

PROBLEMATIC INTERNET USE IN LONELY ADOLESCENTS:  
THE MEDIATING ROLE OF DETACHMENT FROM PARENTS

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## Abstract

**Objective:** The relationship between Problematic Internet Use (PIU) and loneliness in adolescence is a disputed issue. In the current study, we explored whether the relationship between loneliness and PIU in adolescence is mediated by detachment from parents.

**Method:** A community sample of 356 adolescents completed self-report questionnaires assessing Internet addiction symptoms, peer- and parent-related loneliness, and detachment from parents. Linear regression and mediation analyses were performed to explore the role of loneliness and detachment from parents in predicting PIU.

**Results:** Peer-related loneliness positively predicted PIU, whereas detachment from parents fully mediated the association between parent-related loneliness and PIU.

**Conclusions:** Multidimensional assessment of subjective solitary experience is needed to explain the relationship between loneliness and PIU in adolescence. This is in line with previous research on adolescents' PIU, suggesting that peer-related loneliness is more strictly related with maladjustment, whereas parent-related loneliness is maladaptive in the context of a lack of parental support.

**Key words:** problematic Internet use; loneliness; detachment; adolescence

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## Introduction

A vast amount of literature underlines the potential harmful effects of several Internet-related activities, including online gaming, online gambling, use of online pornography and cybersex, and social media and networking site use (Andreassen et al., 2016; Cacioppo, Gori, Schimmenti, Baiocco, Laghi, & Caretti, 2018; Casale & Fioravanti, 2017; Cooper, Delmonico, & Burg, 2000; Griffiths, 2012; Kuss & Griffiths, 2011; Munno et al., 2017; Musetti et al., 2016, 2017; Musetti, Terrone, & Schimmenti, 2018; Schimmenti et al., 2019; Wéry, Schimmenti, Karila, & Billieux, 2019; Van Rooij, Ferguson, Van de Mheen, & Schoenmakers, 2017).

Internet use could be problematic when an individual experiences a maladaptive preoccupation and a sense of craving for online activities and remains connected longer than he or she intended, despite the negative consequences (distress or impairment) resulting from that behavior (Aboujaoude, 2010; Block, 2008). It is important to pay attention to this problem in adolescence because technological literacy is pivotal in this phase for both social interaction (Bryant & Bryant, 2005) and

leisure activities (Dannon & Iancu, 2007). Adolescents are avid Internet users (Cerruti, Spensieri, Presaghi, Valastro, Fontana, & Guidetti, 2017; Pujazon-Zazik & Park, 2010) and construct some features of their social identity via Internet activities (Bradley, 2005).

According to Griffiths and Kuss (2017), social media use can be considered a "way of being", especially for young people. Furthermore, in the debate about dangers and opportunities due to the use of digital devices (Livingstone, 2008), the risk still remains of over-pathologizing daily activities while searching for a unanimous conceptualization and operationalization of web-related behaviors (Billieux, Schimmenti, Khazaal, Maurage, & Heeren, 2015; Musetti & Corsano, 2018; Starcevic & Aboujaoude, 2017; Starcevic & Billieux, 2017; Starcevic, Billieux, & Schimmenti, 2018).

In fact, Internet use could positively affect adolescents' social development (Borca, Bina, Keller, Gilbert, & Begott, 2015). Adolescents use digital devices to (a) explore and achieve their identity (Borca et al., 2015; Israelashvili, Kim, & Bukobza, 2012; Subrahmanyam, Smahel, & Greenfield, 2006); (b) increase self-confidence by promoting self-presentation

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(Boursier & Manna, 2018a) and self-disclosure (Valkenburg, Sumter, & Peter, 2010); (c) develop close and intimate relationships (McKenna, Green, & Gleason, 2002; Tzavela et al., 2015) and a feeling of connection with peers, belonging to a large community (Best, Manktelow, & Taylor, 2014; Etgar & Amichai-Hamburger, 2017; Utz, 2015); (d) increase positive feelings of competence (Schmitt, Dayanim, & Matthias, 2008); (e) gain social and moral knowledge (Bradley, 2005).

However, problematic Internet use (PIU)—that is, an abuse or misuse of Internet-related services—negatively impacts adolescents' social and emotional functioning (Schimmenti, Passanisi, Gervasi, Manzella, & Famà, 2014), and many concerns have been raised regarding adolescents' unhealthy, dysfunctional, excessive, and potentially addictive Internet use (Andreassen et al., 2016; Bányai et al., 2017; Boursier & Manna, 2018b; Casale, Tella, & Fioravanti, 2013; Fullwood, James, & Chen-Wilson, 2016; Griffiths, Kuss, & Demetrovics, 2014). A number of empirical studies have linked PIU with a variety of negative developmental outcomes such as depressive symptoms (Cho, Sung, Shin, Lim, & Shin, 2013; Gámez-Guadix, 2014; Park et al., 2013), social isolation (Sanders, Field, Diego, & Kaplan, 2000), poor school performance (Wainer et al., 2008), lack of well-being (Rosen et al., 2014), and so on. Among these variables, loneliness was identified as a risk factor for PIU among adolescents (Prievara, Piko, & Luszczynska, 2019).

Loneliness refers to the subjective experience of discomfort due to the inadequacy of existing relationships (Perlman & Peplau, 1981). Adolescents, who face a number of developmental tasks, such as separation from parents and forming relationships with peers (Majorano, Musetti, Brondino, & Corsano, 2015), might be particularly subjected to loneliness (Goossens, 2006; Heinrich & Gullone, 2006; Lasgaard, Armour, Bramsen, & Goossens, 2016; Qualter et al., 2015).

According to the compensatory model of PIU (Kardefelt-Winther, 2014), online activities, such as social networking and gaming, may compensate for psychosocial problems, such as low social support and loneliness. Consistently, socially anxious adolescents may prefer online social interactions to offline interactions (Caplan, 2006). However, high engagement in online social interaction does not necessarily provide a real solution to loneliness (Leung, 2004), and the excessive involvement in the Internet as a temporary solution to loneliness may lead to a vicious circle that maintains or even increases PIU (Huan, Ang, & Chye, 2014; Seepersad, 2004; Shi, Wang, & Zou, 2017). Despite the large amount of research highlighting a relationship between loneliness and PIU, it is still unclear which specific kind of subjective solitary experience is involved in this relationship. Some studies (Cramer & Barry, 1999; Goossens, Lasgaard, Luyckx, Vanhalst, Mathias, & Masy, 2009) showed that when adolescents' loneliness is assessed through a one-dimensional construct, loneliness within the peer group is the only aspect taken into consideration.

However, the solitary experience does not only affect "horizontal" relationships. In fact, loneliness is a complex construct that can involve different kinds of feelings depending on the relational context (e.g., peer- and parent-related loneliness; Goossens & Beyers, 2002). The distinction between peer- and parent-related loneliness is particularly significant in adolescence (Teppers, Klimstra, Damme, Luyckx, Vanhalst, & Goossens, 2013) because these two experiences of loneliness are associated with different positive and

negative developmental outcomes (Corsano, Majorano, Musetti, & Antonioni, 2014; Corsano, Musetti, & Gioia, 2016; Corsano, Musetti, Caricati, & Magnani, 2017; Lasgaard, Goossens, Bramsen, Trillingsgaard, & Elklit, 2011; Musetti & Corsano, 2019; Musetti, Eboli, Cavallini, & Corsano, 2019). This issue is particularly cogent because the identification of the specific determinants of PIU could have a great impact for effective prevention and intervention.

One of the most important developmental tasks of adolescence is the second separation-individuation process in which adolescents relinquish their childish dependencies and idealized representations of parents (Blos, 1967), but this redefinition of bonds might lead adolescents to experience a physiological loneliness (Corsano & Musetti, 2012). It could be considered the "price to pay" (Csikszentmihalyi & Larson, 1984, p. 187) for individuation. Separation from parents during adolescence is a prerequisite for autonomous emotional functioning during adulthood because it allows adolescents to foster social investments outside of the family (Beyers, Goossens, Van Calster, & Duriez, 2005; McElhaney, Allen, Stephenson, & Hare, 2009; Steinberg & Silverberg, 1986) and to develop a sense of agency (Beyers et al., 2003). By contrast, adolescent detachment from parents, which represents a more conflicting and radical emotional distancing, is linked to distrust, lack of support, and perceived alienation from parents (Ryan & Lynch, 1989). In other words, separation represents an adaptive developmental trajectory toward individuation linked to adolescents' adjustment. On the contrary, detachment may be defined as the detrimental side of adolescents' acquisition of emotional autonomy due to feelings of mistrust and alienation (e.g., excessive loneliness), and it is consequently related to maladjustment (Beyers et al., 2005).

In light of the aforementioned considerations, the purpose of this study was to examine the relationship between PIU, peer- and parent-related loneliness, and detachment from parents. We hypothesized that peer-related loneliness would predict PIU and that detachment from parents might play a key role in the relationship between parent-related loneliness and PIU, partially or totally mediating this association.

## Methods

### Participants

Three hundred fifty-six students (147 males; 41.3%) ranging in age between 13 and 16 ( $M = 14.47$ ;  $SD = .81$ ) were involved in the study. All students were recruited from four public high schools (each high school specialized in a different subject: grammar, science, teacher training, technology) located in the city of Parma, a relatively small urban area (about 190,000 citizens) in northern Italy.

### Procedure

The head teachers of each institute consented to the data collection and selected four classes inside their school (two 9th-grade and two 10th-grade classes) to participate in the study. An informed consent with a brief description of the study was delivered to all students' parents. Only students whose parents signed the informed consent were submitted to the data collection. All students whose parents signed the informed consent completed questionnaires assessing the variables of interest. The data collection, with an

average duration of 45–50 minutes, was conducted in the classrooms during school hours in place of normal lessons. The teacher and the researcher were present. Students were invited to respond to questionnaires with maximum autonomy. They were assured of the anonymity of the questionnaires to favor the adherence and the sincerity of their responses. The study was designed and carried out according to the Ethical Code of the Italian Psychological Association and the American Psychological Association.

Measures

**Problematic Internet Use.** The Italian version of the Internet Addiction Test (IAT; Ferraro, Caci, D’Amico, & Di Blasi, 2006; original version by Young, 1998) was administered to assess PIU. The IAT is a self-report questionnaire that includes 20 items (e.g., “How often do you try to hide how long you’ve been online?”) rated on a 5-point Likert-type scale ranging from 1 (*never*) to 5 (*always*). Missing values were replaced with the mean of the participant’s scores on other items. IAT total scores range from 20 to 100, with a score  $\geq 50$  suggesting PIU. In the present study, the Cronbach’s  $\alpha$  of the IAT was .85.

**Loneliness.** Two subscales of the Italian version of the Loneliness and Aloneness Scale for Children and Adolescents (LACA; Melotti, Corsano, Majorano, & Scarpuzzi, 2006; original version by Marcoen, Goossens, & Caes, 1987) were used in the study to assess loneliness. The subscales are (a) peer-related loneliness (L-Peer; e.g., “I feel sad because I have no friends”; Cronbach’s  $\alpha$  in this study was .87), assessing loneliness from the network of peers; and (b) parent-related loneliness (L-Part; e.g., “I feel left out by my parents”; Cronbach’s  $\alpha$  in this study was .78), assessing loneliness from parents. Each subscale consists of 12 items. For each subscale, the score is obtained by the sum of singular item scores. The higher the score, the higher the perceived loneliness in that dimension. Items could be answered on a 4-point Likert-type scale

ranging from 1 (*never*) to 4 (*often*).

**Detachment.** The alternative factor structure (Beyers et al., 2005) for the Emotional Autonomy Scale (EAS; Steinberg & Silverberg, 1986; Italian version by Meleddu & Scalas, 2002) was used to measure adolescents’ detachment from parents. Detachment is a second-order factor of EAS composed of eight items (e.g., “I might be surprised to see how my parents act at a party”) assessing maladaptive form of emotional distancing from parents. Items are rated on a 4-point Likert-type scale from 1 (*completely disagree*) to 4 (*completely agree*). A higher score indicates a higher level of detachment. Cronbach’s  $\alpha$  in this study was .61.

Data Analysis

Descriptive statistics were calculated for all the variables investigated in the study. We assessed gender differences through a *t*-test for independent samples. We evaluated associations between the variables through Pearson’s *r* correlations and regression analysis. We tested the proposed mediation model using the Process Macro for SPSS (Hayes, 2018), applying Model 4 with 5,000 bias-corrected bootstrap samples and controlling for age. A *p* value of .05 was set to indicate statistical significance.

Results

All scale scores were normal (no significant skewness or kurtosis), and we found no significant association between gender and age in this sample,  $t_{354} = 1.07, p = .29$ . As expected for a nonclinical sample, the mean scores of IAT were in the normal range. Consistent with previous Italian studies (e.g., Schimmenti et al., 2012, 2014), an empirical cutoff score at the 75th percentile of the distribution of IAT scores was derived, and values above 50 were selected. Eighty-seven (24%) participants reported scores of 50 or above on the IAT, indicating PIU in this study. Descriptive statistics are presented in **table 1** for the

Table 1. Descriptive statistics and gender differences

	Full sample (N = 356)			Males (n = 147)		Females (n = 209)		
	M	(SD)	Observed Range	M	(SD)	M	(SD)	<i>t</i> (354)
Age (years)	14.47	.81	13-16	14.57	.83	14.43	.89	1.07
Problematic Internet Use	43.04	11.06	21-77	42.78	11.19	43.21	10.99	-.35
Peer-related loneliness	20.94	7.05	12-45	20.47	6.57	21.27	7.37	.34
Parent-related loneliness	23.20	5.74	14-43	23.32	5.43	23.11	5.96	-1.05
Detachment from parents	19.36	4.24	9-30	19.32	3.97	19.39	4.44	-.16

Note: \* *p* < .05; \*\* *p* < .01

Table 2. Pearson’s *r* correlations between the investigated variables

	2	3	4	5
1. Age	.15**	.11**	.22**	.01
2. Problematic internet use	-	.23**	.20**	.26**
3. Peer-related loneliness		-	.27**	.12*
4. Parent-related loneliness			-	.35**
5. Detachment from parents				-

Note: \* *p* < .05; \*\* *p* < .01



full sample and differentiated by gender. There were no gender differences in relation to all the variables evaluated.

The intercorrelations between the investigated variables are reported in **table 2**. As predicted, we found significant associations between loneliness domains and PIU. Pearson's *r* correlations between IAT

relationships could lead adolescents to spend more time online, seeking virtual contacts and more manageable web-mediated interactions. However, previous studies (Baroni, Marazziti, Mucci, Diadema, & Dell'Osso, 2019) showed that the relationship between loneliness and PIU is often affected by a broader clinical picture that may pre-exist and may evolve into addictive

**Table 3.** Multiple regression analysis examining the predictors of problematic Internet use in the sample

	<b>B</b>	<b><math>\beta</math></b>	<b>t-value</b>	<b>CI (95%)</b>	<b>VIF</b>
Parent-related loneliness	.16	.08	1.46	-0.054 - 0.367	1.22
Peer-related loneliness	.27**	.17	3.29	0.110 - 0.435	1.08
Detachment from parents	.56***	.21	3.99	0.285 - 0.840	1.42

**Outcome variable**

Problematic internet use  $R^2=0.11$ .  $F_{(3,348)} = 14.64$ ,  $p < .001$

Note: \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

total score and LACA scale scores were, respectively,  $r = .20$  for parent-related loneliness and  $r = .23$  for peer-related loneliness (all  $p < .01$ ). There was also a significant correlation between IAT total scores and the Detachment subscale scores of EAS ( $r = .26$ ,  $p < .01$ ).

As depicted in **table 3**, results of the regression analyses showed that IAT total scores were predicted by LACA peer-related loneliness scores ( $\beta = .17$ ,  $p < .01$ ) and EAS detachment from parents scores ( $\beta = .21$ ,  $p < .001$ ), while LACA parent-related loneliness scores did not predict IAT total scores ( $\beta = .08$ ,  $p = .144$ ). Multicollinearity was evaluated using the variance inflation factor (VIF). VIF scores ranged between 1.08 and 1.22, thus indicating that there were no multicollinearity problems.

We performed bootstrapping to generate 95% confidence intervals (CIs) to assess whether detachment from parents mediated the relationship between parent-related loneliness and IAT scores in the overall sample controlling for age. Mediation analysis showed that detachment from parents fully mediated the effect of parent-related loneliness on IAT total scores. The total effect of parent-related loneliness on IAT total scores was significant ( $B = 0.34$ ,  $SE = 0.10$ ,  $t = 3.31$ ,  $p = .001$ , 95% CI [0.14, 0.54]). The direct effect, removing the effect of the mediator, was not significant ( $B = 0.17$ ,  $SE = 0.11$ ,  $t = 1.63$ ,  $p = .105$ , 95% CI [-0.04, -0.39]), but the indirect effect was significant ( $B = 0.17$ , 95% CI [0.09, -0.26]). These results suggest that detachment from parents might play a key role in adolescence, linking feelings of loneliness with PIU.

## Discussion

The first aim of the current study was to explore the associations between loneliness and PIU in a group of Italian adolescents. As expected, peer-related loneliness was positively associated with PIU. This result is in line with literature showing that loneliness is a vulnerability factor for adolescents' excessive and dysfunctional use of the Internet (Huan et al. 2014; Seepersad, 2004; Shi et al. 2017). In agreement with the compensatory model of PIU (Kardefelt-Winther, 2014), these findings suggest that dissatisfaction with offline peer

behaviors. For example, Berdin and Saules (2019) found that having poor interpersonal relationships was particularly common among individuals who abuse alcohol while using the Internet. Additional research is thus warranted to disentangle the causality and the directionality of the relationship between addictive phenomena and their shared and distinct underlying mechanisms (Estevez, Jauregui, Sanchez-Marcos, Lopez-Gonzalez, & Griffiths, 2017; Liu, Lan, Wu, & Yan, 2019).

Interestingly, in our group of participants, parent-related loneliness was not predictive of PIU *per se*. As shown in previous studies (Corsano et al., 2014; Majorano et al., 2015), adolescents' loneliness toward parents could be related to a healthy separation-individuation process. In fact, adolescents might be elaborating an emotional distance from parents and at the same time might feel connected to and supported by peers. Thus, these adolescents might withdraw emotional investment from the family and might invest in social relationships outside the family (Blos, 1979).

Subsequently, we aimed to evaluate the mediational role of detachment from parents in the relationship between parent-related loneliness and PIU. As predicted, results showed that adolescents who feel lonely in their relationships with parents and emotionally detached from them display more PIU. This result appears in line with literature showing a link between the condition of isolation from parents (e.g., a radical disengagement from them) and maladjustment (Beyers et al., 2005; Pace & Zappulla, 2010). From a psychodynamic standpoint, the introjection of unhealthy internal parental objects (negative relational experience) may be the basis of certain sorts of psychic pain (Kernberg, 1995). Therefore, as posited by Cimino and Cerniglia (2018), isolated adolescents who display PIU might overuse the Internet to strive for external regulation of their emotions due to a lack of parental emotional regulation during their childhood. This is in line with research suggesting that PIU is linked with both emotion dysregulation (Di Blasi et al., 2019; Maganuco, Costanzo, Midolo, Santoro, & Schimmenti, 2019; Schimmenti et al., 2018) and insecure attachment (Schimmenti, Passanisi, Gervasi, Manzella, & Famà, 2014, 2019). Moreover, many studies suggested

significant associations between Internet-related activities and emotion management (Casale, Caplan, & Fioravanti, 2016; Spada & Marino, 2017; Tokunaga, 2015; Yu, Kim, & Hai, 2013), especially in adolescents (Schimmenti et al., 2017; Gioia & Boursier, 2019a, 2019b). Overall, our findings indirectly support the association between difficulties in emotion regulation and PIU, suggesting that the lack of perceived parental support combined with the inability to use loneliness as a resource to grow might expose the adolescent to inner unpleasant feelings, consequently reinforcing compulsive-impulsive Internet use as a maladaptive coping strategy (Longstreet, Brooks, & Gonzalez, 2019). In other words, adolescents could turn to excessive or otherwise problematic Internet use to emotionally interact with others (for example, because they prefer online social interactions; see Gioia & Boursier, 2019a) or to contrast a perceived sense of isolation and social distance.

The current study also allowed us to investigate loneliness and related phenomena in different contexts (i.e., family and peers) and with respect to the second separation-individuation process (Blos, 1967), and provided us with new evidence on the significance of evaluating PIU in adolescents from a developmental perspective, including core aspects of socio-emotional development that constitute noteworthy targets for clinical interventions.

As with all research, the present study comes with many limitations. First, the findings are not generalizable to all community adolescents because the sample included only adolescent volunteers within a limited age range and from a single region. Furthermore, studies including clinical groups are needed to compare and broaden our results, providing more significant clinical implications for public health. Second, in this study we used self-report questionnaires, whose potential biases (e.g., social desirability, difficulty in memory recall) are well known. Even though the measures administered in the present study are widely applied in research and have consistently demonstrated adequate psychometric properties, in all probability a multimethod assessment of loneliness, emotional distancing from parents, and PIU would have provided more valid and reliable findings. Third, the cross-sectional nature of the study made it impossible to definitively establish the direction of the association between variables. Furthermore, the mediation model was evoked based on theory, and it is not possible to rule out a reverse causation model in which increased PIU generates parent-related loneliness and ultimately detachment from parents. Therefore, longitudinal studies are greatly needed to advance this line of work. Finally, additional variables that were not included in the current study and that may be relevant for understanding PIU among teens (e.g., current social support, psychiatric symptoms, identity needs, use of tobacco, alcohol or other substances) may interact with loneliness and detachment from parents. Future research could address this hypothesis.

Despite these limitations, this initial study provided new evidence about the differential role that the specific relational contexts (e.g., parental relationship or peer relationship) may play in the relationship between loneliness and PIU, which could inform the development of tailored clinical interventions for adolescents who display PIU.

## Conclusions

The current study supported the hypothesis that a

multidimensional perspective on different kinds of solitary experiences may be particularly informative for clinicians dealing with adolescents who display PIU. Our findings showed that, contrary to peer-related loneliness, perceived loneliness in the relationship with parents did not predict PIU *per se*. Parent-related loneliness is associated with PIU only in the context of a radical and maladaptive detachment from parents. Therefore, it appears to be important to determine whether or not parent-related loneliness reflects a dysfunctional or not sufficiently supportive family relational context, or a healthier sign of the separation-individuation process. This distinction might help clinicians to better understand the factors underlying PIU and to develop tailored psychological interventions for adolescents who display PIU. In fact, our results suggest that contextualizing online behaviors of adolescents in light of developmental tasks (e.g., separation-individuation process) could be more informative than solely screening for PIU (e.g., by the use of cutoff scores of IAT or other validated measures) and its psychopathological correlates. For example, an adolescent who uses the Internet excessively because he or she feels detached and isolated from parents could benefit from an intervention designed to consider familial relationships (e.g., family therapy). In contrast, an adolescent who feels a lack of social connection with peers and tries to compensate for it by excessive online social interactions could benefit from interventions that focus on interpersonal relationships (e.g., interpersonal-psychodynamic therapy). Thus, the multidimensional investigation of loneliness experiences in peer and parent relationships of adolescents who display PIU represents a crucial opportunity for fostering research and interventions in this area.

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