' daily habits, such as sleep. Losing the circadian rhythm of sleep due to excessive use of new technologies can negatively affect psychotic health (Petry, 2016) and the quality of life (Sakamoto et al., 2022). Table 11 shows a positive relationship between the time spent by young users to fall asleep and their propensity to develop new addictions. Those who spend a lot of time falling asleep have higher average scores for developing new addictions than those who fall asleep immediately (+9.2 FoMO Index; +9.4 Smartphone Index; and +6.7 Internet Addiction Index). Results are also statistically significant.

5. Discussion

The two research questions addressed different aspects of digital addictions. RQ1 examined the factors related to the prevalence of this phenomenon among young Italians. The female showed a higher probability of developing new addictions, as they showed higher average scores on the three indices (Internet addiction, Smartphone addiction and FoMO). However, these results can be considered controversial as literature on digital literacy shows that there is still a slight imbalance in the acquisition of digital skills in our society at the expense of female users (Addeo et al., 2023; Ragnedda et al., 2020). These results could suggest that women use digital media more intensely specifically when doing entertainment actions (e.g. chatting, posting on social media, etc.). This line of research could be explored further in future studies.

Regarding the age of the sample, although all users were classified as young, the division into age groups showed interesting results. Very young (18-20) make more intensive use of digital platforms (e.g., social networks) and digital devices (e.g., smartphones) than young adult. This perspective suggests the need to act on younger people to raise their awareness on the use of technology. Moreover, it would be useful for educational agencies to take charge of this issue by spreading digital well-being programs (Feerrar, 2020).

The geographical area could also be a key element in the development of digital addictions. However, this relationship could be mediated by other important aspects, which mainly concern the Italian divide between northern and southern regions. For example, the propensity to addiction among young people in the North could be related to the greater presence and quality of infrastructure to which they belong or to higher economic resources (Lei et al., 2018).

The negative correlation between life satisfaction and the digital addictions (RQ2) is consistent with a more recent study by Lachmann and colleagues (2017). These findings may suggest that negative feelings (such as loneliness, a

sense of non-satisfaction, anxiety, and more) lead younger people to feel the need to switch off in the digital world (Baltacı, 2019). At the same time, the development of digital addictions could foster increased anxiety, depression (Adorjan & Ricciardelli, 2021), sleep difficulties (Sohn et al., 2021), and other psychophysical problems in young people, generating an endless loop.

6. Conclusion

In the latest version of the DSM (2023), gambling is the only addiction not related to substances in the official list of mental disorders. Addictions to the internet and new media, such as social networks, are not yet on this list but only proposed in the third section.

Our research addressed the topic of digital addiction among young Italians and its impact on quality of life. Given the ubiquitous nature of technology in modern society, it is crucial to understand the potential effects of excessive technology usage on the daily lives of young people.

There is a significant correlation between sleep patterns and digital habits. Young who excessively use smartphones and messaging apps tend to experience poorer quality of sleep and reduced duration of sleep compared to those who are less reliant on technology. Interestingly, data shows that frequent usage of these applications is linked to increased difficulties in daily life, irrespective of gender or educational background.

It is essential to acknowledge the limitations of our research. Firstly, the sample used in our study is not statistically representative. Additionally, as this research is exploratory, we plan to conduct further studies to enhance our findings. We plan to rely on a representative sample of the Italian population.

To improve our online survey, we plan to enhance it by incorporating different forms of digital addictions such as those from various social networks. Moreover, we will broaden our research to encompass individuals of all age groups and not just limited to young Italians. This will enable us to draw more comprehensive conclusions across different regions of Italy.

References

Addeo, F., & D'Auria, V. (2021). *Going digital*. In Advances in knowledge acquisition, transfer, and management book series/Advances in knowledge acquisition, transfer and management book series (pp. 24–41). https://doi.org/10.4018/978-1-7998-8473-6.ch003.

Addeo, F., D'Auria, V., Esposito, V., Perrone, R., & Bottoni, G. (2023). Exploring New Digital Addictions: Developing a WhatsApp Addiction Index. *Italian Journal of Sociology of Education*, 15(2), 95-121. DOI: 10.14658/PUPJ-IJSE-2023-2-6.

Adorjan, M., & Ricciardelli, R. (2021). Smartphone and social media addiction: Exploring the perceptions and experiences of Canadian teenagers. *Canadian Review of Sociology/Revue canadienne de sociologie*, 58(1), 45-64.

American Psychiatric Association (2023). Manuale diagnostico e statistico dei disturbi mentali – Quinta edizione. DSM-5.Tr.it. Raffaello Cortina, Milano, 2023.

Andreassen, C. S., Pallesen, S., & Griffiths, M. D. (2017). The relationship between addictive use of social media, narcissism, and self-esteem: Findings from a large national survey. *Addictive behaviors*, 64, 287–293. https://doi.org/10.1016/j.addbeh.2016.03.006.

Ballarotto, G., Marzilli, E., Cerniglia, L., Cimino, S., & Tambelli, R. (2021). How does psychological distress due to the COVID-19 pandemic impact on internet addiction and Instagram addiction in emerging adults?. *International journal of environmental research and public health*, *18*(21), 11382.

Baltacı, Ö. (2019). The Predictive Relationships between the Social Media Addiction and Social Anxiety, Loneliness, and Happiness. *International Journal of Progressive Education*, 15(4), 73–82. https://doi.org/10.29329/ijpe.2019.203.6.

Bernal-Ruiz, C., Rosa-Alcázar, N., & González-Calatayud, V. (2019). Development and validation of the WhatsApp Negative Impact scale (WANIS). *Anales de Psicología*, 35(2), 242–250. https://doi.org/10.6018/analesps.35.2.356791.

Brailovskaia, J., Ozimek, P., Rohmann, E., & Bierhoff, H. W. (2023). Vulnerable narcissism, fear of missing out (FoMO) and addictive social media use: A gender comparison from Germany. *Computers in Human Behavior*, *144*, 107725.

Brand, M., Wegmann, E., Stark, R., Müller, A., Wölfling, K., Robbins, T. W., & Potenza, M. N. (2019). The Interaction of Person-Affect-Cognition-Execution (I-PACE) model for addictive behaviors: Update, generalization to addictive behaviors beyond internet-use disorders, and specification of the process character of addictive behaviors. *Neuroscience and Biobehavioral Reviews*, 104, 1–10. https://doi.org/10.1016/j.neubiorev.2019.06.032.

Chan, S. S., Van Solt, M., Cruz, R. E., Philp, M., Bahl, S., Serin, N., & Canbulut, M. (2022). Social media and mindfulness: From the fear of missing out (FOMO) to the joy of missing out (JOMO). *Journal of Consumer Affairs*, 56(3), 1312-1331.

Charmaraman, L., Sode, O., & Bickham, D. (2020). Adolescent mental health challenges in the digital world. In Megan A. Moreno and Andrea J. Hoopes (Eds.), *Technology and adolescent health* (pp. 283-304), Elsevier eBooks.

Chattu, V. K., Manzar, M. D., Kumary, S., Burman, D., Spence, D. W., & Pandi-Perumal, S. R. (2018). The Global Problem of Insufficient Sleep and Its Serious Public Health Implications. Healthcare (Basel, Switzerland), 7(1), 1. https://doi.org/10.3390/healthcare7010001.

Chen, H., & Kim, Y. (2013). Problematic use of social network sites: the interactive relationship between gratifications sought and privacy concerns. *Cyberpsychology, Behavior, and Social Networking*, 16(11), 806–812. https://doi.org/10.1089/cyber.2011.0608.

Chóliz, M. (2012). Mobile-phone addiction in adolescence: The Test of Mobile Phone Dependence (TMD). Progress in Health Sciences, 2(1), 33–44. http://cejsh.icm.edu.pl/cejsh/element/bwmeta1.element.ceon.element-72e09d7b-c90e-39bb-8a2c-1979dde32ef6.

Christakis, D. A., Moreno, M., Jelenchick, L. A., Myaing, M. T., & Zhou, C. (2011). Problematic internet usage in US college students: a pilot study. *BMC Medicine*, 9(1). https://doi.org/10.1186/1741-7015-9-77.

Csibi, S., Griffiths, M. D., Cook, B., Demetrovics, Z., & Szabo, A. (2018). The psychometric properties of the smartphone application-based addiction scale (SABAS). *International journal of mental health and addiction*, *16*(2), 393-403.

da Veiga, G.F., Sotero, L., Pontes, H.M., Cunha, D., Portugal, A. & Relvas, A.P. (2019). Emerging Adults and Facebook Use: the Validation of the Bergen Facebook Addiction Scale (BFAS). *Int J Ment Health Addiction*, 17, 279–294 (2019). https://doi.org/10.1007/s11469-018-0018-2.

Dalbudak, E., Evren, C., Aldemir, S., & Evren, B. (2014). The severity of Internet addiction risk and its relationship with the severity of borderline personality features, childhood traumas, dissociative experiences, depression and anxiety symptoms among Turkish University Students. *Psychiatry Research*, 219(3), 577–582. https://doi.org/10.1016/j.psychres.2014.02.032

De Bérail, P., Guillon, M., & Bungener, C. (2019). The relations between YouTube addiction, social anxiety and parasocial relationships with YouTubers: A moderated-mediation model based on a cognitive-behavioral framework. *Computers in Human Behavior*, 99, 190–204. https://doi.org/10.1016/j.chb.2019.05.007.

De Martino, M., Santini, B., Cappelletti, G., Mazzotta, A., Rasi, M., Bulgarelli, G., Annicchiarico, L., Marcocci, A., & Talacchi, A. (2020). The quality of measurement properties of neurocognitive assessment in brain tumor

clinical trials over the last 30 years: a COSMIN checklist-based approach." *Neurological Sciences* 41: 3105-3121.

De Martino, M., Talacchi, A., Capasso, R., Mazzotta, A., & Miceli, G. (2021). Language Assessment in Multilingualism and Awake Neurosurgery. *Frontiers in Human Neuroscience* 15: 750013.

De Pasquale, C., Sciacca, F., & Hichy, Z. (2017). Italian validation of smartphone addiction scale short version for adolescents and young adults (SAS-SV). *Psychology*, *8*(10), 1513-1518.

Ding, K., & Li, H. (2023). Digital Addiction Intervention for Children and Adolescents: A Scoping Review. *International Journal of Environmental Research and Public Health*, *20*(6), 4777.

Dresp-Langley, B., & Hutt, A. (2022). Digital addiction and sleep. *International Journal of Environmental Research and Public Health*, 19(11), 6910.

Eitan, T., & Gazit, T. (2023). No social media for six hours? The emotional experience of Meta's global outage according to FoMO, JoMO and internet intensity. *Computers in Human Behavior*, 138, 107474. https://doi.org/10.1016/j.chb.2022.107474

Evci, V. Y. (2022). An evaluation on the problem of digital addiction in youth. *Journal of Social Sciences and Education*, 5(1), 115-134.

Feerrar, J. (2020). Supporting digital wellness and wellbeing. In *Student wellness and academic libraries: Case studies and activities for promoting health and success*. ACRL Press.

Goodman, M. D. (1990). Addiction: Definition and implications. *British Journal of Addictions*, 85(11), 1403–1408. doi:10.1111/j.1360-0443.1990.tb01620.x.

Grant, J. E., Potenza, M. N., Weinstein, A., & Gorelick, D. A. (2010). Introduction to behavioral addictions. *The American Journal of Drug and Alcohol Abuse*, 36(5), 233–241. https://doi.org/10.3109/00952990.2010.491884

Griffiths, M. (2005). A 'components' model of addiction within a biopsychosocial framework. Journal of Substance Use, 10(4), 191–197. https://doi.org/10.1080/14659890500114359

Gui, M., & Büchi, M. (2019). From Use to Overuse: Digital Inequality in the age of communication abundance. *Social Science Computer Review*, 39(1), 3–19. https://doi.org/10.1177/0894439319851163.

Haug, S., Castro, R. P., Kwon, M. J., Filler, A., Kowatsch, T., & Schaub, M. P. (2015). Smartphone use and smartphone addiction among young people in Switzerland. *Journal of Behavioral Addictions*, 4(4), 299–307. https://doi.org/10.1556/2006.4.2015.037.

Ibáñez-Cubillas, P., Díaz-Martín, C., & Pérez-Torregrosa, A. B. (2017). Social networks and childhood. New agents of socialization. *Procedia-Social and Behavioral Sciences*, 237, 64-69.

James, R. J., Dixon, G., Dragomir, M. G., Thirlwell, E., & Hitcham, L. (2023). Understanding the construction of 'behavior' in smartphone addiction: A scoping review. *Addictive behaviors*, *137*, 107503.

Jonnatan, L., Seaton, C. L., Rush, K. L., Li, E. P. H., & Hasan, K. (2022). Mobile Device Usage before and during the COVID-19 Pandemic among Rural and Urban Adults. *International Journal of Environmental Research and Public Health*, 19(14). https://doi.org/10.3390/ijerph19148231.

Kayiş, A. R., Satici, S. A., Yilmaz, M. F., Şimşek, D., Ceyhan, E., & Bakioğlu, F. (2016). Big five-personality trait and internet addiction: A meta-analytic review. *Computers in Human Behavior*, 63, 35–40. https://doi.org/10.1016/j.chb.2016.05.012.

Khang, H., Kim, J. K., & Kim, Y. (2013). Self-traits and motivations as antecedents of digital media flow and addiction: The Internet, mobile phones, and video games. *Computers in Human Behavior*, 29(6), 2416–2424. https://doi.org/10.1016/j.chb.2013.05.027.

Kircaburun, K., & Griffiths, M. D. (2018). Instagram addiction and the Big Five of personality: The mediating role of self-liking. *Journal of Behavioral Addictions*, 7(1), 158–170. https:// doi.org/10.1556/2006.7.2018.15.

Ko, C. H., Yen, J. Y., & Lin, P. C. (2022). Association between urbanization and internet addiction. *Curr. Opin. Psychiatry* 35, 219–225. doi: 10.1097/YCO.0000000000000780.

Krasnova, H., Abramova, O., Notter, I., & Baumann, A. (Eds.). (2016). *Why phubbing is toxic for your relationship: Understanding the role of smartphone jealousy among "Generation Y" users*, [Twenty-Fourth European Conference on Information Systems (ECIS)].

Kross, E., Verduyn, P., Sheppes, G., Costello, C. K., Jonides, J., & Ybarra, O. (2021). Social media and well-being: Pitfalls, progress, and next steps. *Trends in Cognitive Sciences*, 25(1), 55–66. https://doi.org/10.1016/j.tics.2020.10.005.

Kumar, N., & Sharma, S. (2017). Survey Analysis on the usage and Impact of Whatsapp Messenger. *Global Journal of Enterprise Information System*. 8. 52. 10.18311/gjeis/2016/15741.

Kwon, M. J., Kim, D., Cho, H., & Yang, S. Y. (2013). The Smartphone Addiction Scale: Development and Validation of a short version for Adolescents. *PLOS ONE*, 8(12), e83558. https://doi.org/10.1371/journal.pone.0083558.

Lachmann, B., Sariyska, R., Kannen, C., Cooper, A., & Montag, C. (2016). Life satisfaction and problematic Internet use: Evidence for gender specific effects. *Psychiatry Research*, 238, 363–367. https://doi.org/10.1016/j.psychres.2016.02.017.

Lei, H., Li, S., Chiu, M. M., & Lu, M. (2018). Social support and Internet addiction among mainland Chinese teenagers and young adults: A meta-analysis. *Computers in Human Behavior*, 85, 200–209. https://doi.org/10.1016/j.chb.2018.03.04.1

Lozano-Blasco, R., Quílez-Robres, A., & Soto, A. (2022). Internet addiction in young adults: A meta-analysis and systematic review. *Computers in Human Behavior*, 130, 107201. https://doi.org/10.1016/j.chb.2022.107201.

Mahmood, Q. K., Jafree, S. R., & Sohail, M. M. (2020). Pakistani Youth and Social Media Addiction: the Validation of Bergen Facebook Addiction Scale (BFAS). *International Journal of Mental Health and Addiction*, 20(1), 581–594. https://doi.org/10.1007/s11469-020-00391-0.

Marengo, D., Fabris, M. A., Longobardi, C., & Settanni, M. (2022). Smartphone and social media use contributed to individual tendencies towards social media addiction in Italian adolescents during the COVID-19 pandemic. *Addictive Behaviors*, 126, 107204. https://doi.org/10.1016/j.addbeh.2021.107204.

McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. J*ournal of Personality and Social Psychology*, 52(1), 81–90. https://doi.org/10.1037/0022-3514.52.1.81.

Meng, S. Q., Cheng, J. L., Li, Y. Y., Yang, X. Q., Zheng, J. W., Chang, X. W., & Shi, J. (2022). Global prevalence of digital addiction in general population: A systematic review and meta-analysis. *Clinical Psychology Review*, 92, 102128.

Monacis, L., De Palo, V., Griffiths, M. D., & Sinatra, M. (2017). Social networking addiction, attachment style, and validation of the Italian version of the Bergen Social Media Addiction Scale. *Journal of behavioral addictions*, *6*(2), 178-186.

Montag, C., Blaszkiewicz, K., Sariyska, R., Lachmann, B., Andone, I., Trendafilov, B., Eibes, M., & Markowetz, A. (2015). Smartphone usage in the 21st century: Who is active on WhatsApp?. *BMC research notes*. 8. 331. 10.1186/s13104-015-1280-z.

Muise, A., Christofides, E., & Desmarais, S. (2009). More information than you ever wanted: Does FacebookBring out the Green-Eyed monster of jealousy? *Cyberpsychology & Behavior*, 12(4). https://doi.org/10.1089/cpb.2008.0263

Nolan, B.V., Taylor, S. L., Liguori, A., & Feldman, S. R. (2009). Tanning as an addictive behavior: a literature review. *Photodermatology Photoimmunology and Photomedicine*. 25, 12-19.

Pang, H. (2022). Connecting mobile social media with psychosocial well-being: Understanding relationship between WeChat involvement, network

characteristics, online capital and life satisfaction. *Social Networks*, 68, 256-263.

Panova, T., & Carbonell, X. (2018). Is smartphone addiction an addiction?. *Journal of Behavioral Addictions*, 7(2), 252-259. https://doi.org/10.1556/2006.7.2018.49.

Petry, N. M. (2016). *Behavioral Addictions: DSM-5 and Beyond*. New York: Oxford Univ. Press.

Phanasathit, M., Manwong, M., Hanprathet, N., Khumsri, J., & Yingyeun, R. (2015). Validation of the Thai version of Bergen Facebook addiction scale (Thai-BFAS). *Journal of the Medical Association of Thailand = Chotmaihet thangphaet*, 98 Suppl 2, S108–S117.

Praxedes, D. R., Silva-Júnior, A. E., Macena, M. L., Oliveira, A. D., Cardoso, K. S., Nunes, L. O., & Bueno, N. B. (2022). Prevalence of food addiction determined by the Yale Food Addiction Scale and associated factors: A systematic review with meta-analysis. *European Eating Disorders Review*, 30(2), 85-95.

Przybylski, A. K., & Weinstein, N. (2012). Can you connect with me now? How the presence of mobile communication technology influences face-to-face conversation quality. *Journal of Social and Personal Relationships*, 30(3), 237–246. https://doi. org/10.1177/0265407512453827.

Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in human behavior*, 29(4), 1841-1848.

Punziano, G., De Falco, C. C., & Trezza, D. (2023). Digital Mixed Content Analysis for the Study of Digital Platform Social Data: An Illustration from the Analysis of COVID-19 Risk Perception in the Italian Twittersphere. *Journal of Mixed Methods Research*, 17(2), 143-170. https://doi.org/10.1177/15586898211067647.

Roberts, J. A., & David, M. E. (2023). Instagram and TikTok Flow States and Their Association with Psychological Well-Being. *Cyberpsychology, Behavior, and Social Networking*, *26*(2), 80-89.

Rudski, J.M., Segal,C., & Kallen, E. (2009). Harry Potter and the end of the road: Parallels with addiction. *Addiction Research and Theory*. 17(3), 260-277.

Sakamoto, N., Kabaya, K., & Nakayama, M. (2022). Sleep problems, sleep duration, and use of digital devices among primary school students in Japan. *BMC Public Health*, 22(1), 1006.

Servidio, R. (2017). Assessing the psychometric properties of the Internet Addiction Test: A study on a sample of Italian university students. *Computers in Human Behavior*, *68*, 17-29.

Sinclair, D. L., Vanderplasschen, W., Savahl, S., Florence, M., Best, D., & Sussman, S. (2021). Substitute addictions in the context of the COVID-19 pandemic. *Journal of Behavioral Addictions*, 9(4), 1098–1102. https://doi.org/10.1556/2006.2020.00091.

Sixto-Costoya, A., Castelló-Cogollos, L., Aleixandre-Benavent, R., & Valderrama-Zurián, J. C. (2021). Global scientific production regarding behavioral addictions: An analysis of the literature from 1995 to 2019. *Addictive behaviors reports*, 14, 100371. https://doi.org/10.1016/j.abrep.2021.100371.

Sohn, S. Y., Krasnoff, L., Rees, P., Kalk, N. J., & Carter, B. (2021). The association between smartphone addiction and sleep: a UK cross-sectional study of young adults. *Frontiers in psychiatry*, *12*, 629407.

Soraci, P., Ferrari, A., Abbiati, F. A., Del Fante, E., De Pace, R., Urso, A., & Griffiths, M. D. (2020). Validation and psychometric evaluation of the italian version of the fear of covid-19 scale. International Journal of Mental Health and Addiction. Advance online publication. https://doi.org/10.1007/s11469-020-00277-1.

Soraci, P., Ferrari, A., Abbiati, F. A., Del Fante, E., De Pace, R., Urso, A., & Griffiths, M. D. (2020). Validation and psychometric evaluation of the Italian version of the Fear of COVID-19 Scale. *International journal of mental health and addiction*, 1-10.

Suissa, A. (2008). Addiction to Cosmetic Surgery: Representations and Medicalization of the Body. *International Journal of Mental Health and Addiction*. 6, 619-630.

Targhetta, R., Nalpas, B., & Perney, P. (2013). Argentine tango: Another behavioral addiction?. *Journal of Behavioral Addictions*, 2(3) 2(3): 179-86.doi: 10.1556/JBA.2.2013.007.

Tinghino, B., Lugoboni, F., Amatulli, A., Biasin, C., Araldi, M. B., Cantiero, D., Cremaschini, M., Galimberti, G., Giusti, S., Grosina, C., Mulazzani, G. E. G., &Nizzoli, U. (2021). The FODRAT study (FOod addiction, DRugs, Alcohol and Tobacco): first data on food addiction prevalence among patients with addiction to drugs, tobacco and alcohol. *Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity,* 26(2), 449–455. https://doi.org/10.1007/s40519-020-00865-z.

Utz, S., & Beukeboom, C. J. (2011). The role of social network sites in romantic relationships: Effects on jealousy and relationship happiness. *Journal of Computer-Mediated Communication*, 16(4), 511–527. https://doi.org/10.1111/j.1083-6101.2011.01552.x

Vasiliu, O. (2022). Current status of evidence for a new diagnosis: food addiction-a literature review. *Frontiers in Psychiatry*, 12, 2545.

Veiga, M. H., Bjerva, J., Östling, R., Tiedemann, J., & Augenstein, I. (2019). What do language representations really represent?. *Computational Linguistics*, *45*(2), 381-389.

Volkow, N. D., & Li, T. K. (2005). Drugs and alcohol: treating and preventing abuse, addiction and their medical consequences. *Pharmacology and therapeutics*, 108(1), 3-17.

Wang, J., Li, M., Zhu, D., & Cao, Y. (2020). Smartphone Overuse and Visual Impairment in Children and Young Adults: Systematic Review and Meta-Analysis. *Journal of Medical Internet Research*, 22(12), e21923. https://doi.org/10.2196/21923.

West, R., & Brown, J. (2013). *Theory of addiction* (2nd ed.). Wiley-Blackwell. https://doi.org/10.1002/9781118484890.

Wong, J., Ho, K. K., Leung, T. N., & Chiu, D. K. (2023). Exploring the associations of youth Facebook addiction with social capital perceptions. *Online Information Review*, *47*(2), 283-298.

Wrzus, C., Hänel, M., Wagner, J., & Neyer, F. J. (2013). Social network changes and life events across the life span: a meta-analysis. *Psychological bulletin*, 139(1), 53.

Yen, J., Ko, C., Yen, C., Chen, S., Chung, W., & Chen, C. (2008). Psychiatric symptoms in adolescents with Internet addiction: Comparison with substance use. *Psychiatry and Clinical Neurosciences*, 62(1), 9–16. https://doi.org/10.1111/j.1440-1819.2007.01770.x.

Young, K. S. (1998). Internet addiction: The emergence of a new clinical disorder. *CyberPsychology and Behavior*, 1(3), 237–244.

Zwilling, M. (2022). The Impact of Nomophobia, Stress, and Loneliness on Smartphone Addiction among Young Adults during and after the COVID-19 Pandemic: An Israeli Case Analysis. *Sustainability* 14, no. 6: 3229. https://doi.org/10.3390/su14063229.