Behaviour & Information Technology

ISSN: (Print) (Online) Journal homepage: www.tandfonline.com/journals/tbit20

From parents to their adolescent children: reexamining the link between parental and adolescent internet addiction

Sameha Alshakhsi, Khansa Chemnad, Constantina Panourgia, Diana Alsayed Hassan, Ala Yankouskaya & Raian Ali

To cite this article: Sameha Alshakhsi, Khansa Chemnad, Constantina Panourgia, Diana Alsayed Hassan, Ala Yankouskaya & Raian Ali (01 Apr 2025): From parents to their adolescent children: reexamining the link between parental and adolescent internet addiction, Behaviour & Information Technology, DOI: 10.1080/0144929X.2025.2484395

To link to this article: https://doi.org/10.1080/0144929X.2025.2484395

© 2025 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

View supplementary material

Published online: 01 Apr 2025.

Submit your article to this journal

Article views: 155

View related articles

View Crossmark data

Full Terms & Conditions of access and use can be found at
https://www.tandfonline.com/action/journalInformation?journalCode=tbit20

BEHAVIOUR & INFORMATION TECHNOLOGY
https://doi.org/10.1080/0144929X.2025.2484395

Taylor & Francis
Taylor & Francis Group

OPEN ACCESS Check for updates

From parents to their adolescent children: reexamining the link between parental and adolescent internet addiction

Sameha Alshakhsi[a], Khansa Chemnad[a], Constantina Panourgia[b], Diana Alsayed Hassan[c], Ala Yankouskaya[b] and Raian Ali[a]

[a]College of Science and Engineering, Hamad Bin Khalifa University, Doha, Qatar; [b]Department of Psychology, Bournemouth University, Poole, United Kingdom; [c]Department of Public Health, College of Health Sciences, QU Health, Qatar University, Doha, Qatar

ABSTRACT

This study explores the complex relationship between parental behaviours and adolescent problematic internet use (PIU), contributing to a growing understanding of how family dynamics influence digital habits in children. Using a sample of 236 Arab parents, we investigated the impact of parental PIU, the frequency of parental monitoring, and serious arguments about internet use on adolescent PIU. The findings demonstrated significant associations between parental and adolescent PIU levels, highlighting shared patterns in specific symptoms. Regression analysis identified parental PIU and frequent serious arguments as significant predictors of adolescent PIU, indicating the heightened risk among adolescents with PIU-affected parents. Additionally, the study uncovered a partial mediation effect, with the frequency of serious arguments serving as a pathway linking parental and adolescent PIU. By examining these relationships within a culturally distinct context, the research broadens the scope of PIU studies beyond western populations, offering new insights into underexplored Arab families. The results indicate the importance of family-centered intervention strategies, including positive parental role modelling and promoting constructive discussions about internet use. These findings have practical implications for developing culturally sensitive programmes aimed at mitigating adolescent PIU through improved family dynamics and healthy digital practices.

ARTICLE HISTORY
Received 6 April 2024
Accepted 12 February 2025

KEYWORDS
Internet addiction; adolescents; parental monitoring; problematic internet use; Arabs

1. Introduction

In recent times, the surge in Internet usage among adolescents has been particularly noticeable, with approximately 79% of them engaging with digital platforms as of 2022, according to the International Telecommunication Union (2022). This figure notably surpasses the 65% prevalence observed in the general population. Adolescents' engagement with screen media, including smartphones, video games, and computers, often exceeds time allocated to sleep or schooling, averaging around nine hours daily (Howarth 2023). While technology facilitates social interaction, education, and leisure pursuits, its increasing reliance has also led to adverse effects on adolescents' mental well-being, sleep patterns, physical activity, and academic performance (Bozzola et al. 2022)(Tülübaş, Karakose, and Papadakis 2023). Additionally, it has been associated with social isolation, impulsiveness, and aggression (Kwak, Kim, and Ahn 2022), raising concerns about the detrimental impact of Internet overuse on young people's lives and the risk of problematic use of Internet.

Problematic Internet Use (PIU), also known as Internet addiction (IA), is commonly characterised as a compulsive-impulsive disorder, encompassing both online and offline computer activities (Lavadi et al. 2021). It shares characteristics such as overuse, withdrawal symptoms, tolerance development, and adverse consequences similar to substance abuse disorders. The absence of a universally accepted definition of PIU presents a major challenge in understanding and addressing this issue effectively (Smyth, Curran, and McKelvey 2019). Despite numerous studies and expert opinions, consensus on definitive diagnostic criteria remains elusive, leading to differing interpretations of the condition. This lack of standardised definition hinders efforts to comprehend and tackle PIU adequately. Although PIU

CONTACT Sameha Alshakhsi salshakhsi@hbku.edu.qa College of Science and Engineering, Hamad Bin Khalifa University, Doha, Qatar; Raian Ali raali2@hbku.edu.qa College of Science and Engineering, Hamad Bin Khalifa University, Doha, Qatar
Supplemental data for this article can be accessed online at https://doi.org/10.1080/0144929X.2025.2484395.

© 2025 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group
This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

has not yet been officially classified in the Diagnostic and Statistical Manual of Mental Disorders (DSM) or International Classification of Diseases (ICD), growing evidence suggests its resemblance to other addictive behaviours, prompting increased recognition of its potential as a condition warranting professional intervention (Kuss 2015; Young 2017). Therefore, our use of the term PIU in this paper aims to reflect problematic and excessive technology use, as characterised by the symptoms described earlier, while avoiding reliance on less widely accepted terminologies such as 'Internet addiction.'

The Arab countries, particularly the Gulf Cooperation Council (GCC) countries, have experienced significant growth in internet usage, with prevalence rates of PIU alarmingly high among adolescents. A systematic review and meta-analysis conducted in 2021 estimated a pooled PIU prevalence of 33% in the GCC region, specifically among adolescents and young adults (Al-Khani et al. 2021). The high prevalence of PIU among adolescents in Arab countries was further evidenced by a study in 2023 reporting a 29.64% prevalence rate in Qatar (Chemnad et al. 2023). Similarly, PIU has been escalating rapidly in Saudi Arabia, particularly among adolescents and young adults, with recent estimates ranging from 30% to 60% in 2019, compared to 4% to 6% in 2014-2015 (Saquib 2020). The increasing prevalence of PIU in this region underscores the importance of investigating its underlying risk factors, particularly considering the significant rise in internet usage among adolescents, possibly influenced by adverse weather conditions in this area, like intense summer heat, limiting outdoor activities (Al-Khani et al. 2021). This study contributes to understanding the prevalence of PIU in recent years, specifically focusing on data toward the end of 2023.

Adolescents, in their developmental stage characterised by rapid cognitive, physical, and emotional changes, naturally engage in identity exploration, often involving sensation-seeking and risky behaviours (Steinberg 2005). This stage of life is marked by an inclination towards autonomy and self-realisation (Makariuk 2022), which can lead adolescents to engage more with the Internet as a means to fulfil these developmental needs. At this stage, adolescents and their behaviours are influenced by their environment and the interactions within it, including their immediate surroundings (microsystem), particularly their family and peers, as well as broader influences from the macrosystem, including cultural values and societal norms, which indirectly shape their development (Bronfenbrenner 1979). Within the family, being the closest and most consistent presence, parental behaviour acts as a critical role model for adolescents, aligning with the Social Learning Theory, which posits that individuals shape their behaviours through observation and imitation of others, especially their parents (Bandura 1977). Empirical evidence supports this notion, demonstrating that adolescents replicate different behaviours of their parents such as food consumption and smoking (Ilmaskal et al. 2022). Similarly, this observational learning extends to the digital realm, where adolescents internalise the norms and behaviours demonstrated by their parents, encompassing patterns of Internet usage. Consequently, they are inclined to replicate their parents' online behaviours, potentially resulting in their own PIU. For example, a study revealed that the amount of time parents spent online using computers was positively associated with their adolescents' amount of time spent using computers (Vaala and Bleakley 2015).

The relationship between parental PIU and adolescent PIU is an emerging area of study, with growing evidence suggesting that parental PIU may foster similar tendencies in adolescent (Chemnad et al. 2022; Doo and Kim 2022). However, research on the impact of parental PIU on adolescent PIU is limited and needs further exploration as understanding PIU in adolescents is important for early detection and intervention, potentially mitigating their susceptibility to PIU (Chi, Hong, and Chen 2020; Shi et al. 2022), particularly in the context of Arab family dynamics where parental influence is pronounced (Harb 2015). In the Arab region, where technological advancement and Internet accessibility have urged, adolescents are notably vulnerable to PIU (Yasmeen El-Sayed Borham et al. 2022). Cultural norms, family structures, and societal expectations in this region may shape adolescents' Internet usage patterns differently than those of their Western counterparts (Cheng and Li 2014). In collectivist cultures such as those in Arab countries, overprotective parenting and various family factors, such as family interactions, play a pivotal role in influencing adolescents' internet behaviours (Ahmadi and Saghafi 2013; Yen et al. 2007).

The impact of the family environment on adolescents extends beyond observing parents' behaviours. Research highlights that family dynamics, including parent – child relationships and cultural influences, play a critical role in shaping adolescents' PIU (Karakose, Tülübaş, and Papadakis 2022). This is further supported by the Problem Behaviour Theory, which posits the interaction between an individual's personality, perceived environment, and behaviour is crucial in determining the likelihood of engaging in addictive behaviours, including PIU among adolescents. For instance, environments with limited supervision or conflicted parent–child relationships may increase likelihood of high-risk

behaviour (DeVore and Ginsburg 2005), making adolescents more vulnerable to PIU. Research explored the relation between environmental factors and adolescents' PIU, such as family income (Leung and Lee 2016), (Chemnad et al. 2022) and parental supervision (Bleakley, Ellithorpe, and Romer 2016). The interplay between parental control over Internet use and adolescent behaviour is a critical area of study (Martins et al. 2020). Parental monitoring has a notable influence on adolescent PIU (Wang, Zou, and Yao 2011). Parental monitoring of their adolescents' Internet use and activities is a proactive measure that raises their awareness of their adolescents' need for support (Li et al. 2014). The more frequently parents monitor their child, the more they are informed of their child's behaviours, which potentially leads them to control, engage them in different activities, or have open communication with their children. Further research shows that parental monitoring, along with leisure activities and family engagement, can significantly influence PIU, suggesting that active and supportive parental involvement may reduce PIU tendencies (Lin, Lin, and Wu 2009). Additionally, research revealed that parental monitoring and care predicted lower PIU (Faltýnková et al. 2020). However, systematic reviews have reported inconsistent findings on the effectiveness of parental monitoring, attributing this variability to contextual factors, such as cultural differences, and methodological differences (Nielsen et al. 2019). This highlights the need for research into how parental behaviour and Internet use influence adolescent PIU, particularly in Arab culture where parental oversight is more prevalent.

Conflicted parent–child relationships, including poor communication and frequent serious arguments is another important environmental factor in understanding adolescent PIU. Supportive parent–adolescent relationships foster emotional security and resilience, reducing the likelihood of maladaptive coping behaviours (Books and Bowlby 1973). A research study found that the quality of parent–adolescent communication related to Internet use was associated with PIU, while the frequency of such communication showed no significant correlation (Van Den Eijnden et al. 2010). Conversely, poor communication and serious arguments over Internet use can create stress and increase the likelihood of adolescents engaging in problematic Internet behaviours (Milkovich et al. 2024) (Hayixibayi et al. 2022). Frequent serious arguments over Internet use are often observed in authoritarian parenting practices, which can be problematic. For example, Aziz et al. (2022) highlighted that frequent serious arguments about adolescents' excessive Internet use arise more frequently in families where parents themselves are at risk of PIU, impose rigid control or express disapproval without open communication, inadvertently increasing adolescent PIU. Such interaction may serve as pathways through which parental PIU shapes adolescent behaviours. Parental Parental PIU can contribute to inconsistent or negative parenting practices, such as poor communication, which heighten parent–adolescent conflicts (Peebles and Chen 2024). These findings align with research highlighting poor communication and conflicts as possible mediating pathways linking parental and adolescent behaviours (McDaniel 2019). Building on these findings, the present study hypothesises that the frequency of serious arguments about internet use mediates the relationship between parental PIU and adolescent PIU.

Parenting styles and their impact on adolescent behaviour can differ by culture (Shapka and Law 2013). Parenting practices are deeply influenced by cultural norms, and what is considered effective or normative can vary significantly across societies (Bornstein and Gov 2012). In individualistic cultures, such as those in the West, independence and autonomy and authoritative parenting are emphasised (Tamis-LeMonda et al. 2008). By contrast, collectivist cultures prioritise familial harmony, respect for authority, and obedience, with authoritarian parenting styles being more common (Harb 2015) (Tamis-LeMonda et al. 2008). In Arab families, characterised as collectivist, while most commonly described as authoritarian, research has shown that parenting styles also involves hybrid approaches see explanation in (Wrobel 2013). For example, a mix of authoritarian (emphasising obedience and high levels of control) and authoritative (exercising a moderate degree of control while fostering increasing autonomy) parenting styles commonly observed in the Kingdom of Saudi Arabia. While authoritarian parenting, for example, has been linked to adverse outcomes among youth in western cultures, it appears less detrimental in Arab and Asian societies, where it is often perceived as normative and not negatively viewed by adolescents (Alsheikh, Parameswaran, and Ethoweris 2010) (Chao 2001). In the online context, parenting practices such as parental monitoring and serious arguments with parents about internet use may be perceived as normative in Arab culture, the practices could potentially have different impacts in Western cultures. These cultural nuances underscore the importance of exploring parenting practices in Arab cultures that shape adolescent PIU, as the link between parenting and PIU tends to be stronger in collectivist cultures than in individualistic ones (Lukavská et al. 2022).

Building on this foundation, further examination of family influences reveals that parenting styles, family cohesion, and the quality of parent–child communication significantly contribute to adolescent PIU. Restrictive or overly permissive parenting styles and family cohesion, considerably affect the likelihood of adolescent PIU (Aziz et al. 2022; Yayman and Bilgin 2020). Additionally, the dynamics within the parent–child relationship, including poor family communication (Jiang 2019; Xu et al. 2014; Yu and Shek 2013) and parent–adolescent conflict (Bonnaire and Phan 2017; Liu and Kuo 2007; Yen et al. 2007), exhibit positive correlations with adolescents' PIU. These findings, aligning with attachment theory (Moretti and Peled 2004), underscore the substantial impact of parent–child relationships on adolescent behaviour. In Arab societies, where the family serves a central unit, these dynamics assume even greater significance (Harb 2015). Understanding these influences is crucial for developing tailored strategies to address PIU in adolescents effectively.

Given the introduced literature and the replication crisis in research (Mackey and Porte 2012) (Tackett et al. 2019), the present study revisits the relationship between parents' PIU, the frequency of parental monitoring, and the frequency of serious arguments about adolescents' internet use in relation to adolescents' PIU. Expanding on previous research (Chemnad et al. 2022), which demonstrated a significant and positive correlation between parents' PIU, frequency of serious argument about excessive use and adolescents' PIU, this study explores these associations within a broader geographical scope. Additionally, the COVID-19 pandemic has significantly altered adolescent internet behaviour (Wu et al. 2022), necessitating a reevaluation of these patterns as societies transition to normalcy. Given the original study's unique period – marked by a surge in internet use due to blended learning and social distancing revisiting this research post-pandemic is vital for assessing the persistence, reduction, or evolution of previously observed trends.

Recent research during the pandemic revealed various changes in Internet use, highlighting the importance of understanding these shifts and their implications for PIU post-pandemic (Wu et al. 2022). As educational and social interactions return to pre-pandemic modes, it becomes essential to examine how these changes have influenced technology use and PIU patterns. This study aims to investigate whether dependencies and behaviours related to PIU have changed in this context, providing insights into the pandemic's long-term effects on adolescents. Furthermore, the pandemic has affected family dynamics, particularly in parental interactions with children's internet use (Sciacca et al. 2022). This study seeks to offer a nuanced understanding of parental behaviour influences on adolescent PIU. To enhance the robustness and replicability of our findings, this study extends its reach beyond Qatar, incorporating participants who are nationals of other Gulf Cooperation Council (GCC) countries, including the UAE, Saudi Arabia, and Oman.

This study contributes to the growing body of research on PIU by shifting the focus from WEIRD populations (Western, Educated, Industrialised, Rich, and Democratic) to the culturally distinct and underexplored context of Arab families. Most existing research focuses on WEIRD countries, which represent only a subset of the world's population and may not fully capture the diversity of experiences and cultural influences in non-WEIRD regions (Henrich, Heine, and Norenzayan 2010). By investigating the interplay between parenting practices and PIU, this study provides valuable insights into the family factors shaping adolescent behaviour within Arab culture.

This paper aims to replicate the study by Chemnad et al. (2022), and explore the following research questions:

RQ1: Is there an association between Problematic Internet Use (PIU) in parents and their adolescents?

RQ2: Are there associations between specific PIU symptoms in parents and corresponding symptoms in adolescents?

RQ3: To what extent do parents' PIU, parental monitoring frequency, serious arguments about excessive internet use, parent's gender, and employment status contribute to predicting adolescents' PIU?

In addition to the replication, we aim to answer the following question:

RQ4: Does the frequency of serious arguments about excessive Internet use mediate the relationship between parents' PIU and adolescents' PIU?

2. Method

2.1. Participants and procedure

The study recruited participants from Arab countries via TGM (tgmresearch.com), a multi-country online data collection platform that connects with respondents across 130 countries, facilitating diverse participation in research studies. The survey was then conducted online using the SurveyMonkey platform (surveymonkey.com). SurveyMonkey is a widely recognised online survey platform that supports multiple languages, including Arabic, making it suitable for use in diverse cultural contexts. The platform was selected as it offers

comprehensive support for right-to-left (RTL) languages such as Arabic, ensuring proper formatting and accessibility for Arabic-speaking respondents. Moreover, SurveyMonkey has been successfully utilised in numerous studies conducted in the Arab region, demonstrating its reliability and acceptance among Arabic-speaking populations (Benstead 2018).

The survey was initially developed in English and then translated into Arabic using the back-translation method to ensure accuracy and preserve the intended meaning (Brislin 1970). A pilot test was conducted before the main study to evaluate the clarity and comprehensibility of the translated survey. Participants who did not meet the eligibility criteria were excluded from the study, while eligible individuals were invited to complete the full survey. To maintain the quality of responses, the survey included attention-check questions. Participants who failed these checks or completed the survey in less than 50% of the median completion time were excluded from the final analysis.

Eligible participants were Arabs from the Gulf Cooperation Council (GCC) countries, specifically parents of at least one adolescent aged 12 to 15, with both parents and adolescents being internet users. Participants also confirmed they identified as Arab GCC in terms of norms and culture. GCC countries share cultural values, social norms, and advancements in digital technology. The sample comprised 236 parents (123 males, 113 females) with an age range of 27 to 59 years ($M = 39.28$, $SD = 6.50$). Data on their children, as reported by the parents, covered 136 males and 100 females, all aged between 12 and 15 years ($M = 13.19$, $SD = 0.97$).

Data collection for the current study occurred from mid-November to late November 2023. Participants were provided a brief description of the research and shown information sheet and consent form at the beginning of the survey, with the option to withdraw at any point. Eligible participants were monetarily compensated for their participation. The study was approved by the Institutional Review Board (IRB) of Bournemouth University.

2.2. Measures

2.2.1. Demographic information

Parents were requested to provide demographic details, including their age, gender, nationality, employment status, and the age and gender of their children.

2.2.2. Internet addiction diagnostic questionnaire (IADQ)

Parental PIU was measured utilising the Internet Addiction Diagnostic Questionnaire (IADQ). The IADQ, adapted from criteria used for pathological gambling, comprises eight items, each indicating a potential symptom of PIU (Young 1998). This questionnaire uses a binary response format (Yes/No), yielding a total score between 0 and 8. Classification of PIU varies in the literature. Young's criteria categorise individuals scoring 5 or higher as 'Dependent Internet Users', while lower scores signify 'Non-Dependent Internet users.' Alternatively, three severity categories are identified: 'Non-Dependent' (0-2 'Yes' responses), 'At Risk of Dependency' (3-4 'Yes'), and 'Dependent Internet User' (5 or more 'Yes') (Durkee et al. 2012). Consistent with the study in (Chemnad et al. 2022), the present study employs both the total score and these assessment methods. The reliability of the IADQ scale in the present sample was assessed using Cronbach's alpha, with $\alpha = 0.65$, indicating an acceptable value of reliability (Ursachi, Horodnic, and Zait 2015) especially considering the items are binary. Previous studies have shown variability in the internal consistency of the IADQ across populations, with reported Cronbach's alpha values ranging from 0.62 in Arab samples to 0.72 among adolescents (Chemnad et al. 2023; Johansson and Götestam 2004). This variability suggests the influence of sample characteristics such as culture, language, and context. Despite moderate reliability coefficients, shorter scales like the IADQ remain widely used due to their practicality (Laconi, Rodgers, and Chabrol 2014). As a screening tool, the IADQ prioritises sensitivity, making Cronbach's alpha of 0.65 acceptable for identifying internet addiction patterns (Young 1998) (Gignac 2009). Similar coefficients have been reported for comparable scales. For instance, the Internet Addiction Test (IAT), developed based on the IADQ, has reported alpha values ranging from 0.63 to 0.82 in adolescent populations across diverse cultural contexts (Ngai 2007).

2.2.3. Parental version of young diagnostic questionnaire (PYDQ)

Adolescents' PIU was measured utilising the PYDQ, an adaptation of the IADQ tailored to assess adolescent PIU from a parental perspective (Wartberg et al. 2016). This version retains the original IADQ's eight binary questions (Yes/No), each reflecting a symptom of PIU. The total PYDQ score, ranging from 0 to 8, indicates the severity of an adolescent's problematic internet use, with higher scores suggesting greater risk. Notably, the PYDQ rephrases the IADQ items for external assessment by parents, without altering the content. For instance, a self-report item in IADQ about efforts to control internet use is mirrored in PYDQ as a query about the child's efforts to control internet use. Both IADQ and PYDQ evaluate similar criteria of

problematic internet usage, encompassing 'preoccupation', 'tolerance', 'unsuccessful efforts to limit or stop internet usage', 'withdrawal', 'loss of control of time spent on the Internet', 'risk/lose relationships/opportunities', 'lies to conceal extent of involvement', and 'dysfunctional coping' (Strittmatter et al. 2014).

The reliability of the PYDQ scale in the present sample was assessed using Cronbach's alpha, with $\alpha = 0.78$, indicating an acceptable value of reliability (Ursachi, Horodnic, and Zait 2015).

2.2.4. Parental monitoring of digital technology use

Parental monitoring was measured using two survey items capturing parents' involvement in their child's online activities: (1) 'How often do you monitor the amount of time your child spends on the internet?' and (2) 'How often do you monitor the types of activities your child engages in online?'. Responses were recorded on a 6-point Likert scale, ranging from 1 (Never) to 6 (Very Frequently). These items assess general parental behaviours related to oversight and awareness, consistent with the conceptualisation of parental monitoring as a protective factor against risky behaviours online (Vaala and Bleakley 2015).

2.2.5. Frequency of serious arguments

The variable 'serious argument' was operationalised through two questions focused on parent–child conflicts over internet use: (1) 'On average, how often do you argue with your child about excessive internet use on a school day?' and (2) 'On average, how often do you argue with your child about excessive internet use on a weekend day?'. Responses were captured on a 4-point Likert scale: 1 (0 times), 2 (1–2 times), 3 (3–4 times), and 4 (more than 4 times). The two responses were averaged to create an overall score reflecting the frequency of these serious arguments. Frequent arguments of this nature have been associated with increased stress in family dynamics and a higher likelihood of PIU among adolescents (Aziz et al. 2022; Milkovich et al. 2024).

It should be noted that while both variables (parental monitoring of digital technology use and frequency of serious arguments) capture aspects of family dynamics, they address distinct dimensions of parent–adolescent interactions. Parental monitoring emphasises proactive and intentional oversight of adolescents' online behaviours, which may function as a protective mechanism (Hernandez et al. 2024). In contrast, serious arguments reflect reactive and conflict-driven interactions, often indicating communication breakdowns and heightened stress (LoBraico et al. 2020).

2.2.6. Employment status of both parents

Parents were asked to report their employment status. The responses were then consolidated; the category 'Yes' was used when both parents were employed, while the category 'No' was used for all other scenarios.

2.3. Data analysis

We started the analyses by presenting *descriptive statistics* to provide detailed information about the characteristics of the study sample. For inferential analysis, we used four approaches.

First, a *chi-square test of independence* was conducted to examine the association between parental PIU and PIU in adolescents. The chi-square test is a non-parametric statistical method used to determine whether there is a significant relationship between two categorical variables (McHugh 2013). This test evaluates whether the observed frequencies in a contingency table differ from the expected frequencies under the null hypothesis of independence. To enhance the robustness of our findings, Bayesian contingency tables were also employed. Bayesian methods provide a probabilistic framework for hypothesis testing by comparing the likelihood of the data under the alternative hypothesis relative to the null hypothesis (Dienes 2014). Additionally, we used the Vovk-Sellke Maximum p-Ratio (VS-MPR) as a supplementary measure. The VS-MPR quantifies the maximum possible odds in favour of the alternative hypothesis over the null hypothesis, given the observed p-value, providing an intuitive metric for evaluating the strength of evidence (Sellke, Bayarri, and Berger 2001).

Second, to examine the relationship between PIU symptoms in parents and adolescents, we modelled parental assessments of PIU using *Generalized Linear Mixed Models (GLMM)*. The GLMM approach is particularly well-suited for analyzing survey data, addressing some of the inherent limitations of cross-sectional designs (Bolker et al. 2009). The decision to use GLMM in the present study was based on several factors. In particular, GLMM allows for the inclusion of random effects, such as participant ID, to account for intersubject variability and intrasubject correlations (Brown 2021). This helps reduce bias in parameter estimates and prevents inflated Type I error rates, enhancing the reliability of the results (Garson 2013). In addition, GLMM is well-suited for survey data with non-normal distributions, such as binary, count, or categorical outcomes. This flexibility ensures that the model can handle the specific characteristics of the data, producing more accurate and interpretable results (Salinas Ruíz et al. 2023). Additionally, to maintain

consistency with the replicated study, which used chi-square analysis to examine PIU symptom-level associations, the chi-square results for symptoms are included in the supplementary materials.

Third, a *multiple linear regression analysis* was performed to assess whether parental demographic variables of gender and employment status of both parents, parental PIU (IADQ score), and parental monitoring factors can predict adolescent PIU (PYDQ score). Prior to performing the regression analysis, the assumptions of normality, homoskedasticity of the residuals and the collinearity were verified. The results of the collinearity diagnostics showed no multicollinearity among the variables. The VIF values were < 5, and the Tolerance values were > 0.2. Additionally, Pearson's correlation was conducted, revealing a high correlation (r = 0.74) between two variables: 'Frequency of parents observing the amount of time adolescents spend on the internet' and 'Frequency of parents observing the activities of adolescents on the internet.' This correlation is understandable due to the similar nature of these variables. To ensure robustness, a series of regression analyses were performed, including both variables, each variable individually, and the average of both. Consistently, all models yielded similar results. Therefore, based on these findings and in alignment with the methodology of the previous study (Chemnad et al. 2022), both variables were retained in the analysis. The Pearson's correlation results are shown in Table 5. Durbin–Watson value was between 1 and 3, suggesting the independence of predictors. There were no outliers that significantly deviated from the model based on the standardised residuals not exceeding ±3.29. The analysis revealed no significant relationship between parental monitoring and the frequency of serious arguments with adolescents about excessive internet use. This finding indicates the independence of these variables.

Fourth, a *mediation analysis* was conducted to investigate whether the association between parents' PIU and adolescents' PIU was mediated by the Average frequency of serious arguments about excessive internet use. The analysis involved 5000 bootstrapping resamples to assess indirect effects while controlling for parents' age and gender.

The data were analyzed using JASP version 0.17.3 (JASP Team 2022).

3. Results

3.1. Descriptive statistics

Descriptive statistics of the participants are presented in Table 1. Of the 236 participants, 65.25% were from Saudi Arabia, 26.27% were from the United Arab Emirates, 3.39% from Oman, 3.39% from Bahrain, and 1.70 from Qatar.

Table 1. Descriptive Statistics of Demographic Variables.

Are both parents employed?	n	%
Yes	152	64.41
No	84	35.59
Frequency of parents observing the amount of time their adolescent spends on the internet.	n	%
Never	5	2.12
Very rarely	4	1.69
Rarely	15	6.36
Occasionally	67	28.39
Frequently	112	47.46
Very Frequently	33	13.98
Frequency of parental observation of the activities of their adolescent on the internet.	n	%
Never	4	1.69
Very rarely	9	3.81
Rarely	12	5.09
Occasionally	53	22.46
Frequently	108	45.76
Very Frequently	50	21.19
Frequency of parents' serious arguments with their adolescents about excessive internet use	M	SD
Weekly Average	1.96	0.75

3.2. Prevalence of PIU

Table 2 presents the mean IADQ scores for parents and PYDQ scores for adolescents. The prevalence of PIU among adolescents and parents, as determined by the two scoring classification methods, is depicted in Tables 3. Table 4 details the frequency of each PIU symptom among parents and adolescents.

3.3. Relationship between PIU levels in parents and adolescents

A chi-square test of independence was conducted to examine the relationship between PIU in parents and adolescents. PIU levels were classified based on Young's criteria, with participants identified as dependent Internet users if they answered 'Yes' to five or more items on the IADQ or PYDQ; all others were classified as non-dependent. The chi-square statistic ($\chi^2(1) = 19.51$, $p < .001$) revealed a significant association between parental and adolescent PIU. The Vovk-Sellke Maximum p-Ratio indicated strong evidence for this association, with maximum odds favouring the alternative hypothesis over the null hypothesis at 3196.5. Cramer's V test showed a moderate effect size (V = 0.3), suggesting a meaningful relationship between the two variables. Additionally, a Bayesian test of association (Jamil et al. 2017) was performed using version 0.19 of the BayesFactor package, applying default priors and a joint multinomial sampling plan. The analysis yielded a Bayes

Table 2. Descriptive Statistics of Parents' PIU and adolescents' PIU.

IA diagnostic questionnaire	M	SD
Parents' PIU (IADQ score)	3.91	1.90
Adolescents' PIU (PYDQ score)	3.48	2.27

Table 3. Prevalence of PIU in Parents and Adolescents Classified Using Two Different Scoring Methods.

Prevalence of PIU Based on Young's (1998) Two Levels Scoring	n	%
PIU in Parents		
Non-dependent internet users	145	61.44
Dependent internet users	91	38.56
PIU in Adolescents		
Non-dependent internet users	143	60.59
Dependent internet users	93	39.41
Prevalence of PIU Based on **Bakken et al.** (2009) and **Durkee et al.** (2012) Three Levels of Scoring	n	%
PIU in Parents		
Non-dependent internet users	53	22.46
At risk of dependency	92	38.98
Dependent internet users	91	38.56
PIU in Adolescents		
Non-dependent internet users	86	36.44
At risk of dependency	57	24.15
Dependent internet users	93	39.41

factor of 2570:1 in favour of the alternative hypothesis, providing strong evidence for the non-independence of PIU between parents and adolescents.

To evaluate the robustness of this association, we replicated the analysis using an alternative classification of PIU based on criteria from Bakken et al. (2009) and (Durkee et al. 2012). In this method, participants were categorised as non-dependent Internet users (0–2 'Yes' responses), at risk of dependency (3–4 'Yes' responses), or dependent Internet users (5 or more 'Yes' responses). This analysis also identified a significant association between PIU levels in parents and adolescents ($\chi^2(4) = 42.56$, $p < .001$, VS-MPR > 100, Cramer's $V = 0.3$, BF10 > 100). The findings revealed that adolescents were more likely to be either at risk of dependency or dependent Internet users if their parents were classified within similar risk levels. These results replicated the significant association observed in the initial analysis.

3.4. Relationship between PIU symptoms in parents and adolescents

A Generalised Linear Mixed Model was employed to test the effects of parental symptoms of PIU and children's symptoms of PIU on parental assessments of these symptoms. The dependent variable was binary, indicating whether symptoms of PIU were identified (yes/no). Given the binomial nature of the dependent variable, the logit link function was applied to model the probability of the outcome occurring while ensuring predicted values remained between 0 and 1, as required for binary data. Participant ID was included as a random variable to account for repeated measures within individuals.

In sum, we tested three fixed effects in this model: (1) the effect of Person (parents, adolescents), (2) the effect of PIU Symptoms (preoccupation, tolerance, unsuccessful efforts to limit or stop Internet using, withdrawal, loss of control of time spent on the Internet, risking or losing opportunities or relationships, lying to conceal extent of involvement, dysfunctional coping), and (3)

Table 4. Prevalence of PIU Symptoms in Parents and Adolescents.

	N (%)			
	Parents		Adolescents	
Symptoms of PIU	Yes	No	Yes	No
Preoccupation	182 (77.12)	54 (22.88)	148 (62.71)	88 (37.29)
Tolerance	150 (63.56)	86 (36.44)	168 (71.19)	68 (28.81)
Made unsuccessful efforts to control internet use repeatedly	131 (55.51)	105 (44.49)	95 (40.25)	141 (59.75)
Withdrawal	100 (42.37)	136 (57.63)	124 (52.54)	112 (47.46)
Loss of control of time spent on the internet	170 (72.03)	66 (27.97)	148 (62.71)	88 (37.29)
Risk/lose relationships/opportunities because of the internet	17 (7.20)	219 (92.80)	21 (8.90)	215 (91.10)
Lies to conceal extent of involvement	39 (16.53)	197 (83.47)	48 (20.34)	188 (79.66)
Dysfunctional coping	134 (56.78)	102 (43.22)	69 (29.24)	167 (70.76)

Table 5. Pearson's Correlations Among Adolescents' PIU, Parents' PIU, and Variables Related to Parental Monitoring and Arguments Argument Frequency About Internet Use.

Variable	1	2	3	4	5	6
1. Adolescents' PIU	–					
2. Parents' PIU	0.49***	–				
3. Frequency of parents observing the amount of time adolescents spends on the internet	−0.04	0.02	–			
4. Frequency of parents observing the activities of the adolescents on the internet	−0.07	0.00	0.74***	–		
5. Average frequency of serious arguments with adolescents about excessive internet use	0.58***	0.37***	0.06	0.06	–	

* $p < .05$, ** $p < .01$, *** $p < .001$

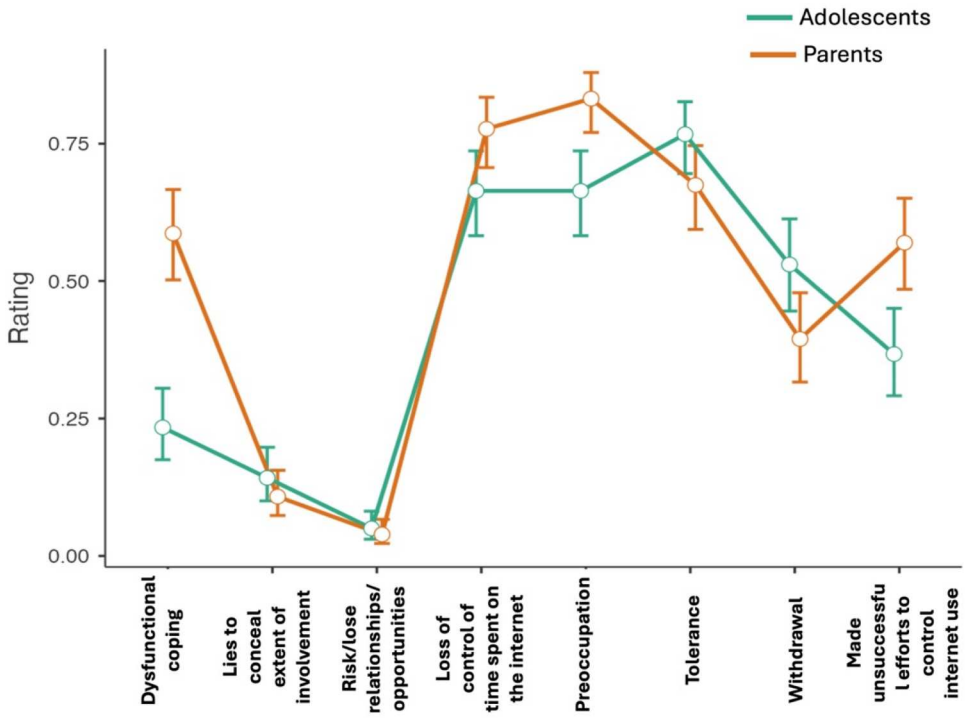

Figure 1. Mean ratings of Problematic Internet Use (PIU) Symptoms for parents and their adolescents. Error bars represent the 95% CI.

the interaction between these two effects to explore whether the relationship between parental and children's PIU symptoms varied based on the assessment.

The results showed the variance explained by the fixed and random effects together over the total variance of the dependent variable was 0.54. Fixed effects Omnibus tests showed that there was a fixed effect of Person (χ^2 (1) = 10.2, p = .001) indicating higher rating of PIU in parents compared to children (B = 1.33, mean difference (MD) = 0.75, z = 3.19, p = .001). There was also a fixed effect of Symptoms (χ^2 (7) = 618.8, p < .001) and interaction between Person and Symptoms (χ^2 (7) = 78.0, p < .001) (Figure 1). A Post Hoc test using Bonferroni corrections for multiple comparisons was performed to test the interaction between Person and Symptoms (see supplementary material for full report).

This analysis revealed several important findings. First, parents rated themselves higher than adolescents on three symptoms: dysfunctional coping (MD = 0.21, SE = 0.05, z = 6.87, pbonf < .001), preoccupation (MD = 0.39, SE = 0.09, z = 3.90, pbonf = .011) and unsuccessful efforts to control (MD = 0.44, SE = 0.09, z = 3.84, pbonf = .015). Second, two symptoms (the loss of relationship or opportunities and lies to conceal the extent of involvement) yielded the lowest rating in parents and adolescents and were significantly different from the rest of symptoms (see details in supplementary materials). Third, there were no significant differences between parents and adolescents in five out of eight PIU symptoms lies to conceal the extent of involvement (MD = 1.36, SE = 0.36, z = 1.18, p = 1.0), loss of relationship or opportunities (MD = 1.29, SE = 0.47, z = 0.41, p = 1.0), loss of control (MD = 0.57, SE = 0.13, z = 2.49, p = 1.0), tolerance (MD = 1.59, SE = 0.36, z = 2.04, p = 1.0) and withdrawal (MD = 1.73, SE = 0.36, z = 2.57, p = 1.0).

3.5. Role of parents' PIU, demographics, monitoring, and argument frequencies in predicting adolescents' PIU

Multiple regression analysis was performed to investigate factors predicting the adolescents' PIU. The model significantly contributed to the prediction of adolescents' PIU, explaining 42% of the variance R^2 = .44, adjusted R^2 = .42 (F (6, 229) = 29.58, p < .001). Notably, parents' PIU (β = 0.32, p < .001) and the average frequency of serious argument about excessive internet use (β = 0.46, p < .001) emerged as significant predictors. The correlation and regression results are presented in Table 5 and Table 6. We observed that using either the average or the total of serious arguments during weekdays and weekends produced identical results.

3.6. Mediating effect of frequency of serious arguments about excessive internet use

A mediation analysis was performed to examine the mediation effect of average frequency of serious

Table 6. Multiple Regression Analysis for Predicting Adolescents' PIU ($n = 236$).

Predictors	$R^2 = .44$, *Standardized* β	R^2Adj = .42, *t*	F (6, 229) = 29.58 *p*
Parents' PIU	0.32	6.01	< .001
Parents' Gender (Father:1, Mother: 2)	0.05	1.07	.286
Both parents employed (No: 0, Yes: 1)	−0.05	−1.01	.312
Frequency of parents observing the amount of time adolescents spends on the internet	−0.01	−0.16	.875
Frequency of the parents observing the activities of the adolescents on the internet	−0.07	−0.95	.343
Average frequency of serious arguments with adolescents about excessive internet use	0.46	8.46	< .001

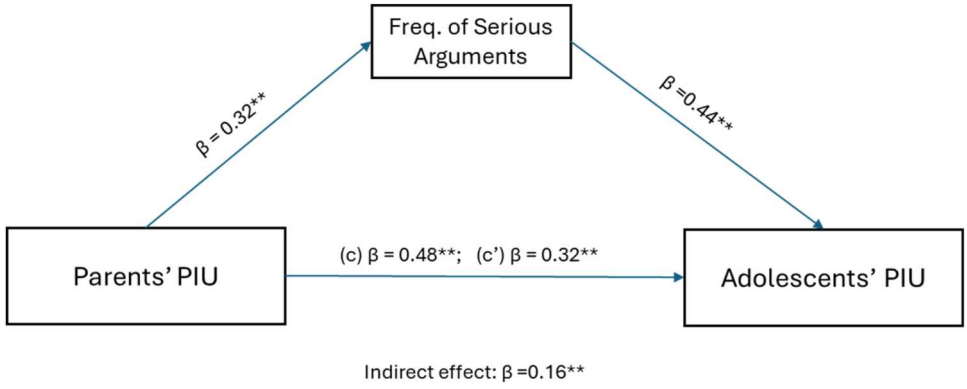

Figure 2. Mediation model between parents' PIU (IADQ score) and adolescents' PIU (PYDQ score) through the average frequency of serious arguments, (c) Total effect, (c′) Direct effect; *$p < .05$; **$p < .001$.

arguments about excessive internet use on the relationship between parents' PIU and adolescents' PIU. To account for the potential effect of parents' age and gender, these variables were controlled in the analysis. As illustrated in Figure 2, the mediation model results showed a significant total effect of parents' PIU on adolescents' PIU (β = *0.48, SE = 0.06, p < .001),* a significant direct effect (β = 0.32, SE = 0.05, $p < .001$), and a significant indirect effect (β = 0.16, SE = 0.03, $p < .001$). These findings indicate that average frequency of serious arguments about excessive internet use partially mediated the effect of parents' PIU on adolescents' PIU.

4. Discussion

The relationship between parents' PIU and its potential impact on adolescents is an evolving area of research. This study extends previous findings by emphasising that PIU is not solely an individual concern but operates within family systems, where parental behaviours significantly shape adolescent outcomes (Chemnad et al. 2022; Lam 2020). By exploring the interplay of parental PIU, parental monitoring, and serious arguments about internet use, this study provides valuable insights into the dynamics of adolescent PIU development. Our findings align with prior research suggesting that parental PIU predicts adolescent PIU, reinforcing the importance of intergenerational digital habits. This study further advances these findings by highlighting the mediating role of frequent serious arguments about internet use, showing that these conflicts partially explain the relationship between parental and adolescent PIU. Exploring these dynamics is essential, given that adolescence is a developmental stage marked by heightened susceptibility to environmental influences, particularly from family members (Bronfenbrenner 1979).

By investigating these factors within a culturally specific context, this study provides novel insights into how parent–adolescent interactions influence PIU patterns within Arab GCC cultural norms. In collectivist societies such as those in the Arab GCC region, where parental authority and family cohesion are deeply ingrained, the transmission of digital habits may be more pronounced compared to individualistic cultures (Harb 2015; Yasmeen El-Sayed Borham et al. 2022). Consequently, while our findings are specific to Arab GCC families, they also offer valuable insights into PIU dynamics in other collectivist societies, where family dynamics play a central role in shaping adolescent behaviours. These findings contribute to the understanding of adolescent PIU and lay the groundwork for interventions that consider family-level dynamics rather than adolescent-centered interventions to mitigate PIU among adolescents.

The chi-square results in our study revealed a significant association between parents' PIU and adolescents' PIU, as well as in the eight PIU symptoms. Regression

analysis confirmed that parental PIU is a significant predictor of adolescent PIU, emphasising the critical role of parental internet behaviours in shaping adolescents' digital habits. These findings align with prior literature indicating that excessive internet usage by parents may engender a similar trend in adolescents (Chemnad et al. 2022; Lam and Wong 2015). Lam and Wong (2015) identified a significant relationship between PIU in parents and their adolescent offspring, with stress moderating the relationship. While research on parental PIU remains limited, prevailing studies have predominantly framed PIU as an adolescent concern. However, parallels can be drawn from investigations into various addictive behaviours such as substance use (Keeley, Mongwa, and Corcoran 2015) and gambling (Emond and Griffiths 2020). These studies underscore the pivotal role of parental behaviour as a model for adolescent behaviour. For instance, adolescents with problematic gambling tendencies often have parents who engage in gambling activities (Emond and Griffiths 2020). The strong influence of parental behaviours on adolescents' behaviours is consistent with the principles of the Social Learning theory, which asserts that children learn primarily through observational learning from significant role models such as parents (Bandura 1977). When parents spend excessive time online, their children are likely to perceive such behaviour as acceptable or even desirable. Through the process of observational learning, children internalise the norms and behaviours modelled by their parents, including internet usage patterns. Consequently, children are more likely to imitate their parents' online behaviours, potentially leading to their own PIU. Notably, research indicates that the effect size of parental influence on adolescent PIU is stronger than that of their peers (Soh et al. 2018), thereby contributing to the establishment of a family culture prioritising digital interactions over face-to-face communication or other offline activities. This underscores the importance of targeted family-based interventions to address PIU, focusing on promoting healthy internet use habits across generations,

The GLMM analysis revealed largely similar intergenerational patterns of PIU symptoms, although parents reported significantly higher levels of certain symptoms compared to adolescents. Specifically, parents exhibited higher levels of dysfunctional coping, preoccupation, and unsuccessful efforts to control internet use. These findings suggest that parents, more than adolescents, may rely on excessive internet use as a maladaptive coping mechanism for stress or emotional challenges. This behaviour aligns with prior research indicating that adults are more likely than adolescents to engage in emotion-focused coping strategies, such as PIU, which is often associated with psychological distress (McNicol and Thorsteinsson 2017). The observed higher levels of preoccupation in parents may reflect persistent thoughts that interfere with daily responsibilities and family interactions (Caplan 2010). However, these findings should be interpreted with caution, as parents may underreport or misperceive adolescents' preoccupation due to limited visibility into private internet use. Additionally, higher parental levels of unsuccessful control suggest difficulties in self-regulation, which may influence adolescents through observational learning, potentially contributing to self-regulation challenges in younger individuals (Morris et al. 2007). Parents' struggles with controlling their own internet use may model maladaptive behaviours for adolescents, further emphasising the need for parental modelling of effective self-regulation strategies. These dynamics highlight the importance of exploring targeted interventions aimed at addressing PIU symptoms, with approaches tailored to the unique needs of both parents and adolescents.

The findings also showed that frequency of serious arguments was a significant predictor in adolescents' PIU. Furthermore, mediation analysis demonstrated a significant indirect association between parents PIU and adolescents' PIU, mediated by the frequency of serious arguments with adolescents about excessive internet use. These findings indicate a partial mediating effect, suggesting that parent–adolescent conflict may escalate the risk of PIU in adolescents. Such findings highlight the importance of fostering positive communication within families to mitigate conflict-driven pathways to PIU. Family-related factors exert a significant influence on both the onset and escalation of adolescent PIU (Li et al. 2014). While some research has delved into the direct correlation between parental PIU and adolescent PIU (Chemnad et al. 2022; Lam and Wong 2015), the underlying mediating mechanisms still remain unknown. This study supplemented existing literature by proposing a mediation model to elucidate the pathways through which parental PIU impacts adolescent PU. Our findings underscore that it is not only the way parents engage with the internet that predicted similar patterns of behaviour in adolescents, but it is also the way parents engage with their children. Specifically, the frequency of serious arguments surrounding excessive internet usage emerged as a significant predictor of adolescent PIU and partially mediated the association between parental PIU and adolescent PIU. These findings align with previous studies documented that the development of PIU in adolescents is influenced by the quality of parent–adolescent communication (Xu et al. 2014; Yu and Shek 2013). Additionally,

research has revealed a positive association between parent–adolescent conflict and PIU in adolescents (Bonnaire and Phan 2017; Liu and Kuo 2007; Yen et al. 2007), positing that instances of conflict may engender adolescent' resistance to parental guidance and rules. Furthermore, this finding could be explained by prior evidence showing that conflicts, a sign of negative parenting, can exert a detrimental effect on adolescents' development of self-control, rendering them susceptible to excessive internet usage (Botchkovar et al. 2015; Kheradmand et al. 2012; Vazsonyi and Jiskrova 2018).

Furthermore, PIU, manifested as an excess of and inadequate control over preoccupations, impulses, or behaviours related to internet usage, may cause social impairment or emotional distress (Weinstein et al. 2014), potentially precipitating familial discord. For instance, internet addicted parents may experience distress, thereby exhibiting poor communication skills and engaging in conflict with their adolescents. This concurs with the developmental task of identity formation, wherein adolescents attach to peer groups that provide a sense of affiliation, while diminishing their dependence on parental figures (Arnett 2015). Therefore, we could argue that conflicts between parents and adolescents, coupled with adolescents' quest for autonomy and the desire for peer acceptance may catalyse heightened internet engagement among adolescents (Borca et al. 2015). Our findings can be further understood through the lens of attachment theory (Books and Bowlby 1973; Bowlby 1969), which posits that the quality of parent–child attachment profoundly influences child behavioural outcomes. Specifically, early and attuned responses from parents to the child's needs are deemed pivotal in nurturing decision-making and self-regulation capabilities, often associated with mitigating addictive tendencies (Brown 1998). Conversely, insecure attachment manifests, which be manifested by frequent arguments, subsequent defiance from the child, involvement in maladaptive behaviours, and a tendency to seek escape mechanisms (Gerard, Krishnakumar, and Buehler 2006; Hollenstein et al. 2004), such as excessive internet usage.

Although our analysis aligns with established theory and previous empirical findings, it is imperative to recognise the inherent limitations of our study, primarily stemming from its cross-sectional design. Although the cross-sectional design has been widely used in the field of PIU, it constrains our ability to establish causal relationships between the predictor and outcome variables and generalise our results, as such our findings must be interpreted with caution. The use of longitudinal data would afford researchers the opportunity to assert definitive claims regarding the causal associations. Additionally, the cultural specificity of the sample, focusing on Arab GCC countries, limits the generalizability of our findings to other cultural contexts. However, the focus on a unique population provides insights into an underexplored demographic, potentially contributing to a deeper understanding of PIU within similar cultural settings. Comparative studies involving diverse cultural groups are recommended to better evaluate the broader applicability of these findings.

The data were collected using self-reported measures, which means the results should be interpreted carefully due to the possible influence of social desirability bias. Additionally, it is important to note that parents reported on their children's behaviours, which may not fully capture the children's perspectives. Consequently, the accuracy of these reports may be compromised, with a plausible scenario being that parents who are themselves addicted to the internet may perceive their children as more addicted than they truly are. Although the use of self-report allowed us to reach a substantial sample of parents in our study, future research would gain advantages by examining this relationship through data acquired from both parents and adolescents. Finally, the frequency of serious arguments about excessive internet use partially mediated the relationship between parents' PIU and adolescents' PIU. Therefore, it is recommended that forthcoming research studies explore additional variables, such as the quality of time spent, to further elucidate this relationship. Furthermore, while our current study focuses on parental monitoring of the amount of time spent online and activities, future research could explore other parental strategies, including active approaches (e.g. engaging in discussions and providing guidance) and restrictive approaches (e.g. setting rules or limits on internet use) (Li et al. 2022). Examining the interaction between these variables could offer a more comprehensive understanding of how different parental methods influence PIU in adolescents.

The findings from our study, conducted within the GCC countries, serve to affirm and consolidate the conclusions drawn in previous research suggesting the influence of parents' PIU on their adolescents' PIU and confirming the patterns observed in research during the Covid-19 pandemic (Chemnad et al. 2022). This alignment is further supported by findings from a study in Hong Kong, illustrating the potential global nature of such familial PIU patterns (Lam and Wong 2015). Our investigation not only corroborates existing insights, but also provides additional perspectives,

shedding light on the persistence of the phenomena of PIU in families and the effect it has on communication dynamics in families. PIU is an issue that transcends specific circumstances like Covid-19. Due to the pervasive nature of digital technology and the internet, PIU has become and will continue to be a persistent issue affecting different demographics.

Despite the above limitations, our findings carry significant practical implications for the prevention and intervention of adolescent PIU. Firstly, these findings highlight the association between parental PIU and adolescent PIU, emphasising the necessity for parents to focus on their own internet usage habits before addressing their adolescents' problematic internet behaviours. Therefore, enhancing parental internet habits may serve as a proactive measure to mitigate adolescent PIU. Secondly, our study elucidates the pathway by which parental PIU influences adolescent PIU, corroborating the deleterious impact of serious arguments regarding internet usage between parents and adolescents. Cultivating a positive and non-confrontational parent–adolescent relationship holds promise in fostering adolescents' development of self-control skills, thereby preventing the onset of PIU. Consequently, designing multifaceted and collaborative preventive strategies involving both parents and adolescents is crucial. Interventions targeting the enhancement of the parent–adolescent relationship represent a viable avenue for future PIU intervention initiatives. Additionally, culturally tailored interventions, such as family counselling and parenting workshops, could address the unique challenges of Arab family dynamics in managing adolescent PIU. These programmes should focus on fostering positive communication, reducing conflict, and equipping parents with strategies to model healthy internet behaviours. Such interventions should align with the collectivist norms of Arab GCC societies, emphasising family cohesion and shared responsibility in mitigating PIU.

These findings also contribute to the growing body of literature on conceptualising PIU among adolescents by emphasising the significant role of parental behaviours and conflict dynamics. Existing research highlights the importance of family and social factors in shaping adolescent PIU, suggesting that family context serves as a critical environment for both the development and mitigation of PIU (Lukavská et al. 2022). Our study reinforces these perspectives by demonstrating the predictive role of parental PIU and the mediating influence of serious arguments about internet use, thereby supporting calls to incorporate family-centered approaches in understanding and addressing adolescent PIU (Nielsen et al. 2019). Moreover, a key strength of this research lies in its focus on a population from Middle Eastern countries, specifically the Arab GCC region. This represents a significant addition to the field, as the majority of prior research on adolescent PIU has predominantly focused on Western and South Asian populations.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Data availability

The dataset used for this paper can be found at the Open Science Framework: https://osf.io/yqhc8.

Funding

Open Access funding provided by the Qatar National Library. This publication was supported by NPRP 14 Cluster grant # NPRP 14C-0916-210015 from the Qatar National Research Fund (a member of Qatar Foundation). The findings herein reflect the work and are solely the responsibility of the authors.

References

Ahmadi, K., and A. Saghafi. 2013. "Psychosocial Profile of Iranian Adolescents' Internet Addiction." *Cyberpsychology, Behavior, and Social Networking* 16 (7): 543–548.

Al-Khani, A. M., J. Saquib, A. M. Rajab, M. A. Khalifa, A. Almazrou, and N. Saquib. 2021. "Internet Addiction in Gulf Countries: A Systematic Review and Meta-Analysis." *Journal of Behavioral Addictions* 10 (3): 601–610.

Alsheikh, N. O., G. Parameswaran, and H. Ethoweris. 2010. "Parenting Style, Self-Esteem and Student Performance in the United Arab Emirates." *Current Issues in Education* 13 (1).

Arnett, J. J. 2015. "Identity Development from Adolescence to Emerging Adulthood: What we Know and (Especially) Don't Know." In *The Oxford Handbook of Identity Development*, edited by K. C. McLean and M. Syed, 53–64. New York, NY: Oxford University Press.

Aziz, M., A. Erbad, S. Brahim Belhaouari, A. O. Abdelmoneium, S. Al-Harahsheh, A. Bagdady, and R. Ali. 2022. "The Interplay Between Adolescents' Internet Addiction and Family-Related Factors: Three Common Patterns." *International Journal of Adolescence and Youth* 27 (1): 418–431.

Bakken, I. J., H. G. Wenzel, K. Gunnar Götestam, A. Johansson, A. Øren, and I. Bakken. 2009. "Internet Addiction among Norwegian Adults: A Stratified Probability Sample Study." *Scandinavian Journal of Psychology* 50:121–127. https://doi.org/10.1111/j.1467-9450.2008.00685.x.

Bandura, A. 1977. *Social Learning Theory*, Vol. 1. Englewood cliffs, NJ: Prentice Hall.

Benstead, L. J. 2018. "Survey Research in the Arab World: Challenges and Opportunities." *PS: Political Science &*

Politics 51 (3): 535–542. https://doi.org/10.1017/S1049096518000112.

Bleakley, A., M. Ellithorpe, and D. Romer. 2016. "The Role of Parents in Problematic Internet Use among US Adolescents." *Media and Communication* 4 (3): 24–34. https://doi.org/10.17645/MAC.V4I3.523.

Bolker, B. M., M. E. Brooks, C. J. Clark, S. W. Geange, J. R. Poulsen, M. H. H. Stevens, and J. S. S. White. 2009. "Generalized Linear Mixed Models: A Practical Guide for Ecology and Evolution." *Trends in Ecology & Evolution* 24 (3): 127–135. https://doi.org/10.1016/J.TREE.2008.10.008.

Bonnaire, C., and O. Phan. 2017. "Relationships Between Parental Attitudes, Family Functioning and Internet Gaming Disorder in Adolescents Attending School." *Psychiatry Research* 255:104–110.

Books, B., and J. Bowlby. 1973. "Attachment and Loss." *Separation: Anxiety And Anger*.

Borca, G., M. Bina, P. S. Keller, L. R. Gilbert, and T. Begotti. 2015. "Internet use and Developmental Tasks: Adolescents' Point of View." *Computers in Human Behavior* 52:49–58.

Bornstein, M. H., and M. Gov. 2012. "Cultural Approaches to Parenting." *Parenting, Science and Practice* 12 (2–3): 212. https://doi.org/10.1080/15295192.2012.683359.

Botchkovar, E., I. H. Marshall, M. Rocque, and C. Posick. 2015. "The Importance of Parenting in the Development of Self-Control in Boys and Girls: Results from a Multinational Study of Youth." *Journal of Criminal Justice* 43 (2): 133–141.

Bowlby, J. 1969. *Attachment: Vol. 1 of Attachment and Loss*. New York: Basic Books.

Bozzola, E., G. Spina, R. Agostiniani, S. Barni, R. Russo, E. Scarpato, A. Di Mauro, et al. 2022. "The use of Social Media in Children and Adolescents: Scoping Review on the Potential Risks." *International Journal of Environmental Research and Public Health* 19 (16): 9960.

Brislin, R. W. 1970. "Back-translation for Cross-Cultural Research." *Journal of Cross-Cultural Psychology* 1 (3), https://doi.org/10.1177/135910457000100301.

Bronfenbrenner, U. 1979. *The Ecology of Human Development: Experiments by Nature and Design*. Cambridge, MA: Harvard university press.

Brown, J. M. 1998. "Self-Regulation and the Addictive Behaviors." *Treating Addictive Behaviors*: 61–73. https://doi.org/10.1007/978-1-4899-1934-2_5.

Brown, V. A. 2021. "An Introduction to Linear Mixed-Effects Modeling in R." *Advances in Methods and Practices in Psychological Science* 4 (1), https://doi.org/10.1177/2515245920960351/ASSET/IMAGES/10.1177_2515245920960351-IMG17.PNG.

Caplan, S. E. 2010. "Theory and Measurement of Generalized Problematic Internet use: A two-Step Approach." *Computers in Human Behavior* 26 (5): 1089–1097. https://doi.org/10.1016/J.CHB.2010.03.012.

Chao, R. K. 2001. "Extending Research on the Consequences of Parenting Style for Chinese Americans and European Americans." *Child Development* 72 (6): 1832–1843. https://doi.org/10.1111/1467-8624.00381.

Chemnad, K., S. Alshakhsi, S. Al-Harahsheh, A. O. Abdelmoneium, M. S. Al-Khalaf, A. Baghdady, and R. Ali. 2022. "Is it Contagious? Does Parents' Internet Addiction Impact Their Adolescents' Internet Addiction?" *Social Science Computer Review* 41 (5): 1691–1711. https://doi.org/10.1177/08944393221117408.

Chemnad, K., M. Aziz, A. O. Abdelmoneium, S. Al-Harahsheh, A. Baghdady, F. Y. Al Motawaa, D. Alsayed Hassan, et al. 2023. "Adolescents' Internet Addiction: Does it all Begin with Their Environment?" *Child and Adolescent Psychiatry and Mental Health* 17 (1): 87.

Cheng, C., and A. Y. Li. 2014. "Internet Addiction Prevalence and Quality of (Real) Life: A Meta-Analysis of 31 Nations Across Seven World Regions." *Cyberpsychology, Behavior, and Social Networking* 17 (12): 755–760.

Chi, X., X. Hong, and X. Chen. 2020. "Profiles and Sociodemographic Correlates of Internet Addiction in Early Adolescents in Southern China." *Addictive Behaviors* 106:106385.

DeVore, E. R., and K. R. Ginsburg. 2005. "The Protective Effects of Good Parenting on Adolescents." *Current Opinion in Pediatrics* 17 (4): 460–465. https://doi.org/10.1097/01.MOP.0000170514.27649.C9.

Dienes, Z. 2014. "Using Bayes to get the Most out of non-Significant Results." *Frontiers in Psychology* 5:85883. https://doi.org/10.3389/FPSYG.2014.00781/ABSTRACT.

Doo, E.-Y., and J.-H. Kim. 2022. "Parental Smartphone Addiction and Adolescent Smartphone Addiction by Negative Parenting Attitude and Adolescent Aggression: A Cross-Sectional Study." *Frontiers in Public Health, Frontiers Media SA* 10:981245.

Durkee, T., M. Kaess, V. Carli, P. Parzer, C. Wasserman, B. Floderus, A. Apter, et al. 2012. "Prevalence of Pathological Internet use among Adolescents in Europe: Demographic and Social Factors." *Addiction, John Wiley & Sons, Ltd* 107 (12): 2210–2222. https://doi.org/10.1111/J.1360-0443.2012.03946.X.

Emond, A. M., and M. D. Griffiths. 2020. "Gambling in Children and Adolescents." *British Medical Bulletin, Oxford University Press* 136 (1): 21–29.

Faltýnková, A., L. Blinka, A. Ševčíková, and D. Husarova. 2020. "The Associations Between Family-Related Factors and Excessive Internet Use in Adolescents." *International Journal of Environmental Research and Public Health,* 17 (5), https://doi.org/10.3390/IJERPH17051754.

Garson, G. D. 2013. "Fundamentals of Hierarchical Linear and Multilevel Modeling." *Hierarchical Linear Modeling: Guide and Applications, SAGE Publications, Inc.*: 3–26. https://doi.org/10.4135/9781483384450.

Gerard, J. M., A. Krishnakumar, and C. Buehler. 2006. "Marital Conflict, Parent-Child Relations, and Youth Maladjustment: A Longitudinal Investigation of Spillover Effects." *Journal of Family Issues, Sage Publications Sage CA: Thousand Oaks, CA* 27 (7): 951–975.

Gignac, G. E. 2009. "Psychometrics and the Measurement of Emotional Intelligence." *Assessing Emotional Intelligence: Theory, Research, and Applications, Springer*: 9–40.

Harb, C. 2015. "The Arab Region: Cultures, Values, and Identities." *Handbook of Arab American Psychology, Routledge*: 3–18.

Hayixibayi, A., E. Strodl, W. Q. Chen, and A. B. Kelly. 2022. "Associations Between Adolescent Problematic Internet Use and Relationship Problems in Chinese Families: Findings from a Large-Scale Survey." *JMIR Pediatrics and*

Parenting, JMIR Publications Inc. 5 (4): e35240. https://doi.org/10.2196/35240.

Henrich, J., S. J. Heine, and A. Norenzayan. 2010. "Most People are not WEIRD." *Nature, Nature Publishing Group UK London* 466 (7302): 29. https://doi.org/10.1038/466029a.

Hernandez, J. M., E. P. Ben-Joseph, S. Reich, and L. Charmaraman. 2024. "Parental Monitoring of Early Adolescent Social Technology Use in the US: A Mixed-Method Study." *Journal of Child and Family Studies, Springer* 33 (3): 759–776. https://doi.org/10.1007/S10826-023-02734-6/TABLES/4.

Hollenstein, T., I. Granic, M. Stoolmiller, and J. Snyder. 2004. "Rigidity in Parent—Child Interactions and the Development of Externalizing and Internalizing Behavior in Early Childhood." *Journal of Abnormal Child Psychology, Springer* 32:595–607.

Howarth, J. 2023. "Alarming Average Screen Time Statistics (2024)". https://explodingtopics.com/blog/screen-time-stats.

Ilmaskal, R., L. Wati, R. Hamdanesti, A. Alkafi, and H. Suci. 2022. "Adolescent Smoking Behavior in Indonesia; a Longitudinal Study." *Eduvest-Journal of Universal Studies* 2 (1): 41–47.

International Telecommunication Union (ITU). 2022. *Measuring Digital Development: Facts and Figures* 2022.

Jamil, T., A. Ly, R. D. Morey, J. Love, M. Marsman, and E. J. Wagenmakers. 2017. "Default 'Gunel and Dickey' Bayes Factors for Contingency Tables." *Behavior Research Methods, Springer New York LLC* 49 (2): 638–652. https://doi.org/10.3758/S13428-016-0739-8/FIGURES/5.

JASP Team. 2022. "JASP - A Fresh Way to Do Statistics", *JASP*, Accessed February 16, 2022. https://jasp-stats.org/.

Jiang, Q. 2019. "Risk Factors and Clinical Assessment of Internet-Addicted Adolescents." In *Internet Addiction Among Cyberkids in China: Risk Factors and Intervention Strategies*, 85–142. Singapore: Springer. https://doi.org/10.1007/978-981-13-3792-5_6.

Johansson, A., and K. G. Götestam. 2004. "Internet Addiction: Characteristics of a Questionnaire and Prevalence in Norwegian Youth (12–18 Years)." *Scandinavian Journal of Psychology* 45 (3): 223–229.

Karakose, T., T. Tülübaş, and S. Papadakis. 2022. "Revealing the Intellectual Structure and Evolution of Digital Addiction Research: An Integrated Bibliometric and Science Mapping Approach." *International Journal of Environmental Research and Public Health, MDPI* 19 (22): 14883.

Keeley, H. S., T. Mongwa, and P. Corcoran. 2015. "The Association Between Parental and Adolescent Substance Misuse: Findings from the Irish CASE Study." *Irish Journal of Psychological Medicine, Ir J Psychol Med* 32 (1): 107–116. https://doi.org/10.1017/IPM.2014.87.

Kheradmand, A., Y. Abedini, B. Eshrat, Z. Phd, and G. Rajabizadeh. 2012. "Impacts of Mothers' Occupation Status and Parenting Styles on Levels of Self-Control, Addiction to Computer Games, and Educational Progress of Adolescents." *Addiction & Health, Kerman University of Medical Sciences* 4 (3–4): 102. https://doi.org/10.1016/s0924-9338(15)30399-0.

Kuss, D. 2015. "Treating Internet Addiction–the Expert Perspective." *European Psychiatry, Elsevier* 30:464.

Kwak, Y., H. Kim, and J.-W. Ahn. 2022. "Impact of Internet Usage Time on Mental Health in Adolescents: Using the 14th Korea Youth Risk Behavior web-Based Survey 2018." *PLoS One, Public Library of Science San Francisco, CA USA* 17 (3): e0264948.

Laconi, S., R. F. Rodgers, and H. Chabrol. 2014. "The Measurement of Internet Addiction: A Critical Review of Existing Scales and Their Psychometric Properties." *Computers in Human Behavior, Pergamon* 41:190–202. https://doi.org/10.1016/J.CHB.2014.09.026.

Lam, L. T. 2020. "The Roles of Parent-and-Child Mental Health and Parental Internet Addiction in Adolescent Internet Addiction: Does a Parent-and-Child Gender Match Matter?" *Frontiers in Public Health, Frontiers Media SA* 8:142.

Lam, L. T., and E. M. Y. Wong. 2015. "Stress Moderates the Relationship Between Problematic Internet use by Parents and Problematic Internet use by Adolescents." *The Journal of Adolescent Health : Official Publication of the Society for Adolescent Medicine, J Adolesc Health* 56 (3): 300–306. https://doi.org/10.1016/J.JADOHEALTH.2014.10.263.

Lavadi, R., M. Subramanian, M. Panchaseelan, L. Chintala, L. Reddy, M. Dhananjay, and S. Acharya. 2021. "A Study on Internet Addiction among Medical Students in a Tertiary Care Hospital in Bangalore, India." *International Journal Of Community Medicine And Public Health, Medip Academy* 8 (6): 2995–2998. https://doi.org/10.18203/2394-6040.IJCMPH20211943.

Leung, L., and P. S. N. Lee. 2016. "Impact of Internet Literacy, Internet Addiction Symptoms, and Internet Activities on Academic Performance." *SAGE Publications, Sage CA: Los Angeles, CA* 30 (4): 403–418. https://doi.org/10.1177/0894439311435217.

Li, C., J. Dang, X. Zhang, Q. Zhang, and J. Guo. 2014. "Internet Addiction among Chinese Adolescents: The Effect of Parental Behavior and Self-Control." *Computers in Human Behavior, Pergamon* 41:1–7. https://doi.org/10.1016/J.CHB.2014.09.001.

Li, X., Y. Ding, X. Bai, and L. Liu. 2022. "Associations Between Parental Mediation and Adolescents' Internet Addiction: The Role of Parent–Child Relationship and Adolescents' Grades." *Frontiers in Psychology* 13:1061631.

Lin, C., S. Lin, and C. Wu. 2009. "The Effects of Parental Monitoring and Leisure Boredom on Adolescents' Internet Addiction." *Adolescence* 44 (176).

Liu, C.-Y., and F.-Y. Kuo. 2007. "A Study of Internet Addiction Through the Lens of the Interpersonal Theory." *CyberPsychology & Behavior* 10 (6): 799–804.

LoBraico, E. J., M. Brinberg, N. Ram, and G. M. Fosco. 2020. "Exploring Processes in Day-to-Day Parent-Adolescent Conflict and Angry Mood: Evidence for Circular Causality." *Family Process* 59 (4): 1706. https://doi.org/10.1111/FAMP.12506.

Lukavská, K., O. Hrabec, J. Lukavský, Z. Demetrovics, and O. Király. 2022. "The Associations of Adolescent Problematic Internet use with Parenting: A Meta-Analysis." *Addictive Behaviors*, https://doi.org/10.1016/j.addbeh.2022.107423.

Mackey, A., and G. Porte. 2012. "Why (or why not), When and how to Replicate Research." *Replication Research in Applied Linguistics* 2146:21–46.

Makariuk, Z. 2022. "Internet Addiction as One of the Main Types of Addiction in Modern High-School Students." *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"* 8:38–44. https://doi.org/10.52534/msu-pp.8(1).2022.38-44.

Martins, M. V., A. Formiga, C. Santos, D. Sousa, C. Resende, R. Campos, N. Nogueira, et al. 2020. "Adolescent Internet Addiction–Role of Parental Control and Adolescent Behaviours." *International Journal of Pediatrics and Adolescent Medicine* 7 (3): 116–120.

McDaniel, B. T. 2019. "Parent Distraction with Phones, Reasons for use, and Impacts on Parenting and Child Outcomes: A Review of the Emerging Research." *Human Behavior and Emerging Technologies* 1 (2): 72–80. https://doi.org/10.1002/HBE2.139.

McHugh, M. L. 2013. "The Chi-Square Test of Independence." *Biochemia Medica, Biochemia Medica* 23 (2): 143–149. https://doi.org/10.11613/BM.2013.018/FULLARTICLE.

McNicol, M. L., and E. B. Thorsteinsson. 2017. "Internet Addiction, Psychological Distress, and Coping Responses among Adolescents and Adults." *Cyberpsychology, Behavior, and Social Networking* 20 (5): 296–304. https://doi.org/10.1089/cyber.2016.0669.

Milkovich, L. M., K. A. Randell, A. K. Sherman, and M. A. Moreno. 2024. "Associations among Problematic Internet Usage in Adolescents, Parental Internet Factors, and Parent-Adolescent Communication." *Journal of Developmental and Behavioral Pediatrics*, https://doi.org/10.1097/DBP.0000000000001328.

Moretti, M. M., and M. Peled. 2004. "Adolescent-parent Attachment: Bonds That Support Healthy Development." *Paediatrics & Child Health, Oxford University Press* 9 (8): 551. https://doi.org/10.1093/PCH/9.8.551.

Morris, A. S., J. S. Silk, L. Steinberg, S. S. Myers, and L. R. Robinson. 2007. "The Role of the Family Context in the Development of Emotion Regulation." *Social Development (Oxford, England)* 16 (2): 361–388. https://doi.org/10.1111/J.1467-9507.2007.00389.X.

Ngai, S. S. 2007. "Exploring the Validity of the Internet Addiction Test for Students in Grades 5–9 in Hong Kong." *International Journal of Adolescence and Youth* 13 (3): 221–237.

Nielsen, P., N. Favez, H. Liddle, and H. Rigter. 2019. "Linking Parental Mediation Practices to Adolescents' Problematic Online Screen use: A Systematic Literature Review." *Journal of Behavioral Addictions* 8 (4): 649–663. https://doi.org/10.1556/2006.8.2019.61.

Peebles, A., and Y. A. Chen. 2024. "Parental Internet Practices in the Family System: Restrictive Mediation, Problematic Internet use, and Adolescents' age-Related Variations in Perceptions of Parent-Child Relationship Quality." *Journal of Social and Personal Relationships* 41 (6): 1347–1369. https://doi.org/10.1177/02654075231221581/ASSET/IMAGES/LARGE/10.1177_02654075231221581-FIG3.JPEG.

Salinas Ruíz, J., O. A. Montesinos López, G. Hernández Ramírez, and J. Crossa Hiriart. 2023. "Generalized Linear Mixed Models for Non-Normal Responses." *Generalized Linear Mixed Models with Applications in Agriculture and Biology* 113–127. https://doi.org/10.1007/978-3-031-32800-8_4.

Saquib, J. 2020. "Internet Addiction among Saudi Arabian Youth." *International Journal of Health Sciences* 14 (2): 1.

Sciacca, B., D. A. Laffan, J. O. Norman, and T. Milosevic. 2022. "Parental Mediation in Pandemic: Predictors and Relationship with Children's Digital Skills and Time Spent Online in Ireland." *Computers in Human Behavior* 127:107081.

Sellke, T., M. J. Bayarri, and J. O. Berger. 2001. "Calibration of ρ Values for Testing Precise Null Hypotheses." *The American Statistician* 55 (1): 62–71. https://doi.org/10.1198/000313001300339950.

Shapka, J. D., and D. M. Law. 2013. "Does one Size fit all? Ethnic Differences in Parenting Behaviors and Motivations for Adolescent Engagement in Cyberbullying." *Journal of Youth and Adolescence* 42:723–738.

Shi, J., M. van der Maas, L. Yu, Q. Jiang, S. Agasee, and N. E. Turner. 2022. "Current Prevention Strategies and Future Directions for Problem Internet use." *Current Opinion in Behavioral Sciences* 48:101231. https://doi.org/10.1016/J.COBEHA.2022.101231.

Smyth, S. J., K. Curran, and N. McKelvey. 2019. "Internet Addiction: The Repercussions, the Causes, and the Treatment." In *Multifaceted Approach to Digital Addiction and Its Treatment*, edited by B. Bozoglan, 1–19. IGI Global.

Soh, P. C. H., K. W. Chew, K. Y. Koay, and P. H. Ang. 2018. "Parents vs Peers' Influence on Teenagers' Internet Addiction and Risky Online Activities." *Telematics and Informatics* 35 (1): 225–236. https://doi.org/10.1016/J.TELE.2017.11.003.

Steinberg, L. 2005. "Cognitive and Affective Development in Adolescence." *Trends in Cognitive Sciences* 9 (2): 69–74.

Strittmatter, E., R. Brunner, G. Fischer, P. Parzer, F. Resch, and M. Kaess. 2014. "Der Zusammenhang von mobbingerfahrungen, copingstilen und pathologischem internetgebrauch bei jugendlichen." *Zeitschrift Für Kinder-Und Jugendpsychiatrie Und Psychotherapie*.

Tackett, J. L., C. M. Brandes, K. M. King, and K. E. Markon. 2019. "Psychology's Replication Crisis and Clinical Psychological Science." *Annual Review of Clinical Psychology* 15:579–604. https://doi.org/10.1146/annurev-clinpsy-050718-095710.

Tamis-LeMonda, C. S., N. Way, D. Hughes, H. Yoshikawa, R. K. Kalman, and E. Y. Niwa. 2008. "Parents' Goals for Children: The Dynamic Coexistence of Individualism and Collectivism in Cultures and Individuals." *Social Development* 17 (1): 183–209.

Tülübaş, T., T. Karakose, and S. Papadakis. 2023. "A Holistic Investigation of the Relationship Between Digital Addiction and Academic Achievement among Students." *European Journal of Investigation in Health, Psychology and Education* 13 (10): 2006–2034.

Ursachi, G., I. A. Horodnic, and A. Zait. 2015. "How Reliable are Measurement Scales? External Factors with Indirect Influence on Reliability Estimators." *Procedia Economics and Finance* 20:679–686. https://doi.org/10.1016/S2212-5671(15)00123-9.

Vaala, S. E., and A. Bleakley. 2015. "Monitoring, Mediating, and Modeling: Parental Influence on Adolescent

Computer and Internet use in the United States." *Journal of Children and Media* 9 (1): 40–57.

Van Den Eijnden, R. J. J. M., R. Spijkerman, A. A. Vermulst, T. J. Van Rooij, and R. C. M. E. Engels. 2010. "Compulsive Internet use among Adolescents: Bidirectional Parent-Child Relationships." *Journal of Abnormal Child Psychology, Springer* 38 (1): 77–89. https://doi.org/10.1007/S10802-009-9347-8/FIGURES/2.

Vazsonyi, A. T., and G. K. Jiskrova. 2018. "On the Development of Self-Control and Deviance from Preschool to Middle Adolescence." *Journal of Criminal Justice* 56:60–69.

Wang, L., H. Zou, and R. Yao. 2011. "On the Relationship Between Adolescents Internet Addiction, Parental Monitoring and the Social Adaptation of Adolescents." *J Spec Educ (Chinese)* 5:62–68.

Wartberg, L., L. Kriston, K. Kegel, and R. Thomasius. 2016. "Adaptation and Psychometric Evaluation of the Young Diagnostic Questionnaire (YDQ) for Parental Assessment of Adolescent Problematic Internet Use." *Journal of Behavioral Addictions* 5 (2): 311–317. https://doi.org/10.1556/2006.5.2016.049.

Weinstein, A., L. Curtiss Feder, K. P. Rosenberg, and P. Dannon. 2014. "Internet Addiction Disorder: Overview and Controversies." *Behavioral Addictions: Criteria, Evidence, and Treatment*: 99–117. https://doi.org/10.1016/B978-0-12-407724-9.00005-7.

Wrobel, N. H. 2013. "Parent Practices and Identity Outcomes in Arab Youth." *International Symposium on Arab Youth*.

Wu, Q., Q. Ren, N. Zhong, J. Bao, Y. Zhao, J. Du, T. Chen, et al. 2022. "Internet Behavior Patterns of Adolescents Before, During, and After COVID-19 Pandemic." *Frontiers in Psychiatry* 13:947360.

Xu, J., L. Shen, C. Yan, H. Hu, F. Yang, L. Wang, S. R. Kotha, et al. 2014. "Parent-adolescent Interaction and Risk of Adolescent Internet Addiction: A Population-Based Study in Shanghai." *BMC Psychiatry* 14 (1): 1–11.

Yasmeen El-Sayed Borham, Y. E.-S. B., A. I. Ahmed, A. I. Ahmed, and R. Gad. 2022. "Assessment of Internet Addiction among Adolescents in Mansoura City." *Mansoura Nursing Journal* 9 (1): 124–132.

Yayman, E., and O. Bilgin. 2020. "Relationship Between Social Media Addiction, Game Addiction and Family Functions." *International Journal of Evaluation and Research in Education* 9 (4): 979–986.

Yen, J.-Y., C.-F. Yen, C.-C. Chen, S.-H. Chen, and C.-H. Ko. 2007. "Family Factors of Internet Addiction and Substance use Experience in Taiwanese Adolescents." *Cyberpsychology & Behavior* 10 (3): 323–329.

Young, K. S. 1998. "Internet Addiction: The Emergence of a New Clinical Disorder." *CyberPsychology & Behavior* 1 (3): 237–244. https://doi.org/10.1089/CPB.1998.1.237.

Young, K. S. 2017. "The Evolution of Internet Addiction." *Addictive Behaviors* 100 (64): 229–230.

Yu, L., and D. T. L. Shek. 2013. "Internet Addiction in Hong Kong Adolescents: A Three-Year Longitudinal Study." *Journal of Pediatric and Adolescent Gynecology* 26 (3): S10–S17.