





ORIGINAL ARTICLE

The role of life satisfaction in the association between problematic technology use and anxiety in children and adolescents during the COVID-19 pandemic

Raquel Luengo-González,^{1,2}  M^a Concepción Noriega-Matanza,¹ 
 Ernesto J. Espín-Lorite,¹  M^a Montserrat García-Sastre,¹ 
 Inmaculada C. Rodríguez-Rojo,^{1,3}  Daniel Cuesta-Lozano¹  and
 Cecilia Peñacoba-Puente⁴ 

¹Nursing and Physiotherapy Department, University of Alcalá, Alcalá de Henares, ²Group for Research in Nursing Care, Gregorio Marañón, Health Research Institute (IISGM), ³Laboratory of Cognitive and Computational Neuroscience, Complutense University, and ⁴Department of Psychology, Rey Juan Carlos University, Madrid, Spain

ABSTRACT: *The main aim of this study is to explore problematic technology use among adolescents (Internet, video games, mobiles, and television) and its association with anxiety symptoms. Furthermore, we also analysed the possible moderating role of life satisfaction in this relationship during the COVID-19 pandemic in Spain. A cross-sectional survey of 4025 children and adolescents (52% females and 48% males) between 12 and 18 years old was carried out to explore problematic technology use and its correlation with anxiety and life satisfaction after pandemic lockdown. Four multivariate regressions containing the independent variable (problematic technology use), the moderator (life satisfaction), and their interaction were entered to predict the outcome (anxiety). The moderated models were examined using SPSS PROCESS macro software (Model 1). Analyses showed significant positive correlations with anxiety and negative correlations with life satisfaction regarding problematic technology use (mobile phone, television, and internet). Both gender and age had a significant direct effect on anxiety (showing that women and older participants had the greatest anxiety). In the moderation analysis, when life satisfaction was higher, the presence of anxiety symptoms depended to a greater extent on the problematic use of technology. Our results confirm that problematic technology use is related to*

Correspondence: Cecilia Peñacoba-Puente, Department of Psychology, Rey Juan Carlos University, Avda. de Atenas s/n. 28922 Alcorcón (Madrid), Spain. Email: cecilia.penacoba@urjc.es

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Raquel Luengo-González, RN, MSc, PhD.
 M^a Concepción Noriega-Matanza, RN, PhD.
 Ernesto J. Espín-Lorite, RN.
 M^a Montserrat García-Sastre, RN, PhD.
 Inmaculada C. Rodríguez-Rojo, RN, PhD.
 Daniel Cuesta-Lozano, RN, MSc, PhD.
 Cecilia Peñacoba-Puente, PhD.

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higher levels of anxiety in adolescents, with differences by age and gender. The results also showed that life satisfaction mediated the relationship between technology abuse and anxiety, such that when life satisfaction was higher, the presence of anxiety symptoms was more dependent on problematic technology use. These findings have implications for health and education professionals.

KEY WORDS: *adolescent, anxiety, COVID-19 pandemic, life satisfaction, technologies use..*

BACKGROUND

Adolescence is essentially a time of change, characterized by enormous physical and emotional variations, in the process of transformation of child into adult. New capacities are acquired, and age determines both, objective needs, and specific subjectivities. It is indeed a vulnerable period for the emergence of risk behaviours, which can be found on their own or concur and bring health, economic, and social consequences (World Health Organization 2020).

With advances in technology, children and adolescents spend a large amount of time on screens (screen time, ST) making watching television (TV), using computers, smartphones, or playing video games a central component of their daily lives (Tremblay *et al.* 2011). New technologies offer both benefits and risks to the health of children and teenagers. On the one hand, benefits identified include exposure to new ideas and knowledge, early learning, social contact and support, and new opportunities to access health promotion and information. On the other, risks identified include negative effects on learning, physical and psychological health, exposure to inappropriate or unsafe content or contacts, and compromised privacy and confidentiality (Reid Chassiakos *et al.* 2016).

During the past three decades, several studies have reported the effects of technology use (TV, video games, social media, internet, and smartphones) on children and adolescents. These studies have looked at the psychological impact of the exposure or abuse of technologies, such as aggressive behaviours, anxiety, depression, and other mental problems (Reis Chassiakos *et al.* 2016; Suzuki *et al.* 2012). Simultaneously, other studies have tried to determine the relationships between the abuse of technology and sedentary behaviour and other health indicators such as eating or sleep behaviour in children and youth (LeBourgeois *et al.* 2017; Stiglic & Viner 2019).

Previous literature has shown the association between time spent using screens and mental health,

as well as the associations between the later and life-style behaviours (Hoare *et al.* 2016; Wang *et al.* 2019). The World Health Organization (WHO) is committed to supporting adolescent mental health and promoting well-being among Member States as part of target 3.4 of the Sustainable Development Goals (SDGs; World Health Organization 2020). Recommendations are aimed at informing conditions, self-harm, substance use, and other high-risk behaviours.

The COVID-19 pandemic has severely and negatively impacted the well-being of young people and has put them at an increased risk of mental health problems. School/college closure, including loss of structure and support, loss of routine, and loss of social connection have challenged children's and adolescents' mental health, and issues such as anxiety, loneliness and isolation, loss of motivation, and purpose have arisen. Lack of regular contact with friends has increased the perception of isolation, which, in some cases, was attempted to be mitigated using phones or other forms of communication such as the internet, video games, and social networks (Nearchou *et al.* 2020).

During the COVID-19 pandemic educators around the world shifted to a virtual mode of teaching and children and adolescents were forced to study online at home. The benefits of online learning contrast with a possible long-term risk of prolonged screen use (Wong 2021). Considering that young people also reinforced their social network with their friends and peers in this manner, the risk of misuse of these technologies has risen, which is associated with other health problems (Caner & Evgin 2021). Under such circumstances, children, and adolescents' behaviours, such as physical activity, were drastically impacted due to the prolonged home confinement (Bates *et al.* 2020; Xiang *et al.* 2020). The pandemic may have worsened existing mental health problems among children and adolescents due to the unique combination of public health crisis, social isolation, and economic recession that have increased adult unemployment, adult mental problems, and child maltreatment (Golberstein *et al.* 2020).

Evidence has shown that children and adolescents are more likely to experience higher rates of depression and anxiety during and after enforced isolation (Loades *et al.* 2020). Several studies have shown that the pandemic had a negative impact on youth mental health and was particularly associated with depression and anxiety in adolescents (Nearchou *et al.* 2020). Another study addressed depressive symptoms, anxiety, and life satisfaction in adolescents at two pandemic time points: before (T1) and after two months of confinement (T2). The results of this study showed that adolescents experienced significant increases in anxiety and depressive symptoms, and a significant decrease in life satisfaction from T1 to T2, which was especially pronounced among girls (Magson *et al.* 2021).

Studies have shown that there are several factors that moderate the relationship between technology use and adolescent psychological adjustment, reporting gender differences. In particular, the use of video games may be a protective factor for boys, but not for girls due to boys' development and maintenance of friendships by using games. Gender, social context, and even type of video game used could represent different coping mechanisms for anxiety (Ohannessian 2018). Another study reported that ego-resilience and parenting behaviour partially mediated between smartphone dependency and aggression in adolescents (Um *et al.* 2019). Given the scarcity of studies in this area, it is of interest to analyse which variables contribute to moderating the well-known relationships between problematic technology use (PTU) (using it in an excessive or inappropriate manner) and anxiety, especially in times of stress such as the COVID-19 pandemic, where the use of technology has been imposed for many facets of life. This analysis is especially relevant in the detection of protective and risk variables that allow the design of adequate prevention programs.

In this context, the principal aims of this study have been to explore the PTU among adolescents (Internet, video games, mobiles, and TV) and the moderating role of life satisfaction between the problematic use of new technology as a predictor of anxiety symptoms during the COVID-19 pandemic.

METHODS

Design

An online cross-sectional survey was designed and conducted during the post-confinement period of the COVID-19 pandemic during the first semester of 2021

in Spain. The research received approval from the Ethics Committee for Research in Health of the institution (Reg. CEIP/HU/2021/2/004).

Participants were recruited from the student population of secondary schools, both private and public, by convenience sampling using different contacts in the educational field and via telephone contact with schools to achieve representation in all regions of Spain.

The survey was published using the online survey platform of the university, and data collection remained open until no additional completion was reported for 2 weeks (June 2021). During this period, the survey was announced to the population of secondary schools all over Spain.

A total of 4025 adolescents (52% females and 48% males) between 12 and 18 years old (14.41 ± 1.74) were recruited. The distribution by age was 12 years (586, 14.6%), 13 years (891, 22.1%), 14 years (773, 19.2%), 15 years (592, 14.7%), 16 years (540, 13.4%), 17 years (470, 11.7%), and 18 years old (173, 4.2%).

Data collection

The survey was designed in a structured format comprising multiple-choice questions and free-text fields for elaboration. The survey consisted of the following six sections:

Demographic variables

This section included questions related to participants' age, sex, type of school and study level, family members, social support, family impact of pandemic, and home city.

Student's life satisfaction scale (SLSS)

The Spanish version of SLSS (Huebner 1991) used was validated with secondary students (Galindez & Casas 2010). The SLSS contains seven items that assess global aspects of schoolchildren's lives. The response scale used was a 5-level Likert-type scale (0 = Strongly Disagree; 4 = Strongly Agree). Cronbach's alpha found in our sample was 0.84.

Generalized anxiety disorder scale (GAD-7)

The GAD-7 questionnaire is a one-dimensional self-administered scale designed to assess the presence of the symptoms of Generalized Anxiety Disorder in adults (Spitzer *et al.* 2006) but has been validated in adolescents at a later stage (Mossman *et al.* 2017). The Spanish version (García-Campayo *et al.* 2010) was used in this study. The response scale used was a 4-level

Likert-type scale (0 = Not at all; 3 = Nearly every day). Because each of the 7 items is scored from 0 to 3, the GAD-7 scale scores range from 0 to 21. In our study, Cronbach's alpha was 0.88.

Problematic use of new technologies questionnaire

This questionnaire was developed and validated as an instrument to assess the PTU in youth and adolescents (Internet, video games, mobiles, and TV). It consists of 41 items, the first two on frequency and problems in the use of the different new technologies, plus 10 items referring to the use of Internet, video games, and mobile phones and 9 on TV use (Labrador *et al.* 2013). All questions are closed-ended with a range of possible answers. In addition, the questionnaire includes questions on frequency of use, existing problems, and characteristics of use such as location and hours of use.

Cronbach's alphas obtained for the sample under study were mobile phone use (0.79), video game use (0.78), TV use (0.76), and Internet use (0.67).

Data analysis

First, descriptive statistics and internal consistency (Cronbach's alpha) were calculated for the variables of interest. Mean difference analyses were carried out for independent groups (Student's *t*-test) on the variables under study (PTU, life satisfaction and anxiety) concerning gender (males vs. females). Pearson correlations were carried out among variables, including age. Four multivariate regressions were then computed with the PROCESS macro (model 1) (Hayes *et al.* 2017). In each regression, a combination of the independent variable (i.e. PTU), the moderator (i.e. life satisfaction), and their interaction was entered to predict the outcome (i.e. anxiety). Post hoc analyses were calculated when significant moderation was found to obtain the conditional effects of the independent variables on outcomes at different levels of the moderator. An alpha level of 0.05 was set for all analyses that were conducted with SPSS version 22 (IBM Corp, 2013).

RESULTS

Differences in problematic technology use (PTU), life satisfaction and anxiety according to age and gender

Statistically significant positive associations were observed between age and problematic mobile phone

use (0.048, $P = 0.002$), problematic Internet use (0.082, $P < 0.001$), and anxiety (0.117, $P < 0.001$). Likewise, negative statistically significant associations were observed between age and PTU video game (-0.114 , $P < 0.001$), problematic TV use (-0.049 , $P = 0.002$) and life satisfaction (-0.125 , $P < 0.001$). The effect sizes found are low or moderate.

Regarding gender, statistically significant differences were observed for all variables (see Table 1). Women showed higher scores in mobile phone PTU, internet PTU, and anxiety compared with men, whilst in the case of video game PTU, TV PTU, and life satisfaction, it was men who showed higher scores. The effect sizes found were low in all cases, being more relevant with regards to video game PTU.

Descriptive data and correlations among variables

As can be seen in Table 2, significant positive correlations were observed between the problematic use of different technologies (mobile phone, video games, TV, and internet; all < 0.001). Likewise, significant positive correlations of anxiety were observed with regard to mobile phone PTU, TV, and internet PTU (all $P < 0.001$). In the same way, significant negative correlations of life satisfaction were observed with regard to PTU mobile phone, TV, and internet PTU (all $P < 0.001$). PTU video game did not show significant relationships either with anxiety or with life satisfaction. Anxiety and life satisfaction maintained significant negative correlations ($P < 0.001$). Regarding the relationship between PTU and outcomes (anxiety and life satisfaction), the largest effect sizes were found regarding PTU mobile phone, both with regards to its relationship with anxiety and with life satisfaction.

Multivariate associations and moderation analyses

The results of the multivariate hierarchical regression analyses predicting anxiety from PTU, life satisfaction and their interaction are shown in Table 3, after controlling for age and gender. A positive main effect of PTU was found for all models, with the greatest loads for TV and internet PTU. In all models, life satisfaction had a significant negative direct effect on anxiety.

Regarding the sociodemographic variables to control, in all cases both gender and age had a significant direct effect on anxiety (showing women and older participants higher rates of anxiety).

TABLE 1 Differences in problematic technology use (PTU) according to gender

	Women Mean (SD)	Men Mean (SD)	<i>t</i>	<i>P</i>	η_p^2
PTU mobile phone	10.37 (3.46)	9.59 (3.20)	7.450	<0.001	0.014
PTU video game	4.54 (1.26)	6.31 (2.34)	-30.087	<0.001	0.184
PTU TV	4.53 (1.15)	4.65 (1.59)	-2.638	0.008	0.002
PTU internet	5.63 (1.83)	5.36 (1.73)	4.751	<0.001	0.005
Anxiety	8.96 (5.56)	5.38 (4.45)	22.422	<0.001	0.111
Life satisfaction	27.99 (7.67)	31.05 (6.68)	-13.451	<0.001	0.043

TV, television.

TABLE 2 Means, standard deviations and Pearson correlations among variables

	Mean	SD	Range	2.	3.	4.	5.	6.
1. PTU mobile phone	9.99	3.36	[6–24]	0.26**	0.39**	0.65**	0.36**	-0.24**
2. PTU video game	5.39	2.06	[4–16]		0.31**	0.31**	0.01	-0.01
3. PTU TV	4.58	1.38	[4–16]			0.29**	0.14**	-0.07**
4. PTU internet	5.50	1.78	[3–12]				0.27**	-0.20**
5. Anxiety	7.24	5.37	[0–21]					-0.52**
6. Life satisfaction	29.46	7.37	[6–42]					

PTU, problematic technology use; SD, standard deviation; TV, television.

***P* < 0.001.

TABLE 3 Prospective prediction of anxiety from problematic technology use (PTU), life satisfaction and their interaction

	<i>R</i> ²	<i>F</i>	<i>P</i>	Beta	<i>t</i>	<i>P</i>	95% CI
DV = Anxiety	0.381	495.78	<0.001				
PTU mobile phone				0.374	17.89	<0.001	0.333, 0.415
Life satisfaction				-0.306	-32.06	<0.001	-0.324, -0.287
Interaction				0.003	1.09	0.275	-0.002, 0.007
Age				0.137	3.55	<0.001	0.061, 0.212
Gender				-2.33	-17.14	<0.001	-2.605, -2.069
DV = Anxiety	0.349	430.93	<0.001				
PTU video game				0.379	10.167	<0.001	0.306, 0.453
Life satisfaction				-0.331	-34.413	<0.001	-0.349, -0.312
Interaction				0.016	3.827	<0.001	0.008, 0.025
Age				0.203	5.106	<0.001	0.125, 0.281
Gender				-3.201	-20.57	<0.001	-3.51, -2.90
DV = Anxiety	0.347	426.84	<0.001				
PTU TV				0.500	9.81	<0.001	0.400, 0.600
Life satisfaction				-0.336	-35.04	<0.001	-0.355, -0.317
Interaction				0.021	3.50	<0.001	0.009, 0.033
Age				0.170	4.31	<0.001	0.093, 0.248
Gender				-2.57	-18.35	<0.001	-2.85, -2.30
DV = Anxiety	0.357	446.87	<0.001				
PTU internet				0.501	12.81	<0.001	0.425, 0.578
Life satisfaction				-0.321	-33.27	<0.001	-0.339, -0.302
Interaction				0.004	0.815	0.415	-0.005, 0.013
Age				0.121	3.09	0.002	0.044, 0.199
Gender				-2.451	-17.64	<0.001	-2.72, -2.18

CI, confidence interval; DV, dependent variable; TV, television.

Two moderation effects of life satisfaction were revealed: one in the relationship between PTU video game and life satisfaction on anxiety ($\beta = 0.016$, $t = 3.827$, $P < 0.001$, 95% CI = 0.008, 0.025), and the other one in the relationship between TV PTU and life satisfaction on anxiety ($\beta = 0.021$, $t = 3.50$, $P < 0.001$, 95% CI = 0.009, 0.033).

As noted in Table 4 and Figures 1 and 2, in both cases (video game and TV PTU), when life satisfaction was higher, the presence of anxiety symptoms depended to a greater extent on the PTU.

DISCUSSION

Because of COVID-19 pandemic, new technologies have become the main tool for children and adolescents in practically all areas of their lives. In this context, the objective of this study has been to analyse the possible relationship between the PTU and anxiety and the possible role of life satisfaction in this relationship, whilst taking age and gender into consideration.

PTU is widely related to psychological disorders in children and adolescents (Maras *et al.* 2015; Oswald *et al.* 2020; Sahu *et al.* 2019). Most of the studies in this area explore the problematic use, including media multitasking, with more than 50% of children and adolescents engaging in multiple media activities at a given time (Moreno *et al.* 2011). Despite the potential benefits of the use of technology, concerns about its use have arisen due to changes in mood, increase in sedentary lifestyles, withdrawal from other activities, and impaired sleep patterns (Reid Chassiakos *et al.* 2016). Difficulties arise when differentiating between normal and PTU, considering the important role that technology has played during the pandemic (Cauberghe *et al.* 2021; Joshi *et al.* 2019).

Due to the negative impact that the pandemic itself has had on children and adolescents (Magson

et al. 2021), and the increased use of technology as a coping strategy during this period, it is important to establish relationships between technology use and outcomes of anxiety and life satisfaction. The present study explores the subject using a PTU scale, showing significant positive correlations between all types of PTU, and between PTU and anxiety. The results of this study replicate those of other similar characteristics regarding PTU in non-pandemic circumstances (Maras *et al.* 2015; Sewall *et al.* 2021; Twenge & Campbell 2018). Furthermore, a significant negative correlation was found between PTU and life satisfaction, and life satisfaction with anxiety. Other studies have suggested that life satisfaction is negatively associated with longer screen time (Matin *et al.* 2017) and that an excessive use of technologies is related to decreased well-being (Dienlin & Johannes 2020; Orben & Przybylski 2019). It has been also found a positive association between anxiety and hours of social media use and, when the results are separated by gender, this association is stronger in girls than boys (Twenge *et al.* 2020).

In agreement with previous literature, our results also point to the need to consider the influence of age and gender in the association between the use of new technologies and emotional symptoms. Specifically, the results of the bivariate analyses, although with low effect sizes, showed significant negative associations between age and life satisfaction and positive associations between age and anxiety. This was also found in other studies in which levels of life satisfaction were significantly higher in childhood than pre-adolescence (Aymerich *et al.* 2021; Kelishadi *et al.* 2018). Evidence also reported that the anxiety levels among the adolescent population were significantly higher than those obtained in children (Meherali *et al.* 2021). Regarding gender, our results indicate differences in life satisfaction and anxiety in the same way as other studies,

TABLE 4 Conditional effects of problematic technology use (PTU video game and PTU TV) on anxiety at different values of life satisfaction

Life satisfaction	Beta (PTU video game)	<i>t</i>	<i>P</i>	95% CI
-7.47	0.258	5.54	<0.001	0.167, 0.349
1.53	0.404	10.50	<0.001	0.329, 0.480
7.53	0.502	9.75	<0.001	0.401, 0.603
	Beta (PTU TV)			
-7.47	0.342	5.72	<0.001	0.225, 0.459
1.53	0.532	9.88	<0.001	0.427, 0.638
7.53	0.659	8.69	<0.001	0.511, 0.808

CI, confidence interval; TV, television.

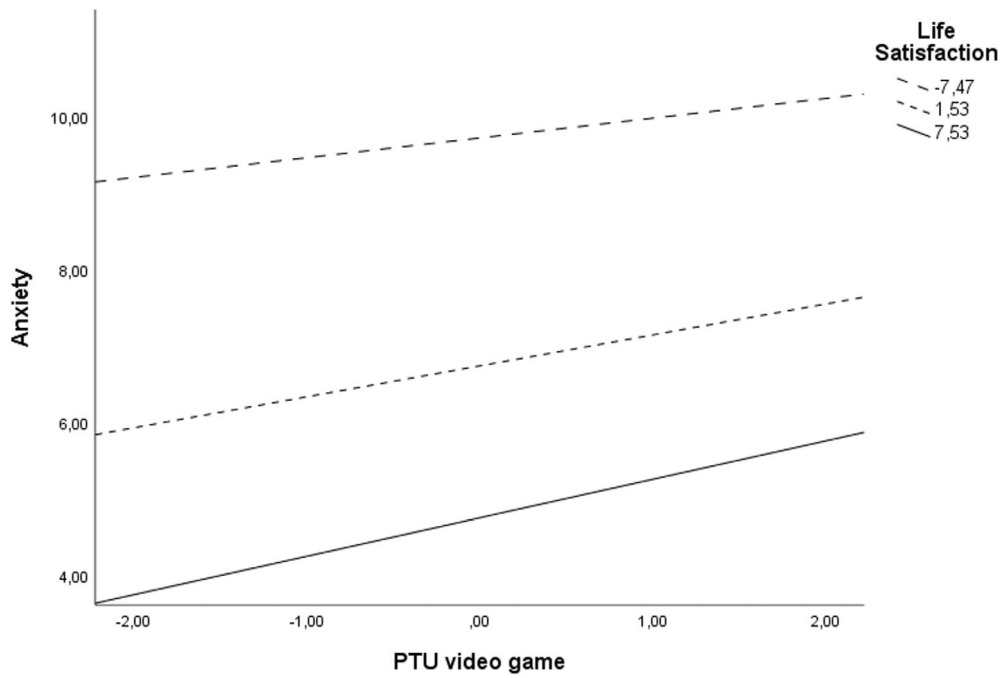


FIG. 1 Conditional effects of PTU video games on anxiety depending on life satisfaction.

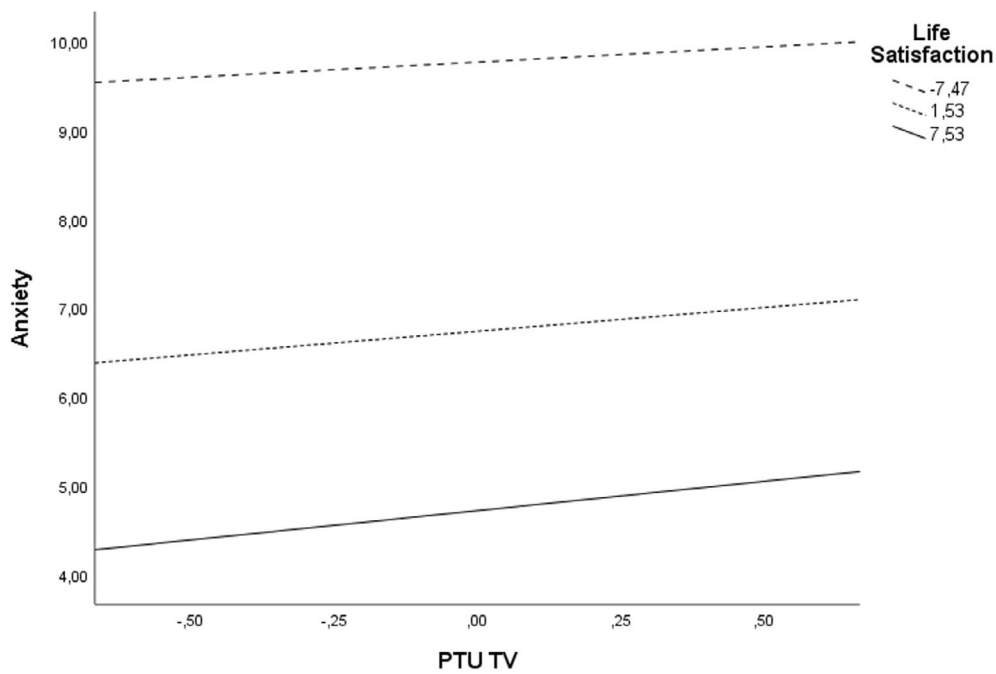


FIG. 2 Conditional effects of PTU TV on anxiety depending on life satisfaction.

where girls report lower levels of life satisfaction than boys (Aymerich *et al.* 2021; Orgilés *et al.* 2012). According to available gender-sensitive data, adult women continue to be a vulnerable group that suffers

more from anxiety and mental health problems (Tibubos *et al.* 2021).

Statistically significant negative relationships were observed between age and problematic video game and

TV PTU in the current study. These results are consistent with previous literature, where the use of video games and TV are used more in younger children and, over the years, other electronic devices exceed the time of use (Charmaraman *et al.* 2022; Houghton *et al.* 2015; Twenge & Campbell 2018). Other studies have shown that total screen time averaged was progressively higher among older children and was related to anxiety and depression (Twenge & Campbell 2018).

Regarding gender, our results show higher scores in women in PTU mobile phone and PTU internet compared with men, and higher scores in men for PTU video game and PTU TV. These differences by gender have been replicated in recent studies where boys have reported significantly higher use of games, whilst girls are more likely to use social media (Houghton *et al.* 2015; Svensson *et al.* 2022; Twenge *et al.* 2020). Along the same lines, other studies indicate that gaming was associated with problematic internet use in males, whilst problematic smartphone use was identified in females (Lee *et al.* 2018).

Given the significant relationships of age and gender with the variables of interest, in the present study we controlled by age and gender in our models because both showed a significant direct effect on anxiety (showing female and older participants to have the higher levels of anxiety). In this sense, one of the strengths of our study is that, after controlling for age and gender, in all models, a positive effect of PTU on anxiety was found, when life satisfaction was also included. Therefore, it would be suggested that PTU generates more anxiety in adolescents, after controlling for the effect of age and gender. The analyses also showed that life satisfaction has a significant negative direct effect on anxiety. This is consistent with the results of recent research that explored predictors of psychological well-being in adolescents and showed that anxiety and loneliness were negatively associated with happiness during the COVID-19 lockdown (Cauberghe *et al.* 2021). Other studies showed a bidirectional relationship between social media use and symptoms of mental health problems (Beeres *et al.* 2021).

One of the most novel results of this study are the moderation effects found. Specifically, the moderation effects showed two interactions between PTU (video games and TV) and life satisfaction on anxiety. This indicates that when life satisfaction levels increase, the effect of PTU on anxiety becomes more relevant, and as life satisfaction scores are lower, anxiety is less dependent on PTU, that is there will be other factors explaining anxiety levels. Indeed, consistent with

previous literature, our results support the fact that higher life satisfaction contributes to lower levels of anxiety. Different studies have suggested that environmental factors that influenced well-being such as higher socioeconomic status, positive family environment, resilience and peer attachment increase the probability of children's life satisfaction (Milosevic *et al.* 2022). However, to our knowledge, the moderating role of life satisfaction between PTU and anxiety has been scarcely investigated. The results indicate that the greater this strength (i.e., life satisfaction) in children and adolescents, the greater the likelihood that PTU will cause elevated levels of anxiety. These results would suggest that children and adolescents with higher levels of life satisfaction are at a higher risk of PTU increasing their anxiety. In the absence of previous studies in this regard, these outcomes could be explained by stress models. It could be hypothesized that in children and adolescents with higher levels of life satisfaction, PTU is a non-standard coping strategy in stressful situations (e.g. the COVID-19 pandemic) that they cannot handle with their usual resources. Some studies explore the use of social media as a coping strategy for adolescents to deal with anxious feelings during the COVID-19 pandemic (Cauberghe *et al.* 2021; Charmaraman *et al.* 2022). This strategy would therefore constitute, in these children and adolescents, a particularly maladaptive strategy that would contribute to an increase in their anxiety, not obtaining the potential protective effect that has been observed in previous literature (Beeres *et al.* 2021). In this sense, PTU should be considered especially problematic in children and adolescents with a resilient profile, at least in terms of life satisfaction. However, given the novelty of our results, further research is needed in this regard.

This study still has some limitations. First, the cross-sectional design of the study limits the ability to make causal inferences about the observed relationships. Future studies should consider using longitudinal studies to investigate this aspect. Second, one of the dimensions of the technology scale, problematic internet use, obtained a Cronbach's alpha of 0.67 with the limitations that this implies. Finally, the scales used in this study do not assess all possibilities of PTU such as problematic use of online social networks, online shopping, or online video games.

CONCLUSIONS

Based on the data from our study, PTU is related to higher levels of anxiety in children and adolescents.

However, there are differences by age, such as the older the age the more PTU of video games and internet, more levels of anxiety and lower levels of life satisfaction. Gender also modifies the ways in which technologies are used, such that women have a more problematic use of mobile phones, and the internet and men have a more problematic use of video games. On the other hand, in relation to emotional symptoms, it was observed that females presented more anxiety and less life satisfaction than males.

Life satisfaction is found to be a variable that mediates the relationship between PTU of TV and video games and anxiety in adolescents. Thus, as life satisfaction increases, anxiety could be more dependent on PTU. Whereas in adolescents with low levels of life satisfaction, anxiety could be higher and less dependent on PTU. In adolescents with high life satisfaction, PTU has been shown to be a risk factor for anxiety. It is therefore necessary to examine the personal characteristics that influence the well-being of this population beyond PTU.

Given that the child and adolescent population are considered populations at risk of developing mental disorders, early detection is important as well as to consider profiles according to age, gender, and other stressors such as PTU. The risk profile in this study is for older girls, with lower levels of life satisfaction and problematic internet and phone use. The pandemic increased the risk of PTU as well as other factors that negatively affected adolescents' mental health. Therefore, given the association of PTU with the COVID-19 pandemic, it is especially relevant to pay attention to adolescents with high life satisfaction, since PTU constitutes a trigger for their anxiety, showing itself in this group as a clearly maladaptive strategy.

RELEVANCE FOR CLINICAL PRACTICE

Understanding psychological and emotional development during childhood and adolescence will make it possible to provide sensitive interventions in the current vulnerable situation.

These findings highlight the importance of psychological care during childhood, especially among the female population, which have implications for health and education professionals. Therefore, community and school nurses should be attentive to risk profiles for early detection of mental health problems, as well as in the promotion of healthy lifestyles and correct use of technology to children, adolescents, and their families.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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