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Articles

Problematic Internet Use among adolescents and young adults: a systematic review of scholars' conceptualisations after the publication of DSM5

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Abstract

Scholars' opinions vary considerably regarding many different aspects of Problematic Internet Use (PIU), including whether it should be conceptualised as an addiction, whether it has to be seen as a discrete category or as the pole of a "normal" to pathological continuum, and whether and how the relationship between a person's characteristics and socio-cultural environment needs to be considered. The aim of the present study is to qualitatively review the evolving body of literature on PIU among adolescents in relation to the three above-mentioned issues, in order to examine how far existing research has progressed since the publication of DSM-5. Following PRISMA guidelines, studies from 2014 to 2019 identified by a search on SCOPUS and Google Scholar were collected. The PIU conceptualisations employed in studies among adolescents and young adults were analysed. Results showed that the debate on PIU as a form of addiction or a distinct clinical disorder is far from over; nonetheless, in the scientific literature about PIU among adolescents and young adults the idea of Internet use as a way to compensate for unsatisfied needs is growing, calling for a better appreciation of what happens in the life-contexts to explain how youths move to/away from PIU over time.

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1. Introduction

Over the last decade, scientific research on Internet Use (IU) has raised concerns about the negative effects its over-use or misuse can have on adolescents and young adults' well-being. While on one hand, the Internet may represent an attractive space for exploring identity, intimacy, and sexuality as well as belonging to a group and receiving group acceptance (Odaç & Kalkan, 2010; for a review: Valkenburg & Peter, 2011), on the other hand, its excessive use is associated to poor school or academic performance or expulsion, even from university

(Anderson, 2001; Sherer, 1997; Young, 1998) as well as depression, anxiety, and stress (e.g. Odacı & Çikrikci, 2017; Radeef & Faisal, 2018).

Psychological, social, school and/or work impairments in a users' life are widely considered a sign that IU has become “problematic” (Beard & Wolf, 2001; Caplan, 2010). Actually, various terms are used to refer to the dysfunctional and disadaptive use of the Internet, such as “Internet Addiction” (Young, 1998), “Pathological Internet Use” (Davis, 2001), “Internet Disorder” (Pontes & Griffiths, 2017), among others. Furthermore, the focus can also be placed on the specific activity which is carried out online (social network sites, online gambling, online gaming, and so on: Can & Kaya, 2016; Dodaj & Sesar, 2020; Frisone et al., 2020b; Ng & Wiemer-Hastings, 2005).

In the present study IU will be investigated, considering it as a generalised behaviour (Davis, 2001), regardless of specific forms of online activity. The umbrella term “Problematic Internet Use” (PIU) will be employed throughout this work for the sake of economy.

Previous systematic reviews on PIU among adolescents and young adults focus on its prevalence (Moreno et al., 2011; Pan et al., 2020), treatments (Gioia & Boursier, 2019), risk/protective factors and health effects (Kuss et al., 2013; Lam, 2014; Nielsen et al., 2020) and personality traits (Munno et al., 2017; Pettorusso et al., 2020). Recently, in their systematic literature review, Anderson et al. (2017) examine the terminology, instruments employed and factors investigated (individual, contextual and activity-related) emerging from longitudinal research in the field of Internet Use (IU) and Problematic Internet Use (PIU) in adolescents and emerging adults. To our knowledge, the scientific literature lacks systematic reviews specifically aimed to assess theoretical models on the generalised form of PIU among adolescents and young adults. To fill this gap, we conducted a qualitative research synthesis starting from three main issues of debate: whether it should be considered an addiction, whether it has to be seen as a discrete category or as the pole on a “normal” to pathological continuum, and whether and how the relationship between a person’s characteristics and socio-cultural environment needs to be considered. A qualitative review seems appropriate and useful considering the heterogeneity of the conceptual and methodological research approaches to this topic.

1.1. Three Open Issues on the Conceptualisation of PIU

One key issue in the debate on the conceptualisation of PIU concerns the possibility of seeing this new clinical issue as a form of addiction. In her pioneering studies on the Internet, Young (1998) starts from the DSM-IV criteria for Pathological Gambling (American Psychiatric Association, 1994) and defines Internet addiction as an impulse-control disorder which does not involve intoxicating substances. In another widely used model of PIU, namely the “component model” (Brown, 1993; Griffiths, 1996, 2005), the same criteria of substance

addiction are proposed as components of the so-called “behavioural addictions” (i.e. salience, mood modification, tolerance, withdrawal, conflict, and relapse), which include Internet addiction.

Recently, in the latest version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric, 2013), the diagnostic category for addictions is relabelled “Substance-Related and Addictive Disorders”, also including “Pathological Gambling (PG)” as a form of behavioural addiction, whereas ‘Internet Gaming Disorder (IGD)’ is added as a ‘Condition for Further Study’. Therefore, despite the absence of other Internet-related disorders, the international scientific community recognises this new form of mental disorder as behavioural addiction, with a potential impact on the way PIU will be investigated – that is, conceptualised – in the upcoming studies (Lopez-Fernandez, 2015). On the other hand, different models consider PIU as a specific and distinct disorder due to the unique communicative context of the Internet which may for instance trigger the belief that the online world is a better place (Davis, 2001), making people prefer online social interactions (Caplan, 2003), which may lead them to overindulge in IU.

A further important issue concerns whether PIU has to be conceived as a distinct disorder or whether a more dynamic and processual view of PIU is needed. Terms such as disorder, pathology and disease are all consistent with the assumption that there is a clear discontinuity between problematic and healthy Internet use. Nevertheless, this assumed discontinuity is counter to the growing body of empirical evidence and assumptions made by the contemporary literature on psychopathology which holds that continuity exists between adaptive and maladaptive functioning (Forbush & Watson, 2013; Røysamb et al., 2011; Venuleo et al., 2020b). Accordingly, more recent perspectives on PIU (Stavropoulos et al., 2016) conceptualise it as a continuum ranging from minimum to maximum severity of symptoms. In the case of adolescents and young adults, for a more dynamic and processual vision on their relationship with the Internet, it seems crucial to take into account how this relationship may change over time.

A third aspect in the PIU debate concerns the factors which may lead to overindulgence in IU. Studies have typically focused on the identification of individual factors that affect the onset and maintenance of PIU (for a review: Anderson et al., 2017): e.g. low self-esteem (e.g. Wang et al., 2015; Yücens & Üzer, 2018), introversion (e.g. Spradlin et al., 2019; Van der Aa et al., 2009), low agreeableness, low emotional stability (Hawi & Samaha, 2019; Kuss et al., 2014), dysfunctions in executive control and in other executive functions (e.g. Lee et al., 2012; Wang et al., 2017) as key correlates of both substance and behavioural addictions.

Consistently with a conceptualisation of PIU in terms of a disorder, it is maintained that the cause and mechanisms of PIU reside in the individual and they need to be addressed as such, with the socio-cultural environment playing a marginal role. However, during the last 20 years efforts have also been made to recognise features and potentialities of the Internet connected to social aspects of the developmental stages of adolescents and young adults, such as the possibility of strengthening/creating new relationships and satisfying the need to belong, while managing self-image and social anxiety (Leigh & Clark, 2018; Mehdisadeh, 2010) and of reconceiving PIU, as well as other risk behaviours enacted by youths, as the by-product of a complex social process (Cheng & Li, 2014; Venuleo et al., 2016, 2017, 2019, 2020a). From this perspective, a key role in preventing or allowing negative outcomes is played by the cultural and interpersonal context and the individual's expectations and demands toward the context they belong to. Several contextual factors have been studied in association with PIU among adolescents and emerging adults, such as stressful life events, family functioning, perceived social support, peer relationships, and parents' online behaviour (e.g. Pellerone et al., 2019; Shields & Kane, 2011; Tang et al., 2014; Yan et al., 2014).

By reviewing more recent studies on PIU, the present study aims to examine whether more recent studies conceptualise PIU as a) an addiction or distinct disorder; b) a discrete category or the endpoint of a continuum and c) whether and how to consider the relationship between the person's characteristics and socio-cultural environment.

2. Materials and method

2.1. Search Strategy

A computer database search was conducted on SCOPUS, and then integrated with the first 220 results on Google Scholars so that other relevant studies not included in the first place could be added. The search terms used were related to the article title, abstract, and keywords and concern problematic Internet behaviours ("Internet addiction", "problematic Internet use", "Internet disorder", "excessive Internet use", "pathological Internet use") and the age of the sample ("adolescent", "young adult", "undergraduate", "emerging adult", "university", "high school", "college"). The search was conducted in October 2020 and included peer-review papers published in psychology journals and written in English. Articles in the press were also included. All the searches were limited to articles published from 2014, thus after the DSM 5 release, to December 2019.

2.2. Inclusion Criteria

Following the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009), works which were potentially eligible for inclusion were first

screened by three reviewers by reading the title and/or the abstract. The full text of the articles selected as appropriate for inclusion was then read analytically.

We included studies that (1) involve adolescents and/or young adults; (2) investigate generalised problematic Internet use (e.g. studies on social media disorders or Internet gaming disorder were excluded); (3) are designed to introduce/test a theoretical model on PIU. A flowchart that visually depicts the search process is provided in Figure 1.

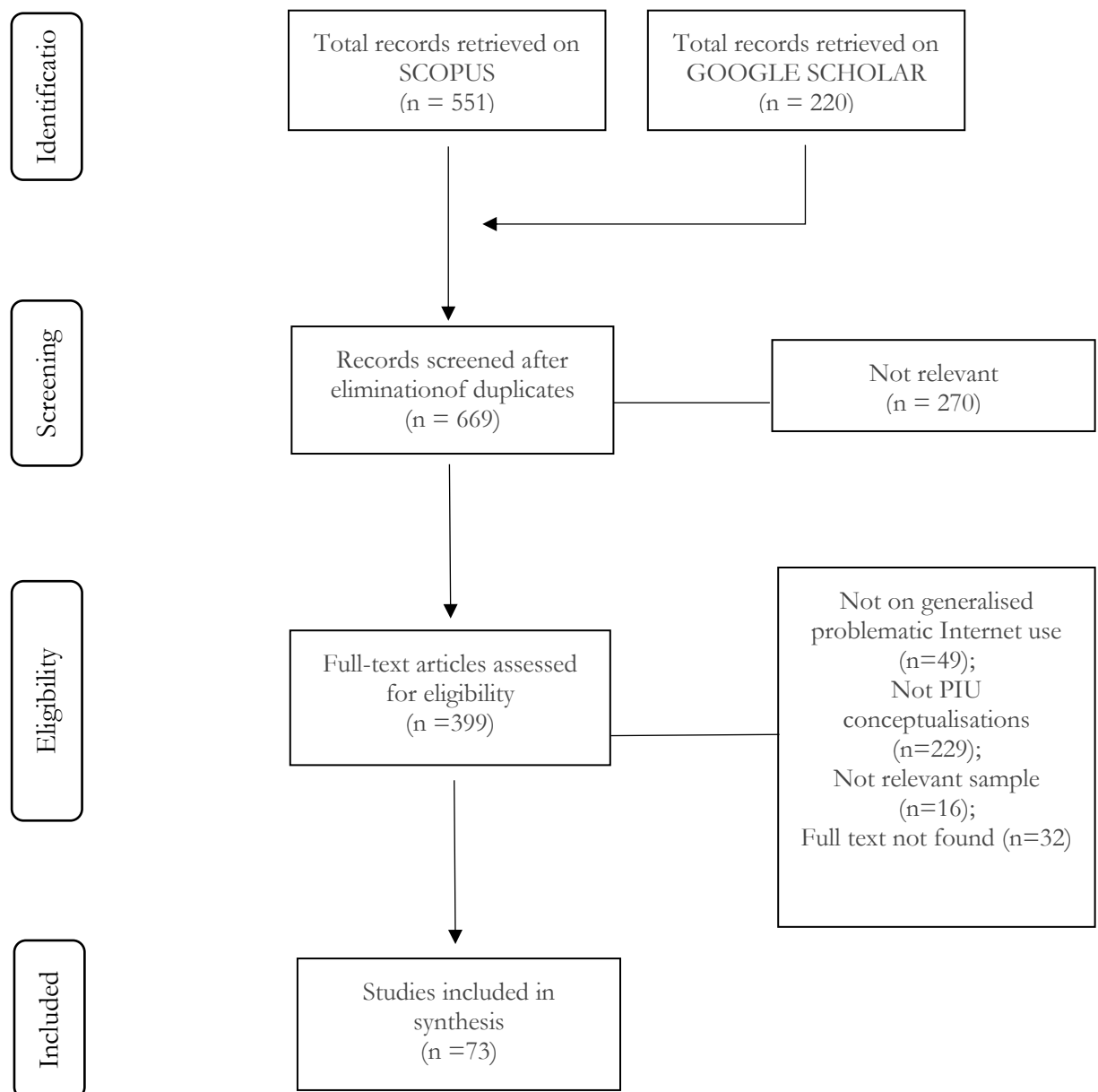


Figure 1. PRISMA flow chart for search strategy.

3. Results

3.1. Search Results

The original research on SCOPUS retrieved 551 papers; after a search on Google Scholar aimed to map other relevant studies and remove duplicates, 669 were assessed. During the screening phase, 270 papers were excluded because they were not relevant to the topic (e.g. did not concern problematic aspects of Internet use). Inclusion and exclusion criteria were then applied to the remaining 399 studies. 326 papers were excluded (excluded studies and reasons for exclusion are shown in Fig 1). A total of 73 studies were deemed eligible for this review after meeting all the above criteria.

For information on the studies reviewed in this paper see Table 1.

Table 1. Table of the basic information of the 73 studies reviewed in this paper (first author, nation, sample information, theoretical approach adopted)

AUTHOR	TITLE	YEAR	NATION	AGE RANGE (y)	N total	Theoretical approach
Jelenchick et al.	The Problematic and Risky Internet Use Screening Scale (PRIUSS) for adolescents and young adults: Scale development and refinement	2014	U.S.A.	18-25	500	Addiction models
Casale et al.	From socially prescribed perfectionism to problematic use of internet communicative services: The mediating roles of perceived social support and the fear of negative evaluation	2014	Italy	18-26	70	Distinct disorder (CB)
Karim et al.	The internet addiction test: Assessing its psychometric properties in Bangladeshi culture	2014	Bangladesh	18-25	172	Addiction models
Özdemir et al.	Depression, loneliness and Internet addiction: How important is low self-control?	2014	Turkey	18-25	648	Distinct disorder (CB)
Gámez-Guadix	Depressive symptoms and problematic internet use among adolescents: Analysis of the longitudinal relationships from the cognitive-behavioral model	2014	Spain	13-17	699	Distinct disorder (CB)
Adiele et al.	Prevalence and determinants of Internet addiction among adolescents	2014	Nigeria	n.a.	1022	Addiction models
Lopez-Fernandez	Problematic Internet use in British adolescents: An exploration of the addictive symptomatology	2014	U.K.	11-18	1097	Addiction models
Chong et al.	Generalised problematic Internet use and regulation of social emotional competence: The mediating role of maladaptive cognitions arising from academic expectation stress on adolescents	2014	Singapore	n.a.	1437	Distinct disorder (CB)
Durak et al.	Which personality traits are associated with cognitions related to problematic Internet use?	2014	Turkey	18-32	494	Distinct disorder (CB)
Yang et al.	Internet addiction, adolescent depression, and the mediating role of life events: Finding from a sample of Chinese adolescents	2014	China	14-17	3798	Addiction models
Mak et al.	Psychometric properties of the Revised Chen Internet Addiction Scale (CIAS-R) in Chinese adolescents	2014	China	n.a.	860	Addiction models
González et al.	Problematic online experiences among Spanish college students: Associations with Internet use characteristics and clinical symptoms	2014	Spain	n.a.	493	Distinct disorder (CB)
Teo et al.	Validity of the internet addiction test for adolescents and older children (IAT-A): Tests of measurement invariance and latent mean differences	2014	China	n.a.	493	Distinct disorder (CB)
Cho et al.	Development of the Internet addiction scale based on the Internet Gaming Disorder criteria suggested in DSM-5	2014	South Korea	8-15	325	Addiction models
Niculović et al.	Study of pathological Internet use, behavior and attitudes among students population at Technical Faculty Bor, University of Belgrade	2014	Serbia	20-24	270	Distinct disorder
Kalaitzaki et al.	The impact of early parenting bonding on young adults' Internet addiction, through the mediation effects of negative relating to others and sadness	2014	Greece	n.a.	774	Addiction models
Kuss et al.	The Internet addiction components model and personality: Establishing construct validity via a nomological network	2014	Netherlands	11-19	3105	Addiction models
Far et al.	Relationship between the Components of Emotional Intelligence and Internet Addiction of Students in Kharazmi University	2014	Iran	18-24	400	Addiction models
Simsek et al.	The Role of Internet Addiction and Social Media Membership on University Students' Psychological Capital	2014	Turkey	n.a.	209	Addiction models

Li et al.	A Twin Study of Problematic Internet Use: Its Heritability and Genetic Association With Effortful Control	2014	China	10-20	825	Addiction models
Fioravanti et al.	Evaluation of the psychometric properties of the Italian internet addiction test	2015	Italy	14-26	840	Distinct disorder (CB)
Gómez-Guadix	Problematic Internet use and problematic alcohol use from the cognitive-behavioral model: A longitudinal study among adolescents	2015	Spain	13-18	976	Distinct disorder (CB)
Stavropoulos et al.	A longitudinal study of adolescent internet addiction: The role of conscientiousness and classroom hostility	2015	Greece	16-18	648	Addiction models
Lai et al.	Measurement Invariance of the Internet Addiction Test among Hong Kong, Japanese, and Malaysian Adolescents	2015	Multi-national	12-18	2535	Addiction models
Casale et al.	Self-presentation styles and problematic use of internet communicative services: The role of the concerns over behavioral displays of imperfection	2015	Italy	n.a.	200	Distinct disorder (CB)
Tzavela et al.	Processes discriminating adaptive and maladaptive Internet use among European adolescents highly engaged online	2015	Multi-national	14-17	124	Distinct disorder (QS)
Lu et al.	Psychometric properties of the internet addiction test in a sample of Malaysian undergraduate students	2015	Malaysia	n.a.	104	Addiction models
Casale et al.	The association between psychological well-being and problematic use of internet communicative services among young people	2015	Italy	18-26	495	Distinct disorder (CB)
Hsu et al.	Examining the Application of the DC-IA-A Diagnostic Criteria for Internet Addiction Disorder in At-Risk College Students	2015	Taiwan	n.a.	41	Addiction models
Lu et al.	Pathological Internet use among Malaysian University Students: Risk factors and the role of cognitive distortion	2015	Malaysia	n.a.	1493	Distinct disorder (CB)
Fernández-Villa et al.	Validation and psychometric analysis of the Internet Addiction Test in Spanish among college students	2015	Spain	16-27	851	Addiction models
Zhang et al.	The Relationship between Impulsivity and Internet Addiction in Chinese College Students: A Moderated Mediation Analysis of Meaning in Life and Self-Esteem	2015	China	18-25	1068	Addiction models
Li et al.	Characteristics of Internet Addiction/Pathological Internet Use in U.S. University Students: A Qualitative-Method Investigation	2015	U.S.A.	n.a.	27	Distinct disorder (QS)
Lam et al.	Stress Moderates the Relationship Between Problematic Internet Use by Parents and Problematic Internet Use by Adolescents	2015	China	13-17	1098	Addiction models
Cudo et al.	Problematic Internet use and intrapersonal and interpersonal attitudes in adolescents	2016	Poland	16-19	260	Addiction models
Casale et al.	Positive metacognitions about Internet use: The mediating role in the relationship between emotional dysregulation and problematic use	2016	Italy	n.a.	293	Distinct disorder (CB)
Liang et al.	Gender differences in the relationship between internet addiction and depression: A cross-lagged study in Chinese adolescents	2016	China	n.a.	1715	Addiction models
Ohno	Internet escapism and addiction among Japanese senior high school students	2016	Japan	15-19	15191	Addiction models
Gómez-Guadix et al.	Assessing the Relationship between Mindful Awareness and Problematic Internet Use among Adolescents	2016	Spain	14-18	901	Distinct disorder (CB)
Liu et al.	Need satisfaction and adolescent pathological internet use: Comparison of satisfaction perceived online and offline	2016	China	n.a.	4559	Distinct disorder (CIUM)
Li et al.	Diagnostic Criteria for Problematic Internet Use among U.S. University Students: A Mixed-Methods Evaluation	2016	U.S.A.	n.a.	27	Addiction models (QS)
Chun	Effects of psychological problems, emotional dysregulation, and self-esteem on problematic Internet use among Korean adolescents	2016	South Korea	12-16	351	Distinct disorder (CB)
Bernal-Ruiz et al.	Is there a relationship between problematic internet use and responses of social anxiety, obsessive-compulsive and psychological well-being among adolescents?	2017	Spain	16-23	310	Distinct disorder (CB)
Han et al.	Reciprocal relationship between internet addiction and network-related maladaptive cognition among Chinese college freshmen: A longitudinal cross-lagged analysis	2017	China	17-21	213	Distinct disorder (CB)
Zhao et al.	The association between life events and internet addiction among Chinese vocational school students: The mediating role of depression	2017	China	14-24	10158	Addiction models
Senol-Durak et al.	Cognitions About Problematic Internet Use: the Importance of Negative Cognitive Stress Appraisals and Maladaptive Coping Strategies	2017	Turkey	17-19	549	Distinct disorder (CB)
Stavropoulos et al.	The longitudinal association between anxiety and Internet addiction in adolescence: The moderating effect of classroom extraversion	2017	Greece	16-18	648	Addiction models
Calvete et al.	Mindfulness facets and problematic Internet use: A six-month longitudinal study	2017	Spain	11-18	609	Distinct disorder (CB)
Ataşalar et al.	Coping and Mindfulness: Mediators between Need Satisfaction and Generalised Problematic Internet Use	2017	Turkey	n.a.	165	
Chen et al.	Impulsivity as a precedent factor for problematic Internet use: How can we be sure?	2017	Taiwan	17-19	430	Addiction models
Tian et al.	Associations between psychosocial factors and generalized pathological internet use in Chinese university students: A longitudinal cross-lagged analysis	2017	China	n.a.	361	Distinct disorder (CB)
Díaz-Aguado et al.	Problematic internet use, maladaptive future time perspective and school context	2018	Spain	12-16	1391	Distinct disorder (CB)

Stavropoulos et al.	Flow on the Internet: a longitudinal study of Internet addiction symptoms during adolescence	2018	Greece	16-18	648	Addiction models
Guo et al.	A moderated mediation model of the relationship between quality of social relationships and internet addiction: mediation by loneliness and moderation by dispositional optimism	2018	China	17-25	1341	Distinct disorder (CB)
Zhou et al.	Internet addiction, problematic internet use, non-problematic Internet use among Chinese adolescents: Individual, parental, peer, and sociodemographic correlates	2018	China	11-19	956	Distinct disorder (CB)
Boniell-Nissim et al.	Bullying victimisation and poor relationships with parents as risk factors of problematic internet use in adolescence	2018	Israel	12-17	1000	Addiction models
Erceg et al.	The Relationship Between Compulsive Internet Use and Symptoms of Depression and Anxiety in Adolescence	2018	Croatia	11-18	1320	Addiction models
Gao et al.	Relationship Between Shyness and Generalised Pathological Internet Use Among Chinese School Students: The Serial Mediating Roles of Loneliness, Depression, and Self-Esteem	2018	China	11-23	5550	Distinct disorder (CB)
Li et al.	Family functioning and internet addiction among adolescent males and females: A moderated mediation analysis	2018	China	11-19	863	Addiction models
Lin et al.	Positive outcome expectancy mediates the relationship between social influence and Internet addiction among senior high-school students	2018	Taiwan	n.a.	1891	Addiction models
Tsermentseli et al.	Assessing the factorial structure of the Internet Addiction Test in a sample of Greek adolescents	2018	Greece	13-18	725	Addiction models
Jiang et al.	Examining Factors Influencing Internet Addiction and Adolescent Risk Behaviors Among Excessive Internet Users	2018	China	13-19	467	Addiction models
Samaha et al.	Assessing the Psychometric Properties of the Internet Addiction Test (IAT) Among Lebanese College Students	2018	Lebanon	18-29	n.a.	Addiction models
Sharma et al.	Internet addiction and psychological well-being among college students: A cross-sectional study from Central India	2018	India	17-25	461	Addiction models
El Asam et al.	Problematic internet use and mental health among British children and adolescents	2019	UK	10-16	1814	Addiction models
Hernández et al.	Depressed and swiping my problems for later: The moderation effect between procrastination and depressive symptomatology on internet addiction	2019	Chile	13-19	529	Distinct disorder (CIUM)
Li et al.	The Mediating Role of Coping Styles on Impulsivity, Behavioral Inhibition/Approach System, and Internet Addiction in Adolescents From a Gender Perspective	2019	China	11-18	416	Addiction models
Liu et al.	Perceived autonomy-supportive parenting and internet addiction: respiratory sinus arrhythmia moderated the mediating effect of basic psychological need satisfaction	2019	China	16-26	146	Addiction models
Liu et al.	Perceived Parent-adolescent Communication and Pathological Internet Use Among Chinese Adolescents: A Moderated Mediation Model	2019	China	13-19	2571	Distinct disorder (CIUM)
Ndasauka et al.	Psychometric properties of Young's Internet Addiction Test (IAT) in Urdu language	2019	Pakistan	n.a.	506	Addiction models
Servidio et al.	Internet addiction, self-esteem and the validation of the Italian version of the Internet Related Experiences Questionnaire	2019	Italy	14-20	438	Addiction models
Yaffe	Further Evidence for the Psychometric Properties of Young's Internet Addiction Test (IAT): A Study on a Sample of Israeli-Arab Male Adolescents	2019	Israel	12-16	180	Addiction models
Černja et al.	Internet addiction test: Croatian preliminary study	2019	Croatia	15-20	352	Addiction models

NOTE: CB= Cognitive-behavioral model; QS= Qualitative study; CIUM= Compensative internet use model

3.2. Conceptualisations of PIU

The final corpus of eligible studies was grouped according to the conceptualisation of PIU at the basis of the study, considering the first question of the present review (i.e. whether it should be conceptualised as addiction or a specific, distinct disorder).

3.2.1. PIU as an addictive behaviour

Criteria. The largest group of studies reviewed (43 studies) conceptualise PIU in terms of addiction, widely relying on pre-existing models for gambling addiction: more specifically, 21 studies employ Young's model of Internet Addiction (Young, 1998), which considers PIU as an impulse-control disorder which shares with Pathological Gambling symptoms such as preoccupation, tolerance, unsuccessful attempts, continued excessive Internet use, withdrawal, lying about Internet use, jeopardising; in another case (El Asam, 2008), Demetrovics and

colleagues' (2008) criteria are employed, namely obsession (being obsessed with Internet use), neglect (neglecting non-Internet activities), and control disorder (inability to control/limit Internet use). One study (Kuss et al., 2014) instead examines PIU based on the component model of addiction (Griffiths, 2005), which considers substance-related addiction criteria, namely salience, withdrawal, tolerance, mood modification, relapse and conflict. The correspondence between signs and symptoms associated with PIU and those of substance use disorder, gambling disorder, and Internet gaming disorder is also found in a mixed-method study included in the analysis in which university students are asked to report their experiences with PIU (Li et al., 2016).

Aetiology. Also with respect to aetiology, scholars explain PIU development by referring to the same dimensions as for any problematic behaviour: for instance, impulsivity traits were found to be a risk factor for adolescents' PIU (Chen et al., 2017), as found in other studies on gambling (Chambers & Potenza, 2003; Frisone et al., 2020a; López-Torres, León-Quismondo & Ibáñez, 2021; Vitaro et al., 1998); two cases (Jiang et al., 2018; Lam & Wong, 2015) highlighted the role of personality (e.g. sensation seeking), environmental (e.g. parental relationship, online relationships) and behavioural (e.g. Internet use for stress reduction) systems in promoting PIU as well as any risk behaviours; in one study (Li et al., 2019), following the dual-system neurobiological model (Casey et al., 2008), the levels of development of reward-seeking system and that of prefrontal control are found to influence the way adolescents cope with stressful life events, enhancing or protecting from the risk of PIU as well as substance abuse, pathological gambling, Internet gaming disorders, and so forth. Similarly, the study of Li and colleagues (2014) – following Potenza's (2006) model - according to which PIU shares with substance and behavioural addictions some clinical symptoms as well as a neural basis – the role of genetic factors is investigated, involving pairs of twins. The authors find that genetics explains 58–66% of variance in PIU in adolescent twins, with the rest explained by non-shared environmental factors.

Psychosocial malaise. Other studies specifically focus on the relationship with psychosocial problems, employing the social displacement theory (Kraut et al., 1998), the mood enhancement hypothesis (Bryant & Zillmann, 1984), the self-medication hypothesis of addiction (Khantzian, 1997) and the Distress-Escapism-Addiction-Harmful Consequences (Escapism-Addiction) model (Ohno, 2016), which basically suggest a circular way of seeing the relationship between PIU and psychosocial problems.

According to the Social Displacement Theory, employed in 3 studies (Liang et al., 2016; Sharma & Sharma, 2018; Yang et al., 2014), the excessive time and effort spent on the Internet makes

adolescents neglect social interaction, leading to more stressful life events with study, peers, and family in real-world situations. Other studies included in the present review (e.g. Liang et al., 2016) employ the Mood Enhancement Hypothesis, which posits that in order to relieve stress, adolescents with negative emotions are more likely to take part in certain leisure activities than others, including surfing the Internet in order to relieve stress. Thus, it is suggested that the attempt to escape from depression and real-world problems through online activities could lead to a vicious circle that exacerbates depression.

A similar view is suggested by Zhao and colleagues (2017) who refer to the Self-Medication Hypothesis of Addiction. According to this perspective, addictive behaviours have to be considered a maladaptive response when the individual is facing excessively difficult states of emotions or stress. They find significant positive correlations between stressful life events, depression and Internet addiction, suggesting that adolescents who suffer from depression caused by stressful life events may seek Internet usage as a necessary way to cope with life stressors and regulate their negative affect. Similar findings are found by Alzayyat and colleagues (2015) in a sample of university students.

The Distress-Escapism-Addiction-Harmful Consequences (Escapism-Addiction) model is proposed in one study (Ohno, 2016): according to this theory, psychological distress – in terms of depression and low satisfaction with life - leads to Internet escapism tendencies, exposing the adolescent to potential Internet addiction tendencies, which, in turn, may lead to actual harmful consequences. One study (Cudo et al., 2016) referred to the concept of compensating mechanisms elaborated by Poprawa (2011), which considers key determinants of PIU to be social and personality deficits in coping with the demands of the world: the absence of these resources – in terms of low self-esteem and negative convictions about life and the world – is compensated by being online, and more and more time spent online brings more and more interpersonal problems and distress. Similarly, Far and colleagues (2014) find that both adolescents and young adults struggle with challenges occurring in family, school and among their peers due to the major biological, mental and social changes. According to the authors, the capability of coping with life stressors and problems depends on emotional intelligence, which promotes social skills and impulsivity control, therefore the lower the emotional intelligence, the higher the risk of overindulging in the Internet to escape from the stress of daily life.

One study (Erceg et al., 2018) inverts the relationship between anxiety, depression, and PIU, considering the former as consequences of the latter; relying on Meerkerk's model (Meerkerk et al., 2009) which considers loss of control and search for relief as signs of PIU. They argue that for adolescents who use it in a compulsive manner, the Internet worsens their psychological

well-being, rather than facilitating them or helping them to overcome their malaise. In two studies (Simsek et al. 2014; Zhang et al., 2015), the positive psychology paradigm is employed, demonstrating that when the time and energy an individual spends on the Internet increase, he/she consumes the psychosocial capital needed to cope with challenges, find new ways to solve problems, and be happy.

PIU evolution/maintenance. With respect to PIU evolution over time in adolescents and young adults, in 3 studies Stavropoulos and colleagues (Stavropoulos et al., 2016, 2017, 2018) expand Young's theory of IA, introducing a longitudinal and bio-ecological perspective which emphasises the potential age- and proximal context-related variations of the effects of individual risk factors. Consistently with the distinction introduced by Douglas (2008), the severity of IA is considered the result of the interplay between "push" (characteristics of the individual and its relational context) and "pull" factors (characteristics of the Internet) throughout life. This perspective is influenced by the bio-ecological model (Bronfenbrenner & Morris, 2006) which contends that all behaviours constantly evolve on a continuum due to the interaction of individual and contextual factors over time. Other studies which adopt Bronfenbrenner's perspective are Boniel-Nissim and Sasson's (2018), which find that both poor parent-child communication and (cyber)bullying victimisation predicted PIU, and Li and colleagues' (2018), which demonstrate that deviant peer affiliation partially mediates the negative relation between family functioning and PIU.

Similarly, following the biopsychosocial model of addiction (Beard, 2005; Griffiths, 2005), Liu and colleagues' (2019) highlight that PIU among young adults is the result of the interaction between various social-environmental, psychological and biological factors which operate in this particular stage of life: more specifically, they demonstrate that young people with little sense of autonomy from their parents may turn to the Internet for the satisfaction of their unmet needs, and that such risk is higher for those with self-regulation problems.

Another model which integrates different domains of influence on at-risk behaviour is the Theory of Triadic Influence (Flay & Petraitis, 1999) employed by Lin and colleagues (2018) and designed to include interpersonal, cultural/attitudinal, and intrapersonal strands in understanding PIU: consistently with this framework, the authors find that social influences (e.g. others' frequency of Internet use) and positive outcome expectancies (e.g. interpersonal connection, stress reduction) predict PIU.

Another model designed to explain PIU evolution/maintenance is the model of Generalised Internet Addiction (GIA; Brand et al., 2014), applied in one study (Ataşalar & Michou, 2017). This model emphasises the mediating role of expectancies and coping strategies in developing

and maintaining GIA, positing that individuals with expectations that the Internet can be used to increase positive or reduce negative moods are more likely to engage in PIU.

3.2.2. PIU as a Distinct Clinical Disorder

The cognitive-behavioural approach. In the second group of studies we placed those that regard PIU as distinct from addictive disorders based on the unique communicative context of the Internet. Of these, almost all (24 studies) reflect the cognitive-behavioural view of PIU, considering thoughts, patterns of behaviour and effects on the life of the individual involved in Internet use. Based on Davis's (2001) model of "Pathological Internet Use", PIU in these studies is seen as a set of maladaptive cognitions and dysfunctional behaviours, which may include obsessive thoughts about the Internet, and the belief that the Internet is the only place where individuals feel good about themselves. Additionally, emphasis is placed on the effect of "distal" factors and "proximal" factors on the development of pathological Internet use (Davis, 2001): the presence of psychopathology (e.g. depression, social anxiety) is considered a distal cause, necessary but not sufficient; it can predispose people to develop maladaptive cognition (distorted thoughts about the self and the world), which are considered a sufficient (proximal) cause.

Therefore, potential "distal" factors and their effects on cognitions ("proximal" factors) are presented in this group of studies: for example, the relationship with teachers (Díaz-Aguado et al., 2018), personality traits (Durak & Senol-Durak, 2014), depressive symptoms (Gámez-Guadix, 2014; Gao et al., 2018), self-esteem, shyness, loneliness and poor social relationships (Gao et al., 2018; Guo et al., 2018; Tian et al., 2017).

Eleven studies are instead based on the updates elaborated by Caplan (2005, 2010) to the cognitive-behavioural model. Referring to the Social Skill Model (Caplan, 2005), it is argued that individuals who perceive themselves as having social skill deficits in face-to-face contexts are more likely to be attracted to the unique features of Internet communication to compensate for such deficiencies and feel a sense of relief from consequent negative affect (e.g. sadness, social anxiety, loneliness). Accordingly, Casale and colleagues (2014) find that PIU might be a defensive response to extreme social evaluation pressures, and that this relation may be mediated by the fear of negative evaluation, making them prefer online interaction to face-to-face communication.

Eight studies are based on the Caplan (2010) model of components of PIU, conceptualised as a preference for online social interaction and a mood regulation strategy, which may result in difficulties in self-regulation (i.e. cognitive preoccupation and compulsive use) and negative outcomes. For example, Özdemir and colleagues (2014) find that loneliness is associated with

PIU, suggesting that the risk of PIU increases when the individual uses the Internet to cope with negative feelings because the relief offered by Internet use can function as a reinforcement for continuing online interaction. The presence of negative affect, such as depression, anxiety or loneliness, and its relationship with components of PIU is also demonstrated in other studies in this group (Calvete et al., 2017; Gámez-Guadix, 2014, 2016).

The role of self-regulation and metacognitions. Starting from Caplan's deficient self-regulation component of PIU (2010), two studies (Bernal-Ruiz et al., 2017; Gàmex-Guadix et al., 2016) apply LaRose's self-regulation model (2003) to understanding Internet use, conceptualising PIU as a problem of poor self-regulation, that is, a lack of self-conscious processes that allow one to judge, monitor, and adjust one's behaviour on the Internet; accordingly, poor awareness (Gàmex-Guadix et al., 2016) and obsessive-compulsive symptoms (Bernal-Ruiz et al., 2017) are found to be associated to PIU.

The conceptualisation of PIU involving cognitive-emotional regulation brings into play the role of metacognitions in some studies: for instance, Casale and colleagues (2016) posit that positive metacognitions associated with Internet use, such as escapism (i.e. "Internet use can help me to escape from negative emotion") and controllability (i.e. "using the Internet can help me control my thoughts"), mediate the link between emotion regulation problems and PIU; similarly, Lu and Yeo (2015) find that undergraduate students with severe cognitive distortion and stronger motivation are more likely to develop PIU; finally, also maladaptive cognitions about the world are found to be associated to PIU in a study included in the present analysis (Díaz-Aguado et al., 2018) which shows that a fatalistic vision of the future increases the risk of PIU for adolescents, and that such a relationship is made stronger in a cultural and school context perceived as hostile and discriminatory.

Reasons for Internet use. Still within this second group of studies, apart from addiction models, in order to explain PIU, different scholars move the focus to the reasons behind Internet use. For example, one study (Senol-Durak & Durak, 2017) finds that maladaptive coping strategies are related with PIU, suggesting that for problematic Internet users, the Internet represents a way of escaping from life's problems, while for non-problematic users it is a way of coping with life's problems by challenging and solving them.

In another study (Nicolović et al., 2014), following Morahan-Martin and Schumacher's theory (2000), it is suggested that pathological users are more likely than others to use the Internet for numerous reasons overall and to use the Internet recreationally (e.g. relaxing, passing the time), socially with non-real-life contacts (e.g. meeting new people), and for emotional support. The

authors find that pathological users feel competent and comfortable online, enjoy the anonymity and become more socially uninhibited than non-pathological users.

Starting from a conceptualisation of IU as a continuum from healthy to pathologically addictive, some scholars (Liu et al., 2016) argue that where the adolescent falls on the spectrum depends on the needs that are being fulfilled online compared to those satisfied offline: when they discover the advantage of the Internet over real life in satisfying their needs, they tend to seek satisfaction online, increasing the risk of using the Internet in a pathological way. These findings lead to the development of a Compensatory Satisfaction Theory to explain PIU development and maintenance, which inspired a successive study (Liu et al., 2019) included in the present review, where good communication with parents enhances the perception of psychological needs being satisfied, which in turn decreases the attractiveness of online activities for adolescents.

A compensatory Internet use model is also the kind developed by Kardefelt-Winther (2014, 2017) and supported by one study (Hernández et al., 2019), considering PIU as the result of a coping behaviour grounded on a state of negative affectivity: it is found that the relationship between such negative affectivity and PIU is stronger for adolescents with high levels of procrastination, suggesting that when the Internet is used to avoid unpleasant tasks it might further amplify the negative affect by creating interference with the adequate resolution of these difficult situations.

Users' point of view. The present systematic review also retrieved two qualitative studies, one of which (Tzavela et al., 2015) is designed to identify maladaptive patterns of Internet use among adolescents without starting from pre-existing models. By qualitatively analysing semi-structured individual interviews, properties (depicted as continuums) defining adaptive and maladaptive Internet use patterns are found: 1) satisfying needs across contexts (online-offline), 2) experiencing personal impact of the Internet upon functioning, and 3) regulating the self. According to these findings, maladaptive use of the Internet is a compensatory way of satisfying offline behaviour, described as irreplaceable and as the cause of interference, and it is linked to low self-control and resistance to change. In the other qualitative studies analysed (Li et al., 2015), sadness and depression, boredom, and stress are identified as common triggers of intensive Internet use in focus groups conducted among American undergraduate students, suggesting that using the Internet as a palliative coping strategy exacerbates negative emotional states.

4. Discussion

The main aim of the present systematic review was to identify conceptualisations on PIU proposed by recent scientific literature and to explore whether and what new insights on understanding PIU have been generated. Regarding the conceptualisation of PIU, findings showed that in addition to the more “traditional” perspective, relying on pre-existing models of addiction, some scholars intend PIU as a new distinct clinical disorder; furthermore, scholars’ contribution to the understanding of PIU aetiology, onset and development provides ideas on the PIU continuum and the role assigned to contextual aspects.

4.1. Behavioural Addiction or Something Else?

Findings suggest that a large part of the scientific research on adolescents and young adults considers PIU as an addictive disorder, embracing a perspective based on models of substance-related addictions, pathological gambling or Internet gaming disorder. Scholars embracing this perspective investigated the presence of symptoms such as preoccupation, withdrawal, tolerance, and loss of control, grounding their research on previous empirical evidence on the parallels between PIU, other addictive behaviours and substance dependency. With respect to adolescence, it is generally indicated as a period characterised by high levels of risk taking, exploration, novelty and sensation seeking behaviours (Crews & Hodge, 2007), characteristics which are often taken as an explanation for the high prevalence of addictive behaviours among this population – whether or not a substance is involved.

As pointed out by Kardefelt-Winther (2017), a first critical aspect of the addiction perspective applied to Internet studies is the use of a confirmatory approach, therefore findings may be vitiated by tautology where theory and measurement are constituted by the same criteria.

On the other hand, also the cognitive-behavioural perspective in the conceptualisation of PIU (Caplan, 2010) proposes similar criteria, namely cognitive preoccupation, compulsive use and negative consequences. Notwithstanding the sharing of some core symptoms, the studies embracing the two different perspectives start from different ways of conceptualising PIU.

Indeed, research based on Davis’s model of PIU (2001) specifically see IU as the experience of being online and leading a social life on the Internet, stressing the unique processes and factors involved in PIU, especially disadaptive cognitions about the self in relation to the online and offline world. Indeed, a strength of this approach may be identified in the focus on the specific features of IU. Consistently, studies embracing Caplan’s updating of the cognitive-behavioural perspective (2002, 2003, 2010) consider the centrality of a specific dimension of PIU, namely ‘preference for online interaction’, which do not appear in the other group of studies. This

dimension is supposed to have a key role in causing other symptoms, including compulsive use and negative outcomes. Considering the social aspects of Internet use seems particularly crucial when investigating PIU among youths: adolescents as well as young adults have to face new challenges in the social sphere, the former because they start to spend more time with peers, the latter because they move to university or enter the world of work.

Another feature shared by the scholars who refer to cognitive-behavioural models is the effort to take into account the interplay between dimensions of PIU: studies reviewed in the present research investigated the relationship between factors such as depression and loneliness (Özdemir et al., 2014) and PIU dimensions, assuming that the mechanisms underlying PIU consist of preference for online social interaction, which is related to greater mood regulation when using the Internet and poorer self-regulation, which, in turn, is associated with more negative consequences for the individual.

Therefore, even in case of similar criteria, the conceptual model underlying the studies is different: in the addiction perspective, components such as “preoccupation” and “loss of control” are borrowed from criteria for other addictive disorders, consistent with the conceptualisation of PIU as the individual’s inability to control his or her own behaviour and to stop thinking about it; in the other group of studies, scholars see poor self-regulation not only as a central aspect of PIU, but also the effect of the preference for online interactions and the motivation of Internet use for mood regulation.

It has to be noted that both groups of studies almost exclusively follow a quantitative research paradigm, where dimensions of PIU are established ‘a priori’, whereas qualitative studies in PIU fields are relatively scarce, although they may offer significant contributions in the understanding of PIU factors and processes. For example, one of the qualitative studies reviewed (Tzavela et al., 2015) offered users’ perspectives on PIU, described by adolescents as a way to compensate unsatisfied needs which becomes irreplaceable and a source of interference, thus causing low self-control and resistance to change. Such insights are consistent with the need to consider the perceived functional impairment and the reasons for the persistence of the behaviour in order to discriminate problematic behaviours from those which lead to excessive involvement and preoccupation without being necessarily problematic (Billieux et al., 2015). Similarly, the other qualitative study analysed (Li et al., 2015) reveals that according to the young participants, PIU occurs when the use of Internet as a palliative coping strategy is persistent, ending up exacerbating rather than relieving negative states. It must be noted that the user’s experience approach might provide more in-depth insight into the “why” of heavy Internet use (Griffiths, 2000): existing qualitative research suggests that negative outcomes

traditionally identified as related to PIU are not necessarily mentioned by the users, and that criteria may deviate greatly from that of the “expert” risk assessor or adult.

In sum, the debate on PIU as a form of addiction or a distinct clinical disorder is far from over. Nevertheless, some tendencies can be identified: firstly, the emphasis on the importance of considering it as a distinct disorder; secondly, the need to include dimensions - such as the preference for online social interaction - related to social life in order also to explain more ‘traditional’ core symptoms such as compulsivity and preoccupation, especially among adolescents and young adults; thirdly, the role of reasons for Internet use, which may trigger and maintain PIU. A critical aspect remains the tendency to adopt *a priori* paradigms (Billieux et al., 2015), as the scarcity of qualitative studies suggests.

4.2. Distinct Disorder or Severity in a Continuum?

As emerged from the results of the present systematic review, studies of the last few years have investigated the aetiology and evolution of the phenomenon over time; in some cases, this results in a more dynamic view of PIU. Indeed, recent integrations to the addiction perspective (Stavropoulos et al., 2016) suggest that PIU should not be considered a static entity, but that it can evolve or regress due to the interplay between individual and contextual factors. For youths, age-related changes as well as changes in their proximal context may affect whether they fall into the healthy or problematic pole, or somewhere in between, especially if we consider Internet use among adolescents and young adults as a way to compensate for needs unsatisfied in the offline context (Li et al., 2016). Furthermore, as pointed out by Kardefelt-Winther and colleagues (2017), in order to understand why the use of Internet may move from healthy to problematic, the focus should be shifted to reasons for IU: considering IU as a compensation strategy and a way of facing life’s challenges in these critical developmental periods may better explain why young people overindulge in using the Internet to the point of experiencing problematic outcomes.

One can see that compensatory use of the Internet as a possible explanation for PIU development and maintenance is mentioned by different studies: in the addiction perspective, Internet use is investigated for instance in association with depression (Liang et al., 2016), low self-esteem (Cudo et al., 2016), and stressful life events (Zhao et al., 2017), claiming that the presence of such factors, and the attempt to cope with them through the Internet, predisposes the individual for PIU. Similarly, in the second group of studies, especially the ones following Davis’s model (2001), both individual (e.g. depression, anxiety, loneliness; Gámez-Guadix, 2014, 2016) and relational problems (e.g. poor quality of relationships, low perceived social support; Bernal-Ruiz et al., 2017; Casale et al., 2014) are considered antecedents of PIU. Overall, it is

suggested that compensating for individual and/or social problems by using the Internet may not be problematic in itself, but it may enhance the attractiveness of the Internet, which may lead young people to overindulge in using it and predispose them to develop PIU. This point seems a further contribution to a more dynamic view on PIU; furthermore, it also finds support in both the qualitative studies included: in Tzavela and colleagues' study (2015), motivations for Internet use are seen as a continuum and Internet use as a way of satisfying offline behaviour is positioned on the problematic side; in Niculović's study (2014), problematic users are the ones who employ the Internet for enjoyment, emotional support and social reasons.

Another example of how recent studies appear to confute the idea of Internet misuse as a static entity is the reference to the self-regulation model (LaRose et al., 2003) which maintains that the so-called symptoms of PIU may be indicators of poor self-regulation of Internet usage that contributes to habit formation. As pointed out by LaRose, Lin and Eastin (2003), deficient self-regulation is understood not as an all-or-nothing phenomenon, distinguishing problematic from non-problematic users, but as a continuous variable systematically related to consumption even among those who fall short of the threshold for a "diagnosis" of PIU. Difficulties in effective self-regulation lead to the formation of Internet consumption habits, but not necessarily to harmful consumption patterns.

In conclusion, notwithstanding the lack of a widely accepted conceptualisation of PIU, it seems that stressing the compensative potential of Internet use may allow us to understand the development and the persistence of problematic Internet use, regardless of the perspective adopted; the view of PIU as a maladaptive strategy to cope with life's difficulties and negative emotional state seems to be consistent with the idea that there is no clear discontinuity between "normality" and "pathology", namely from "healthy" to "problematic" users, who differ not in terms of presence/absence of some manifestations, but in terms of degree. In other words, the use of the Internet as a way to cope with real life problems is not problematic *itself* (Machackova et al., 2013), but it is more likely to become so if this strategy is utilised in a rigid, persistent way, with negative consequences for young people's well-being.

4.3. The interplay between individual and socio-cultural factors

Another issue addressed by the present review was to explore whether and how the relationship between a person's characteristics and socio-cultural environment needs to be considered. For a long time, research in the field of addiction has been embedded in an epistemology of sickness and disease (Reinarman, 2005), conveying an image of the addicted person as an individual who is at the same time free from social and cultural influences and fundamentally out of control.

Based on the papers reviewed, an attempt to consider the role of socio-cultural factors in favouring young people's IU and PIU behaviours has been made in the most recent years. Studies embracing the addiction perspective, even if still mostly focusing on individual factors such as depression (Liang et al., 2016; Zhao et al., 2017), have also included relational and contextual variables in explaining PIU aetiology, such as low satisfaction with interpersonal life (i.e. with friends, parents and school life) (Ohno, 2016), classroom climate (Stavropoulos et al., 2016, 2017), recent life events (Yang et al., 2014; Zhao et al., 2017), which influence the effect of individual risk factors, such as depression and personality traits. On the other hand, studies taking the cognitive-behavioural perspective frequently referred to the offline relational context to explain why a person should prefer online interactions, in terms for example of perceived social support (Casale et al., 2014) and positive relationship with others (Bernal-Ruiz et al., 2017; Casale et al., 2015).

Overall, these lines of research suggest that a better appreciation of what happens in the life-contexts of people is needed for a better understanding of their PIU. At the same time, both in the addiction perspective and in the other view, intra-psyche processes mediate the impact of contextual dimensions. Whereas the formers are considered necessary and sufficient for PIU to develop, the latter are not. A leading example could be the study by Lin and colleagues (2018): even if the authors consider the role of external influences and values of the social environment—namely, social influences - in the aetiology of PIU, they fall into the category of distal and ultimate determinants, whereas internal dimensions – such as the need to reduce stress – are considered proximal determinants.

However, one can also see that the negative outcomes – which Caplan's model (2010) indicates as constitutive components of PIU – depend, at least in part, on the social and cultural contexts in which the Internet use is shaped, experienced, and responded to by others. In certain family cultures, misuse of the Internet produces critical events from the point of view of the over-user and/or his/her family members (e.g. family conflict), and it is condemned or monitored, while in other cases, it is not recognised as a problem by the users or by their proximal social environment, nor is it related to negative social effects. Furthermore, as stressed by some studies (e.g. Borrell & Boulet, 2005; Caputo, 2020; Formica, 2017; Marinaci et al., 2019; Venuleo et al., 2016, 2018), the social environment may work both as a source of malaise and negative feelings and of the meanings through which people interpret and face what happens in their life: for instance, in a study included in the present review (Díaz-Aguado et al., 2018) adolescents showing a fatalistic vision of their future and perceiving the socio-cultural context to which they belong as hostile and discriminatory are at a significantly high risk of PIU. Consistently, we should think of PIU as the by-product of a maladaptive process, occurring between the subjects

and their social world, more than a maladaptive entity which develops in a more or less favourable terrain (Sugiman et al., 2008; Venuleo & Marinaci, 2017). The problematic nature of some patterns of Internet use emerges in the interaction between the person and his/her worlds, thus each of these levels need each other, and are dynamically, dialectically, and jointly made up by each other. This collective process appears to be underestimated in the current understanding of PIU.

5. Conclusions

The systematic literature search, based on PRISMA guidelines, must not be intended as a detailed representation of the ever-changing scenario of PIU research. It was based on the evolving body of literature on PIU among adolescents and young adults in a period of five years (2014-2019) retrieved in the SCOPUS database and combined with relevant Google Scholar findings. Since PIU research is a broad and variegated area of investigation, with a wide variety of theoretical perspectives, it is possible to assume that not the entire corpus of existing models on PIU has been tracked down as is suggested by the absence of other current theories on PIU. Nevertheless, the current work allowed us to highlight the progress made in considering Internet use not as a static entity, but as the dynamic result of the interaction between different factors (both individual and contextual) throughout life. Although most of the empirical studies investigate PIU by focusing on the addictive, compulsive, pathological nature of PIU (Karddefelt-Winther, 2014), the idea of Internet use as a compensation mechanism aimed to cope with life has been introduced. Conceptualising PIU as a maladaptive, exclusive and persistent way to cope with life may be useful to clarify how problematic and non-problematic users differ, suggesting the difference should be considered not in terms of kind, but of degree. Contextual factors may play an important role in this respect: this review suggests that the relational world of adolescents has drawn more and more attention concerning the prevention of negative outcomes, moving beyond the view of problematic adolescents as vulnerable to risky behaviour because of their individual characteristics (e.g. biological aspects). Therefore, future research on the conceptualisation of PIU should provide insights into a view of PIU as a dynamic and processual phenomenon, recognising the specificity of its underlying mechanisms and the role of contextual factors in influencing its course and negative outcomes. Recently, a valid and reliable tool, the “Internet Behaviour Scale” (Ranaiey et al., 2021) has been proposed to measure PIU, taking into account social aspects of Internet use, negative impact and feelings of competency online, so that the effects of the Internet on psychophysical well-being, particularly among adolescents and young adults, can be clarified (Sicari et al., 2021).

Finally, it is suggested that attention should be paid not only to the beliefs the users attach to the Internet and online interactions, but also to the ways they interpret their offline experience and social identity and whether their inter-subjective life-world provides valid and efficacious support in facing the challenges of life. Digital natives do not constitute a homogeneous group, with the same likelihood of being at risk of PIU, and a better consideration of the psychosocial protective and risk factors and conditions related to the interpersonal and social sphere is crucial to prevent PIU and to promote overall well-being.

Conflict of Interest Statement

The authors declare that the research was conducted in the absence of any potential conflict of interest.

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