

PARENTING STYLES, LONELINESS AND PROBLEMATIC INTERNET USE AMONG ADOLESCENTS: A CROSS-SECTIONAL ANALYSIS

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ABSTRACT

Aim. The aim of this study is to explore the relationships between parenting styles, loneliness, and problematic internet use among adolescents, and to determine the contributions of these factors to PIU.

Methods. The study involved 529 high school students aged 15 to 18 years. Data was collected using structured questionnaires and analysed through stepwise regression to assess the impact of different parenting styles and loneliness on PIU.

Results. The study found that authoritative parenting emerged as a strong negative predictor of problematic internet use (PIU). Adolescents who experienced authoritative parenting, a style marked by high levels of both responsiveness and demand—tended to have lower levels of PIU. Conversely, authoritarian, permissive, and loneliness were identified as positive predictors of PIU.

Conclusions. These findings emphasise the importance of both parenting style and emotional well-being in influencing adolescents' internet use behaviour. Effective interventions should address these factors to help reduce PIU and promote healthier online habits. Authoritative parenting plays a significant role in reducing PIU among adolescents. Interventions that promote authoritative parenting practices and address loneliness are recommended as effective strategies for mitigating PIU.

Keywords: Parenting styles, loneliness, problematic internet use, adolescents, Authoritative parenting

INTRODUCTION

The internet is a communication network that connects various electronic devices, such as computers, laptops, mobile phones, and tablets (Mascheroni & Ólafsson, 2013). Internet users often spend hours accessing online content, neglecting basic needs such as eating and drinking, as well as other aspects of their lives (Cheng & Li, 2014). According to data from the Indonesian Internet Service Providers Association (Asosiasi Penyelenggara Jasa Internet Indonesia, 2023), the percentage of internet users in 2023 by age group is 33.67% (ages 35–54), 32.09% (ages 19–34), 12.15% (ages 13–18), and 7.19% (ages 55 and above). Although teenagers rank third in terms of percentage, they are among the most active internet users.

The internet has become an increasingly dominant presence in the lives of adults; however, its growth has been even more pronounced among adolescents (Amichai-Hamburger & Barak, 2009). Its pervasive nature and integration into daily routines make it increasingly difficult to distinguish between healthy and problematic usage (Kim & Lee, 2020). Adolescents, who are in a critical stage of identity development, often turn to the internet as a means of exploring and shaping their self-identity. They engage in a variety of digital activities, including social media, video streaming, online learning, and gaming, which offer significant opportunities for self-expression and social interaction. Despite their technical proficiency in navigating digital platforms, many adolescents lack the critical thinking skills necessary to assess and filter online content effectively. This limitation increases their susceptibility to problematic internet use (PIU) (Anderson et al., 2023).

Problematic Internet Use (PIU) is a multidimensional syndrome encompassing cognitive, emotional, and behavioural symptoms that impair individuals' capacity to manage their offline lives (Caplan, 2010). It adversely affects academic, profes-

sional, and social functioning and is characterised by a preference for online over face-to-face interactions, mood regulation through internet use, cognitive preoccupation, and compulsive engagement. Individuals with PIU often prioritise online communication at the expense of developing meaningful real-world relationships (Kuss & Griffiths, 2011). Furthermore, the internet frequently becomes a maladaptive coping mechanism, resulting in obsessive use that disrupts daily responsibilities and diminishes overall productivity.

Excessive and poorly regulated internet use can disrupt daily routines, including sleep patterns, academic activities, and real-world social interactions (Lukavská et al, 2022). Additionally, unrestricted access to various online features and content without adequate filtering can expose adolescents to inappropriate information and activities. This not only increases the risk of internet addiction but also hinders their social and emotional development. Ultimately, such behaviour can isolate adolescents from healthy and supportive social interactions, further exacerbating the issues associated with Problematic Internet Use (PIU) (Kuss & Griffiths, 2011).

Robert A. Davis (2001) distinguishes Problematic Internet Use (PIU) into two main types: specific and generalised. Specific PIU is associated with the intensive use of a particular aspect of the internet, leading to negative consequences in the user's life. Examples include online gambling, excessive online gaming, and engaging in internet-based sexual activities. In these cases, individuals become overly focused on a single type of online activity, neglecting other important responsibilities and activities in their lives. In contrast, generalised PIU involves a broader and more aimless use of the internet. Individuals with generalised PIU often spend significant amounts of time engaging in various non-specific online activities, such as browsing social media, watching videos excessively, or simply surfing the internet without a clear purpose. Generalised PIU is often rooted in deeper social and emotional factors, such as a lack of social support from family or friends and experiences of social isolation. The lack of meaningful social interactions in the real-world drives individuals to seek escape and comfort through the internet, ultimately exacerbating their feelings of alienation (Spada, 2014).

The distinction between specific and generalised PIU is crucial to understand, as it suggests that effective interventions must be tailored to the type of problematic internet use. Approaches to addressing specific PIU may involve implementing stricter limits on particular online activities and providing therapy to address dependency on those activities. Meanwhile, interventions for generalised PIU might focus more on enhancing social support, building healthy interpersonal relationships, and helping individuals find more constructive ways to spend their time and fulfil their emotional needs (Caplan, 2010).

Adolescents experiencing Problematic Internet Use (PIU) are often unaware of the significant behavioural changes they undergo. Symptoms may include mood fluctuations, such as increased irritability or frustration, which are frequently misat-

tributed to normal adolescent stress (Caplan, 2010). These individuals may struggle to manage their offline lives, finding it difficult to balance online and real-world activities. This imbalance often results in a preference for virtual interactions, thereby weakening the quality of face-to-face relationships (Kraut et al., 2002). The escalating intensity of internet use can also adversely affect adolescents' health. One notable consequence is sleep disturbance, as prolonged screen exposure can disrupt circadian rhythms. Sleep deprivation, in turn, contributes to chronic fatigue and reduced cognitive function. Moreover, excessive online engagement may hinder the development of essential social skills, making it challenging for adolescents to interact effectively in offline settings (Chou et al., 2017).

During adolescence, individuals experience a strong drive to form new peer relationships and achieve emotional independence from their parents. This is a normal part of psychological development, during which adolescents begin to seek their own identity and desire independence (Hurlock, 2013). During this period, they often develop more intense social relationships and require space to explore their identity beyond parental influence. However, adolescents' cognitive abilities and self-control are not yet fully mature. They tend to have high curiosity and a desire to experiment, which can lead to excessive internet use. Without adequate supervision, this can quickly become a serious issue, as they may not fully recognise the consequences of their online behaviour or possess the skills to regulate internet use wisely (Bleakley et al., 2016).

Environmental factors play a crucial role in the development of negative behaviour related to internet use. A lack of parental involvement can leave adolescents without the necessary guidance to manage their time effectively and distinguish between productive and potentially harmful online activities. Family dysfunction, such as tension or conflict, can increase the likelihood of adolescents seeking escape or emotional support through the internet, which can often exacerbate their behavior (Beison & Rademacher, 2017).

The family environment significantly impacts the shaping of adolescent behaviour related to internet use. Parenting styles, especially regarding warmth and supervision, play a crucial role in how children respond to external stimuli, including digital influences. Parental warmth, which includes attention, support, and affection, contributes to a child's psychological and emotional development. When children feel loved and accepted, they are more likely to be emotionally stable and possess greater self-confidence. This emotional security can reduce their tendency to seek validation or escape through excessive internet use (Liu et al., 2012).

Effective parental supervision plays a critical role in helping adolescents manage their internet use. Supervision extends beyond restricting access or screen time; it involves open communication about the benefits and risks of the internet and supportive monitoring of online activities. When parents engage positively with their children's digital lives, they foster informed decision-making and reduce the likelihood of risky

online behaviours (Wang et al., 2018). A strong, positive parent–child relationship further underpins the prevention of problematic internet use. Adolescents who feel comfortable communicating with their parents are more likely to share online concerns, enabling parents to provide appropriate guidance and establish healthy boundaries (Wang & Liang, 2017).

Research suggests that parental warmth and supervision play a crucial role in shaping how children respond to internet-related stimuli (Elsaesser et al., 2017). A supportive and engaged family environment can promote healthier coping strategies and decrease the risk of maladaptive online behaviours. John W. Santrock (2018) emphasises that parenting styles are instrumental in guiding children toward adulthood, functioning as mechanisms of control that influence emotional regulation and stress management. The parenting style adopted not only shapes a child’s character but also determines how they respond to emotional challenges and psychological stressors.

Different parenting styles have distinct impacts on a child’s emotional and behavioural development. Diana Baumrind (1991) identified three primary parenting styles: (1) Authoritarian; Parents with this style impose strict control and establish rules that must be followed with minimal flexibility. (2) Authoritative; This style balances consistent control with emotional support, combining firm expectations with responsiveness and (3) Permissive; Parents who adopt a permissive style are more likely to avoid setting strict boundaries, focusing instead on granting their children greater freedom.

Each parenting style influences a child’s emotional and behavioural development in different ways. Parenting styles that are either too strict or too lenient can increase anxiety and stress, which may lead children to seek escape through excessive internet use (Santrock, 2018). Conversely, a more balanced and supportive parenting style can help children develop better coping skills and reduce the risk of negative behaviours associated with internet use.

Adolescents who lack emotional support from their parents may seek comfort and social interaction outside the home. The internet, through social media and online games, often becomes a readily accessible outlet for escaping emotional distress. However, excessive use of the internet can serve as an unhealthy coping mechanism, potentially exacerbating existing problems. Online interactions frequently fail to offer meaningful emotional support or effective solutions and may expose adolescents to harmful content or detrimental virtual relationships (Cacioppo et al., 2019).

Research shows that a family environment characterised by emotional closeness and strong bonds serves as a protective factor against problematic internet use. In families with harmonious relationships and consistent emotional support, adolescents feel more secure and are better equipped to handle stress in a healthy manner. Emotional closeness with parents helps adolescents feel valued and accepted, which in turn reduces the need to seek escape through the internet. Parental involvement and open communication strengthen family bonds and provide adolescents with

the tools and support needed to face life's challenges more constructively (Onyekachi et al., 2022).

Loneliness is a key contributor to problematic internet use (PIU), often stemming from difficulties in forming and maintaining meaningful social relationships. Adolescents who feel socially isolated may avoid face-to-face interactions, lack confidence in social settings, and increasingly withdraw from real-world engagement. In response, many turn to the internet as a substitute for emotional support and social connection perceived to be missing from their offline lives (Kim et al., 2009; Shen & Williams, 2011).

Adolescents often turn to online platforms such as social media and online games to ease feelings of loneliness by seeking virtual connections. While the internet can provide a sense of interaction, these connections are frequently inadequate in addressing deeper emotional needs. Research suggests that loneliness may drive adolescents to use the internet compulsively, either to escape their isolation or to find more gratifying social alternatives than those available in their offline lives (Geirdal et al., 2021).

RESEARCH PROBLEM AND RATIONALE

Problematic internet use is an increasingly concerning issue among adolescents, encompassing behaviours such as social media addiction, online gaming, and excessive engagement with digital entertainment, all of which may adversely affect mental health and social development. This study investigates the factors contributing to problematic internet use in adolescents, focusing particularly on parenting styles and levels of loneliness. It explores how authoritarian, permissive, and authoritative parenting styles are associated with varying degrees of problematic internet use. The study also examines the role of loneliness, hypothesising that adolescents who experience higher levels of loneliness are more prone to problematic online behaviour. By analysing the influence of both parenting styles and loneliness, this research aims to offer insights that support the development of effective prevention strategies and inform policies to promote adolescent well-being in the digital era.

Parenting style and Problematic Internet Use

Parenting styles are a set of attitudes and approaches that parents adopt towards their children with the aim of creating an emotional climate that influences the interactions between parents and children. According to Baumrind (1991), there are three primary parenting styles: authoritarian, authoritative, and permissive, each with distinct characteristics affecting adolescent behaviour.

Authoritarian parenting is characterised by strict rules, high expectations of obedience, and limited room for discussion or emotional support (Lukavská et al., 2022). While adolescents raised under this style may appear compliant and disciplined, they often experience elevated levels of stress and anxiety. The lack of emotional warmth and open communication may hinder the development of essential social skills, prompting some adolescents to seek relief through excessive internet use as a coping mechanism (Van Petegem et al., 2015).

Research suggests that family environmental factors play a significant predictive role in internet addiction. Adolescents subjected to authoritarian parenting often turn to the internet as a means of escaping a high-pressure home environment or in search of autonomy and a sense of achievement (Hwang & Toma, 2021). Studies by Hifizah Nur et al. (2021) emphasises that authoritarian parenting can increase adolescents' dependency on the internet, as it may represent the only space where they feel a sense of freedom. Prolonged internet use thus becomes a coping mechanism to avoid familial conflict or control, ultimately increasing the risk of addiction. This parenting style affects not only adolescents' emotional well-being but also correlates with problematic internet behaviour. Conversely, adolescents who receive adequate emotional support and are granted healthy levels of autonomy tend to engage with the internet in a more balanced and constructive manner.

The authoritative parenting style strikes a balance between control and emotional support (Khang et al., 2013). Authoritative parents establish clear rules while encouraging open dialogue and respecting their children's perspectives. They promote autonomy within a framework of consistent boundaries. Adolescents raised in such environments tend to develop stronger social and emotional competencies, display higher self-esteem, and cope more effectively with stress. This parenting approach is commonly linked to healthier and more regulated patterns of internet use (Khang et al., 2013).

The authoritative parenting style fosters independence while maintaining appropriate boundaries and control. Parents are warm, supportive, and encourage open, two-way communication with their children. This approach promotes a positive environment where rules are respected, but the child's perspective is also valued. By balancing freedom with structure, authoritative parenting supports healthy and responsible development in children (Valcke et al., 2010).

Study shows that adolescents raised with an authoritative parenting style tend to have better mental health. They are likely to experience less stress and depression, exhibit less violent behaviour, and are less prone to alcohol and drug use, as well as problematic internet use or addiction (Hoskins, 2014). A warm and supportive family environment, characterised by a balance between freedom and control, helps adolescents develop self-confidence and effectively manage their emotions.

The authoritative parenting style, characterised by high warmth and high control, and aligned with an accepting approach, is associated with a lower incidence of problematic internet use (PIU). Both mothers and fathers who use an authoritative parenting

style can help prevent their adolescents from the risk of internet addiction. In such an environment, adolescents feel supported and valued, reducing their need to seek escape or compensation through excessive internet use (Lukavská et al., 2022)

Parents who adopt a permissive parenting style offer their children considerable freedom, often avoiding the enforcement of strict rules or discipline. While they tend to provide emotional support, they lack consistent structure and guidance (Nikken & Schols, 2015). Adolescents raised in such environments may enjoy autonomy but often struggle with self-discipline and responsibility. This can make them more prone to impulsive behaviour and poor time management, increasing the risk of excessive and uncontrolled internet use (Padilla-Walker & Coyne, 2011). The absence of clear expectations and boundaries can hinder the development of essential life skills. According to Denise Boyd and Helen Bee (2006), adolescents raised in permissive households are more likely to display impulsive and aggressive behaviour, acting without fully considering consequences. This lack of accountability may extend to various aspects of life, including their online habits.

Permissive parenting has been linked to an increased risk of problematic internet use among adolescents (Lee, 2012). In the absence of clear boundaries and effective supervision, young people may spend excessive time online, often engaging in unproductive or escapist behaviours. This lack of structure can lead to neglect of responsibilities and, in some cases, internet addiction. Research highlights that adolescents raised in permissive households are more susceptible to unhealthy internet habits. With unrestricted access to digital devices and minimal parental oversight, these adolescents may struggle to manage their internet use, increasing the risk of dependency and related mental health concerns (Lee, 2012). Without proper guidance, they often fail to develop the self-regulation needed for balanced and responsible online engagement.

Loneliness and Problematic Internet Use

According to Daniel W. Russell (1996), loneliness is a distressing experience that occurs when social relationships are lacking in either quantity or quality. Its intensity can vary, from brief and mild to persistent and deeply unsettling. Individuals experiencing high levels of loneliness often become more self-conscious and socially anxious, accompanied by feelings of shame and a perceived lack of support. They are also more likely to face significant social isolation, have lower self-esteem, and show diminished altruism and acceptance towards others.

Sharon S. Brehm, Saul M. Kassin, and Steven Fein (2002) identify several factors that contribute to loneliness, with one key cause being the inadequacy of social relationships. This occurs when individuals feel that their relationships fail to meet their emotional or social needs, often due to shifts in expectations or desires. Lonely individuals frequently develop negative perceptions of others (Cacioppo

& Patrick, 2008), displaying mistrust or dislike and interpreting others' actions in a negative light. Such patterns can lead to defensive or hostile behaviours in social settings, deepening their isolation and reinforcing feelings of loneliness (Hawkley & Cacioppo, 2010).

High levels of loneliness can hinder an individual's ability to establish and sustain healthy social relationships, prompting some to compensate through excessive internet use. This is consistent with findings suggesting that loneliness, particularly among adolescents, can lead to increased online activity as a coping mechanism for isolation and a search for emotional connection (Shen & Williams, 2016). However, excessive reliance on the internet may worsen mental health outcomes. Immersion in the online world can disrupt real-life social balance and contribute to heightened levels of anxiety, depression, and stress. While virtual interactions may offer temporary relief, they often fall short in fulfilling deeper emotional needs (Kraut et al., 2002).

Tania Moretta and Giulia Buodo (2020) identified a cyclical relationship between loneliness and problematic internet use (PIU), wherein each condition reinforces the other over time. Individuals experiencing loneliness may turn to the internet for social connection, yet online interactions often fail to meet deeper emotional needs, leading to increased usage. Conversely, excessive internet use can reduce real-life social interactions, thereby intensifying feelings of loneliness. This cycle perpetuates further reliance on online engagement for emotional support.

Previous research has emphasised that loneliness is not a monolithic experience but rather encompasses multiple dimensions that affect individuals in diverse ways. Loneliness can be primarily understood through two distinct yet interconnected dimensions: emotional loneliness and social loneliness (De Jong Gierveld & Van Tilburg, 2010). Emotional loneliness is defined as the perceived absence of meaningful emotional connections with others. This form of loneliness is characterised by a profound sense of emptiness and longing that arises when an individual feels emotionally disconnected from those around them. It extends beyond merely being alone and pertains to the quality of one's relationships. Emotional loneliness can persist even when a person is surrounded by others, as it stems from the lack of close, intimate bonds that provide emotional support and understanding (Cacioppo & Patrick, 2008).

Emotional loneliness refers to a persistent and deep-rooted sense of disconnection that remains stable across different situations. Individuals experiencing this form of loneliness often feel alienated or unfulfilled in their social interactions, regardless of context (Hawkley & Cacioppo, 2010). It reflects a more enduring trait, with those affected typically having a heightened need for emotional support and social connection (Cacioppo & Patrick, 2008). Struggling to form or sustain meaningful relationships, they may gravitate towards online interactions, where they can navigate social exchanges with greater control and less pressure than in face-to-face settings.

Excessive internet use may offer temporary emotional relief but often fails to resolve underlying feelings of deep loneliness. In seeking to fill this emotional void, individuals

may spend increasing amounts of time online. While the internet can provide a sense of connection, virtual interactions are typically less fulfilling than meaningful face-to-face relationships. As a result, individuals with trait loneliness often continue to feel isolated despite extensive online engagement, perpetuating a cycle in which loneliness and problematic internet use (PIU) reinforce one another (Khang et al., 2013).

Social loneliness refers to the perceived absence of a broader social network or sense of community, focusing on the quantity rather than the quality of social relationships (De Jong Gierveld & Tilburg, 2010). It arises when individuals feel they lack sufficient social connections or do not belong to a group, even if some relationships are present. This form of loneliness often stems from dissatisfaction with one's social life, whether in terms of unmet expectations or inadequate interaction (Cacioppo & Patrick, 2008). As a result, individuals may turn to the internet to compensate for this deficiency. However, such reliance can lead to excessive online engagement, reduced real-world interaction, and heightened feelings of isolation, thereby perpetuating the cycle of social loneliness (Baker & Oswald, 2010).

Excessive internet use to cope with social loneliness often leads to deeper social isolation. While it may seem to provide comfort, problematic internet use (PIU) can result in a decline in quality of life, increased stress, and other mental health issues, which in turn exacerbate feelings of loneliness and social dissatisfaction (Caplan, 2002). Study indicates that individuals experiencing social loneliness often have unmet social needs, prompting them to seek interactions online. Social desirability loneliness is frequently linked to a greater reliance on the internet to fulfill these social needs (Baker & Oswald, 2010). Jennifer D. Shapka and Danielle M. Law (2013) note that online interactions do not always meet deep social needs and can lead to feelings of dissatisfaction.

METHOD AND RESULT

Participants

The participants of this study comprised high school students aged 15 to 18 years, selected to provide a representative sample of adolescents in this age group. Data collection was systematically carried out using a structured questionnaire, which was distributed to a total of 575 students. Of these, 529 questionnaires were returned and deemed complete and valid for inclusion in the final analysis, yielding a response rate of 92%. The sample was predominantly female, with 287 respondents (54.2%), indicating a gender distribution skewed towards female students. Notably, a significant proportion of the participants, accounting for 35.1%, were 17 years old, highlighting a concentration within this specific age group. This robust sample size and high response rate ensure the reliability and generalisability of the study's findings within the adolescent population studied.

Instruments

The measurement of Problematic Internet Use (PIU) was conducted using the GPI-US2 scale developed by Scott E. Caplan (2010). This scale assesses four aspects: Preference for Online Social Interaction (POSI), mood regulation, deficient self-regulation, and negative outcomes. The results of the factor analysis and reliability are presented in Table 1.

Table 1

Factor loadings and reliability for the GPIUS2 Scale

Variable	Aspects	Loading Factor	criteria goodness of fit	Cronbach's Alpha
Problematic Internet Use	Preference for online social interaction	0.610 to 0.825	CFI = 0.913	0.789
	Mood regulation	0.535 to 0.692	TLI = 0.947	
	Deficient self-regulation	0.516 to 0.729	SRMR = 0.06	
	Negative outcome	0.631 to 0.948	RMSEA = 0.05	
			GFI = 0.986	

Note. CFI, comparative fit index; TLI, tucker-lewis index; SRMR, standardized root mean-square residual; RMSEA, root mean-square error of approximation; GFI, goodness of fit index.

Source. Own research

The Parental Authority Questionnaire (PAQ), developed by John R. Buri (1991), is a widely used self-report instrument designed to assess perceived parental authority, specifically in relation to Baumrind's three parenting styles: authoritarian, authoritative, and permissive. The results of the factor loading and reliability analysis are visually represented in Table 2.

Table 2

Factor loadings and reliability for the Parental Authority Questionnaire

Variable	Dimensions	Loading Factor	criteria goodness of fit	Cronbach's Alpha
Parenting Style	Authoritarian	0.518 to 0.716	CFI = 0.926	0.837
	Authoritative		TLI = 0.909	
	Permissive		SRMR = 0.04	
			RMSEA = 0.03	
			GFI = 0.992	

Note. CFI, comparative fit index; TLI, tucker-lewis index; SRMR, standardized root mean-square residual; RMSEA, root mean-square error of approximation; GFI, goodness of fit index.

Source. Own research

The De Jong Gierveld Short Scales for Emotional and Social Loneliness is a widely utilised self-report instrument designed to assess an individual's experience of loneliness (De Jong Gierveld & Tilburg, 2010). This scale comprises two key dimensions: emotional loneliness and social loneliness. The results of the factor analysis and reliability assessment are detailed in Table 3.

Table 3

Factor loadings and reliability for Emotional and Social Loneliness Scale

Variable	Dimensions	Loading Factor	criteria goodness of fit	Cronbach's Alpha
Loneliness	Emotional loneliness	0.506 to 0.796	CFI = 0.913	0.789
	Social loneliness	0.528 to 0.929	TLI = 0.947	
			SRMR = 0.06	
			RMSEA = 0.05	
			GFI = 0.986	

Note. CFI, comparative fit index; TLI, tucker-lewis index; SRMR, standardized root mean-square residual; RMSEA, root mean-square error of approximation; GFI, goodness of fit index.

Source. Own research

Result

Pearson correlation analysis revealed significant correlations among authoritarian, authoritative, and permissive parenting styles, loneliness, and problematic internet use. Specifically, the analysis indicated that both authoritarian and permissive parenting styles were positively correlated with problematic internet use, while the authoritative parenting style showed a negative correlation. Additionally, the dimensions of loneliness (emotional and social) demonstrated a significant correlation with problematic internet use, suggesting that adolescents experiencing higher levels of loneliness may be more inclined to alter their internet use behaviour. These findings emphasise the complex interplay between parenting styles, emotional factors, and behavioural outcomes in the context of adolescent internet use. The detailed results are presented in Table 4.

Table 4

Correlation matrix among variables (N = 529)

No	Variables	Mean	SD	1	2	3	4	5	6
1.	PIU	35.95	6.617						
2.	Authoritarian	10.26	3.249	.314**					
3.	Authoritative	20.72	4.707	-.396**	-.292**				
4.	Permissive	12.33	2.934	.146**	-.012	.358**			

No	Variables	Mean	SD	1	2	3	4	5	6
5.	Loneliness	18.12	3.101	.246**	.103*	-.196**	-.082		
6.	Emotional	5.66	1.402	.341**	.095*	-.176**	-.025	.532**	
7	Social	12.45	2.638	.108*	.071	-.138**	-.083	.893**	.094*

* $p < 0.05$; ** $p < 0.01$

Source. Own research

Subsequently, a *stepwise* regression analysis was performed to evaluate the contributions of parenting style and loneliness to problematic internet use. The results revealed that an authoritative parenting style was a strong negative predictor of problematic internet use ($\beta = -0.3901$ $p < 0.01$; $F = 98.1033$, $t = -9.905$, $p < 0.01$; $R^2 = 0.157$). In contrast, authoritarian and permissive parenting styles, as well as loneliness, were identified as positive predictors of problematic internet use. The results are presented in Table 5.

Table 5

Results of stepwise regression analysis

Variables	B	SE B	β	R^2	ΔR^2	F	t
Step 1							
Constant	47.486	1.195	-.396	.157	.157	98.103**	39.743**
Authoritative	-.557	.056					-9.905**
Step 2							
Constant	41.742	1.327	-.514	.252	.095	66.963**	31.449**
Authoritative	-.723	.057	.330				-12.738**
Permissive	.745	.091					8.183**
Step 3							
Constant	36.645	1.684	-.453	.283	.031	22.702**	21.760**
Authoritative	-.637	.058	.311				-10.900**
Permissive	.701	.090	.185				7.812**
Authoritarian	.377	.079					4.765**
Step 4							
Constant	29.289	2.299	-.424	.311	.028	21.167**	12.738**
Authoritative	-.596	.058	.314				-10.252**
Permissive	.708	.088	.176				8.042**
Authoritarian	.359	.078	.170				4.615**
Loneliness	.364	.079					4.601**

* $p < 0.05$; ** $p < 0.01$

Source. Own research

The *stepwise* regression method was employed to assess problematic internet use based on dimensions of loneliness. The analysis revealed that emotional loneliness played a substantial role in explaining the willingness to change internet use behaviour. The results are presented in Table 6.

Table 6*Results of stepwise Regression Analysis based on dimensions of loneliness.*

Variables	B	SE B	β	R ²	ΔR^2	F	t
Step 1							
Constant	26.836	1.128	.341	.116	.116	69.211**	23.801**
emotional	1.608	.193					8.319**

*p < 0.05; **p < 0.01

Source. Own research

DISCUSSION

The study reveals that both parenting style and loneliness significantly influence problematic internet use among adolescents. These findings emphasise the multifaceted nature of internet-related issues in youth, highlighting the importance of familial and emotional contexts in understanding and addressing such behaviour. Different parenting styles appear to play a crucial role in shaping adolescents' internet use behaviour. Authoritarian and permissive parenting styles were found to be positively associated with problematic internet use. Authoritarian parenting, characterised by high demands and low responsiveness, may create a restrictive and punitive environment that fosters feelings of resentment and rebellion in adolescents. Consequently, adolescents may turn to the internet as a means of escape or to assert autonomy, leading to excessive or maladaptive usage patterns. Adolescents raised under authoritarian parenting styles tend to exhibit limited self-control. As Baumrind (1991) asserts, children raised by authoritarian parents are prone to irritability, moodiness, and stress, while also experiencing fear when expressing dissent. These children often possess poor communication skills and are hesitant to initiate activities, as they rarely receive praise or rewards from their parents. These dynamic fosters a fear of self-expression and a tendency to compare themselves unfavourably with their peers.

Baumrind (1991) explains that authoritarian parents typically exert high levels of control while offering minimal warmth in their interactions with their children. These parents are often unwilling to engage in open dialogue about rules and expectations, creating an environment where children must comply with rigid discipline and pre-established standards. The lack of verbal interaction in such households can heighten stress and anxiety in adolescents (Santrock, 2018). The emotional coldness experienced in authoritarian families often leads to feelings of disappointment and frustration, which adolescents may attempt to manage through increased engagement in online activities such as gaming, chatting, or browsing. Moreover, the emotional distance and poor communication associated with authoritarian parenting can prompt adolescents to seek emotional fulfilment online, contributing to problematic internet use (Odaci & Çelik, 2013)

Permissive parenting, characterised by high responsiveness but low demands (Santrock, 2018), can also contribute to problematic internet use among adolescents. The lack of appropriate boundaries and insufficient monitoring under permissive parenting allows adolescents to engage in unrestricted internet activities. This absence of clear guidelines and supervision increases the risk of developing unhealthy usage habits and exposes adolescents to potentially harmful online content, which can further exacerbate problematic behaviour and dependency on the internet. The absence of structure in permissive parenting can lead to excessive and uncontrolled internet use. Adolescents may spend long hours online without parental intervention, engaging in activities that can range from social media browsing to online gaming. This lack of regulation increases the risk of developing unhealthy internet habits, which can escalate into PIU. Furthermore, because permissive parents tend to be more lenient, they might not address early signs of problematic behaviour, allowing these habits to become entrenched (Padilla-Walker, & Nelson, 2010).

Subramaniam Mythily et al. (2008) identified that when households lack clear rules regarding internet use, adolescents are more likely to engage in excessive online activities. This unregulated environment fosters conditions where adolescents can develop unhealthy internet habits, such as spending prolonged periods online, which can escalate into problematic internet use or even addiction. The study emphasises the importance of setting boundaries to help adolescents manage their online behaviour effectively.

Yusuf Karaer and Devrim Akdemir (2019) found that low levels of parental assertiveness and supervision significantly increase the risk of internet addiction among adolescents. When parents fail to enforce rules or monitor online activities, adolescents are more likely to engage in excessive internet use, potentially leading to dependency. The absence of control enables unrestricted access to online content, increasing the risk of exposure to harmful material and the development of addictive behaviours. While the autonomy provided by permissive parenting can be beneficial in some areas, research indicates it may have adverse effects in the digital context. Without clear boundaries, adolescents may struggle with self-regulation, resulting in academic difficulties, social withdrawal, and exposure to inappropriate content.

In contrast, the study found that authoritative parenting was a significant negative predictor of problematic internet use. This finding suggests that authoritative parenting, which is characterised by a balance of responsiveness and demand, effectively mitigates the risk of problematic internet behaviour in adolescents (Liu et al., 2012). The clear expectations, consistent rules, and supportive communication associated with authoritative parenting contribute to healthier internet use patterns, thereby reducing the likelihood of developing problematic internet use.

Authoritative parents balance responsiveness and demand by providing support while setting clear expectations (Santrock, 2018). They foster a willingness in their children to accept parental guidance, not by imposing their will, but by offering rational explanations for the behaviour and values they wish to instil. This approach is effective

because it promotes discipline in adolescents through close monitoring of internet use, establishment of fair and consistent rules, and a strong sense of self-discipline. These rules encourage compliance without creating a sense of coercion, thereby supporting healthy development.

The balanced approach of authoritative parenting fosters opens communication, self-regulation, and responsible decision-making in adolescents. With appropriate guidance and support, adolescents are better equipped to navigate the digital world responsibly, reducing the likelihood of developing problematic internet use behaviour. Qin-Xue Liu et al. (2012) found that effective parent-adolescent communication, responsible parental internet use, and the establishment of clear internet-specific norms are crucial in preventing pathological internet use among adolescents. By fostering open dialogue, modelling appropriate behaviour, and setting clear guidelines, parents can help mitigate the risk of adolescents developing problematic internet use.

Loneliness has been identified as a significant predictor of problematic internet use among adolescents. Both emotional and social loneliness contribute to heightened susceptibility to excessive and compulsive internet behaviour. Adolescents experiencing loneliness may turn to the internet to address unmet social and emotional needs, seeking connection and validation through online interactions (Wu et al., 2024). Although the internet can offer temporary respite from feelings of isolation, an overreliance on virtual interactions can intensify loneliness and create a feedback loop of increased dependency and problematic use. Bonsaksen et al. (2021) state that adolescents who experience loneliness are more likely to spend a significant amount of time on the internet, particularly on social media, which can potentially lead to Problematic Internet Use.

Santrock (2018) suggests that the inability of adolescents to form close and meaningful friendships can have significant emotional consequences. When adolescents are unable to develop these important social bonds, they may experience heightened feelings of loneliness, which not only impact their emotional well-being but can also result in a diminished sense of self-worth. The absence of supportive peer relationships can leave adolescents feeling isolated and vulnerable, making them more susceptible to negative emotional states (Zulkarnain et al., 2019). In such situations, a lack of comfort, involvement, and affection can exacerbate feelings of loneliness and emotional distress, further impacting their well-being.

In response to these feelings of loneliness, adolescents may increasingly rely on the internet as a coping mechanism. According to Monica Anderson and Jingjing Jiang (2018), the online environment offers a readily accessible platform where adolescents can seek out emotional support and connect with others who might share similar experiences. Through social media, online communities, and other digital platforms, they attempt to alleviate their loneliness and bolster their self-esteem by finding a sense of belonging and validation. However, while the internet can provide temporary relief, it may also pose risks if used as a primary substitute for real-world social interactions, potentially leading to further emotional and psychological challenges.

CONCLUSION

This study finds that parenting styles have a significant influence on adolescents' problematic internet use. Specifically, both authoritarian and permissive parenting are positively associated with higher levels of problematic behaviour online, while authoritative parenting appears to have a protective effect. The restrictive control seen in authoritarian households, alongside the lack of boundaries typical of permissive parenting, may contribute to increased internet-related issues among teenagers. The study also reveals a strong link between loneliness—both emotional and social—and problematic internet use. Adolescents who feel lonely are more likely to turn to the internet for connection or escape, increasing the risk of unhealthy digital habits. These findings highlight the need for balanced parenting approaches and underline the importance of tackling loneliness in youth. Encouraging supportive home environments and addressing emotional isolation may be key to promoting healthier online behaviours among adolescents.

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