

Qualitative Study of Factors Influencing Internet Addiction in Adolescents: Design and Validation of an Intervention Based on It

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Article Info

Article type:

Original Research

How to cite this article:

Ahmadi, M., & Aghamohamadi, S. (2024). Qualitative Study of Factors Influencing Internet Addiction in Adolescents: Design and Validation of an Intervention Based on It. *Journal of Adolescent and Youth Psychological Studies*, 5(8), 97-104.

<http://doi.org/10.61838/kman.jayps.5.8.11>



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ABSTRACT

Objective: The aim of this study was to qualitatively investigate the factors influencing internet addiction and to design an intervention based on these factors for adolescents.

Methods and Materials: The research method was a sequential exploratory mixed method. In the first part of this study, a qualitative method with a phenomenological approach was used to examine adolescents' lived experiences of internet addiction. To achieve this goal, unstructured interviews were conducted, and theoretical saturation was reached after interviewing 20 adolescents. The interviews were then transcribed and entered into MAXQDA software for coding and categorization.

Findings: Using thematic analysis, 33 sub-themes and 13 main themes were identified. Subsequently, based on the extracted themes and with reference to theoretical and research backgrounds, an 11-session educational intervention was developed. In the next part of the study, to validate the educational intervention, its content validity was assessed using the Delphi method. A panel of 12 experts was consulted, and the Content Validity Index (CVI) and Content Validity Ratio (CVR) were calculated. The content validity index and content validity ratio for the intervention sessions ranged from 0.91 to 1, indicating a satisfactory level.

Conclusion: Therefore, the educational intervention based on adolescents' lived experiences regarding internet addiction possesses the necessary validity for application in educational, clinical, and research settings. However, evaluating the effectiveness of this intervention package requires experimental research in this area.

Keywords: Internet addiction, Mixed methods research, Phenomenological approach, Adolescents

1. Introduction

Technologies such as the internet, computer games, mobile phones, and television provide a platform for information, communication, education, and entertainment

(Haug et al., 2015). The use of technology has now become an inseparable behavior in people's lives. However, the extent and pattern of technology use can sometimes potentially harm physical and mental health, leading to individual and social problems (Amudhan et al., 2022). A

significant portion of these harms is generally attributed to internet addiction (Haug et al., 2015). Internet addiction is a pathological process of internet use that creates a psychological state in which a person's behavior is disrupted, and cognitive disorders are induced. Symptoms of this psychological state can include internal problems, work-related issues, and neglect of responsibilities towards family and friends (Du & Lyu, 2021; Kumar & Mondal, 2018; Kuss & Lopez-Fernandez, 2016).

Internet addiction encompasses a range of addictions, including internet addiction (Neverkovich et al., 2018), online gaming addiction (Zajac et al., 2017), smartphone addiction (Wu et al., 2021), and social media addiction (Wang et al., 2020). The overall prevalence of internet addiction among adolescent and young boys and girls is 2.4%, and both genders suffer equally from various levels of internet addiction (Mousavi, 2020). Reviewing the research literature related to internet addiction shows that although this type of addiction does not have physical problems similar to substance addiction, it results in social issues comparable to other addictions (Bisen & Deshpande, 2020). Despite the positive applications of the internet, the presence of excessive behaviors and harmful consequences among some users has drawn attention, including stress, anxiety, and depression (Brailovskaia & Margraf, 2017; Elhai et al., 2020), academic periods accompanied by academic decline (Kuss & Lopez-Fernandez, 2016), and low self-esteem (Kumar & Mondal, 2018).

Today, the high prevalence of online activities and social media use among adolescents and young people, apart from its benefits, may result in wasting some of these investments (Iranmehr et al., 2018). Given that the factors influencing the use of cyberspace, like most areas of the humanities, are multifactorial, different researchers have approached it from various perspectives, each highlighting an aspect based on their research background (Seif Derakhshandeh et al., 2021). Examples of these studies include showing the tendency for suicide, anxiety, and depression among young people with cyber addiction (Asieieva et al., 2022), the relationship between problematic internet use and depression, impulsivity, anger, aggression, and social anxiety (Du Plessis, 2012), future expectations and internet addiction among adolescents: roles of intolerance of uncertainty and perceived social support (Du & Lyu, 2021), depression and narcissistic personality (Haeri et al., 2021), identity styles and academic performance (Mousavi, 2020), leisure time (Khelghati, 2020), and social norms and lifestyle (Jafari Nedarabadi, 2018; Parsakia, Rostami, Darbani, et al., 2023;

Parsakia, Rostami, Saadati, & Navabinejad, 2023). However, according to the studies conducted, no qualitative research in Iran's cultural context examines the factors influencing internet addiction in adolescents from their lived experiences.

The lack of qualitative research in the country, inconsistency in research findings, and increasing concerns among parents, teachers, mental health professionals, and Iran's Cyber Police (FATA) highlight the importance and necessity of researching factors influencing internet addiction from the adolescents' perspective. Besides identifying influential factors, providing educational interventions that can help adolescents with a tendency toward internet addiction and solve this issue is essential. Therefore, the present study qualitatively examines the factors influencing internet addiction and subsequently designs and validates an intervention based on it for adolescents.

2. Methods and Materials

2.1. Study Design and Participants

The research method was a sequential exploratory mixed method. The research population comprised all high school students in the 2021-2022 academic year in Isfahan. The sample for this study was selected using purposive sampling and continued until data saturation was achieved with 20 participants. Therefore, adolescents who met the criteria for internet addiction based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) were chosen. These criteria are:

- Preoccupation with the internet and cyberspace.
- Increasing amount of time spent online.
- Inability to reduce or stop usage, accompanied by restlessness.
- Moodiness or depression.
- Spending longer online than initially intended.
- Risk of losing a job, relationship, or other opportunities due to internet use.
- Deceiving others to conceal the extent of internet use and/or using the internet to escape negative emotions.

Of the 20 student participants, 13 were boys, and 7 were girls.

To formulate interview questions and validate educational interventions, specialists in psychology and counseling were consulted. These specialists included 12 psychologists and counselors in the child, adolescent, and

family domains with doctoral degrees and over ten years of professional experience.

The research procedure involved reviewing recent articles on internet addiction, formulating interview questions for each factor, consulting 10 psychology and counseling specialists for question review, obtaining permission from the Department of Education (District 3), visiting schools, speaking with principals and counselors to identify students with excessive inclination towards cyberspace, reviewing inclusion and exclusion criteria, conducting interviews, coding data in three stages (open, axial, and selective coding), analyzing data using MAXQDA software, and assessing the content validity of the protocol.

2.2. Measures

For data collection in the qualitative part of the study, unstructured interviews were used. For data collection in the

quantitative part, a content validity assessment form was utilized.

2.3. Data analysis

To analyze the qualitative data obtained from interviews, thematic analysis was employed using MAXQDA software (version 2020). For evaluating the content validity of the intervention package in the quantitative part of the study, the Content Validity Ratio (CVR) and Content Validity Index (CVI) were used at both the item (session) level (I-CVI) and the overall intervention package level (S-CVI).

3. Findings and Results

Table 1 shows sample sentences, sub-themes, and main themes extracted from the information collected through interviews with adolescents.

Table 1

Coding and Categorization of Interviews Based on Thematic Analysis

Main Themes	Sub-Themes	Sample Sentences
Influence from Others	Peer Influence	"When I see that certain bloggers my age are having fun every day without studying and their lives are okay, I am influenced..."
Internal-External Role Models	Influence of Bloggers	
	Role Model for Self-Confidence	"I am a huge fan of K-pop, and I feel they are very happy and address various topics..."
Emotional Release	Following Bloggers/Celebrities	
	Excitement	"If I argue with my family, at that moment I go to watch funny videos and start laughing, and I calm down."
Lack of Social Skills	Stress and Discomfort Relief	
	Anger Distraction	
	Anonymity and Safety in Cyberspace	"I can't connect with strangers, but since we don't see each other in the game, it's much better."
	Lack of Close Relationship with Family Members	
Needs Satisfied by Cyberspace	Lack of Close Relationship with Mother	
	Lack of Close Relationship with Father	
	Non-Acceptance of Generational Changes in the Family	"My parents are not up-to-date, and I don't think like them..."
	Need for Approval	
	Financial Needs	
Lack of Attention to Emotional Needs	Need for Companionship	
	Need for Online Gaming	"I need to play games..."
	Sexual Needs	
	Need to be Understood	
	Need for Independence	
Coping Styles	Feeling of Emptiness	"If there is no cyberspace, I have nothing else to do, I am useless..."
	Feeling of Loneliness	
	Feeling of Worthlessness	
Cognitive Challenges	Problem-Focused Coping	
	Emotion-Focused Coping	"When I get angry or frustrated, I do nothing special..."
	Lack of Understanding Thoughts	"I haven't thought exactly about what thoughts lead me to cyberspace..."

	Avoidance of Negative Thoughts	
	Curiosity	
	Information about Education	
	Confusion	
Leisure Time	Lack of Recreational Programs	"I play more at night..."
	Boredom	
Peer Interaction	Interaction with Same-Sex Peers	
	Interaction with Opposite-Sex Peers	"I joined a group chat, and there were kids from different cities and ages, and these different chats from various cities get together to talk, laugh, and play."
Online Employment	Earning Income	"I have a virtual game called 'Revenge of the Kings' where I create accounts and sell them for dollars, so it's more about earning income than entertainment..."
Physical Injuries	Eye Strain	"It had even material and physical harms for me, from internet costs to increasing the number of my astigmatism."
	Weight Gain	

Based on the findings, there was a need to design an educational intervention, which was developed over 11 sessions.

Table 2

Educational Intervention Sessions

Session Order	Session Topic	Session Summary
Session 1	Creating Therapeutic Relationship among Members	Introduction to rules, use of icebreakers, creating security and trust among members
Session 2	Basic Media Literacy	Providing education related to media literacy
Session 3	Advanced Media Literacy	Teaching critical thinking, using critical thinking to accurately evaluate the media they use the most
Session 4	Extreme/ Addictive Tendency towards Cyberspace	Providing education on extreme/addictive tendencies towards cyberspace
Session 5	Emotional Self-Awareness	Providing education on emotional self-awareness
Session 6	Conceptualization of Emotion Regulation	Providing conceptualization of self-emotion regulation
Session 7	Emotion Regulation (Basic Part)	Skills of emotional awareness, understanding emotions, empathy, and emotion regulation
Session 8	Emotion Regulation (Advanced Part)	Skills and strategies for emotion regulation
Session 9	General Communication Skills	Types and levels of communication, communication challenges
Session 10	Parent-Child Communication Skills	Communication between adolescents and parents
Session 11	Stress Coping Strategies	Education on various coping strategies

The eleven sessions were sent to 12 specialists, and content validity was obtained. The minimum and maximum CVI for each item or program component were calculated to be 0.91 and 1, respectively. Considering the panel size of 12 individuals and the minimum acceptable value for confirming content validity of the program components, which was set at 0.79, the obtained CVI value for each program item is suitable.

4. Discussion and Conclusion

This study aimed to qualitatively explore factors influencing internet addiction in adolescents and to design and validate an intervention based on these factors. The results indicated that there are 13 main themes regarding the

etiology of internet addiction from the adolescents' lived experiences.

Previous research on internet addiction has shown that individuals' weak coping mechanisms lead to the development of emotional strategies like addiction to overcome stress and achieve relief. Inadequate ability to cope with stress and negative emotions is recognized as a causative factor in addiction theories (Du Plessis, 2012). Soltani and Baghai-Fard (2020) also found a direct relationship between internet addiction and emotion-focused coping styles for stress. Analysis of interview data revealed that one reason for this finding is the COVID-19 pandemic in recent years and the necessity for online businesses. Furthermore, the growth of social networks has provided new opportunities for businesses, and the structure of business has been influenced by these networks (Mousavi,

2020). The eleventh educational session on stress coping strategies was designed to teach adolescents various coping strategies and explain how each strategy, whether problem-focused or emotion-focused, has been effective and how they can develop more effective strategies.

Another theme identified was the time spent interacting with peers and forming friendships. Adolescents connect with their friends in cyberspace. The results of this study showed that one reason for adolescents' presence in cyberspace is to communicate with their friends. These relationships may sometimes start in the real world and extend to cyberspace or be formed in cyberspace and continue in the real world. Based on the findings of this theme, the ninth educational session on general communication skills was designed to make adolescents aware of the importance of such skills and how to use them in their interactions, especially with friends and peers, to form a better support system.

Another theme identified was the use of cyberspace for leisure and entertainment. The reduction of leisure time in the real world due to lack of access to recreational facilities, the necessity of dealing with mandatory life tasks such as work or study, and the ability of social media to replace real-world leisure with virtual leisure, providing a sense of satisfaction and enjoyment to the user, are among the concepts discussed in the context of leisure needs in cyberspace (Khelghati, 2020). It can be said that cyberspace has created conditions in which leisure time is separated from its traditional forms and has become a type of media and home-based activity. The results of Karevani and Atashafrouz (2015) also showed that membership in virtual social networks, the number of friends in virtual social networks, and the type of use of virtual social networks are significantly related to how leisure time is spent (Karevani & Atashafrouz, 2015). The educational session on emotional self-awareness was designed so that adolescents could have a better understanding of themselves and set short-term, mid-term, and long-term goals and plans for spending their leisure time purposefully and in a planned manner.

In this study, the theme of the content of thoughts and feelings was also identified. The findings of this study in the context of adolescent thoughts showed that most adolescents in this study did not have sufficient awareness of the thoughts that lead them to cyberspace. However, sometimes the need for information on academic subjects and curiosity about various topics, such as sexual matters and following their interests, leads them into this space. Individuals who feel lonely engage in social behaviors through cyberspace

and use it as a tool to cover up their flaws. Cyberspace serves as a solution for expanding the social relationships of lonely individuals and satisfies their need for affiliation with others, which can lead to internet addiction (Rezaeinia & Sokhtehzadeh, 2016). Previous research also shows that the tendency towards internet addiction is influenced by thoughts and feelings and can affect the emotional dimensions of adolescents. Adolescents use cyberspace to relieve tension and discomfort because they often do not know how to cope with stress and tension at this age. Thus, they sometimes turn to cyberspace to escape worries, which may become a tool for escaping problems, reducing tension, and becoming a factor in internet dependency (Darasian Salmasi & Rezakhani, 2019). Cyberspace, as an unlimited source of information and entertainment, provides conditions for dependency for adolescents, making it a place for sensation seekers who are tired of the repetition of predictable experiences and everyday issues and seek new and diverse experiences. Since most adolescents have unrestricted and unlimited access to the internet, they may increasingly use it and gradually become dependent on it (Munno et al., 2017). Based on the findings from the themes, educational sessions five (emotional self-awareness), six (conceptualization of emotion), seven (basic emotion regulation), and eight (advanced emotion regulation) were designed.

Another finding of this study was the role of family members. The main theme identified was the lack of intimacy among family members. It can be said that in families with high conversation orientation and open communication, where extensive discussions on various topics take place and children's wishes, thoughts, and feelings are considered, children feel accepted by their parents and understood by them. Parents also talk more about emotions and feelings, encouraging children to form wider connections. In such families, the environment is more conducive to the growth of intimacy, as the individual can express their opinions on a subject without worry or anxiety, even if they are wrong. Eventually, through discussing different and varied opinions, the individual finds a solution. Therefore, in such families, there is less dependency on virtual networks. On the other hand, children in conformist families experience strict and unchangeable rules and a lot of commands dictated to them, leading to pressure, stress, and anxiety from the family. As a result, they fear failure and do not engage in problem-solving because they are afraid of being blamed for failures, gradually reducing their self-esteem. In these families, the belief is that personal plans

should align with other family members, and parents make decisions for the rest of the family. Consequently, children in such families turn to cyberspace (Amin et al., 2022). Lack of sufficient parental attention and unawareness of communication methods are also mentioned as factors contributing to internet addiction (Jafari Nedarabadi, 2018). Based on the findings of this theme, the tenth educational session on parent-child communication skills was designed to teach adolescents how to communicate correctly with their parents, so they can gain the support of other family members and have better times with them by adhering to certain do's and don'ts in their interactions.

Another theme of this study was the satisfaction of adolescents' needs that lead to cyberspace. These findings can be explained by the fact that adolescents have many physical and psychological needs, and some of the needs identified in this study, such as the need for recognition, companionship, and understanding, are well satisfied through cyberspace. For example, adolescents share photos and videos on Instagram and TikTok and gain recognition through likes and comments, find virtual friends by responding to direct messages, and engage in entertaining activities. On the other hand, data analysis showed that cyberspace and online games have evolved from simple leisure and entertainment to a need called online gaming, with expressions such as "I need to play games, and I don't want anything else." Cyberspace provides very favorable conditions for its users to achieve significant income by creating content, offering virtual stores, and showcasing services and capabilities, which in turn is a major motivation for adolescents who highly value independence. These findings are consistent with Khelghati (2020), who stated that psychologically, individuals desire new experiences that they cannot easily achieve in the real world. Curiosity about communication and striving to become a virtual celebrity are two of these tendencies. Curiosity means wanting to understand what virtual communication is and how it works and whether they can gain such experiences. Sometimes, they also want to prove to themselves, especially compared to their friends and classmates, that they can connect with different people. Another tendency is to gain a specific status in virtual communities, such as becoming a celebrity (Khelghati, 2020). This term is used in the context of social media for those who usually have many followers, whose posts are more visible, more shared, and are, in a sense, in the spotlight. The educational session on emotional self-awareness can be effective by helping them understand their needs and emotions, leading to better self-awareness.

The findings of this study also identified the influence of peers and celebrities on addictive tendencies toward cyberspace. Adolescents' role models have become very complex and diverse due to the rapid changes in society. It seems that today's youth, both boys and girls, despite the rich cultural role models in our society, are exposed to a bombardment of various role models, often inconsistent with cultural and social norms, making the selection of an appropriate role model a source of conflict and doubt. The globalization process has targeted many national cultural models, presenting the new generation with modern role models. The expansion of mass media, satellite, and the internet have been very effective in offering new role models to the new generation, manifesting modern cultural symbols among the youth and adolescents more than ever before (Arab-Moghaddam et al., 2015). Today, with the expansion of technology and extensive communication, symbolic role models are more widely used. Bandura believes that one of the most influential sources of observational learning is the abundance and variety of symbolic models provided by television, cinema, and other mass media. It is evident that viewers learn many motivations, emotional responses, and new behavioral patterns from television and cinema models (Darasian Salmasi & Rezakhani, 2019). Based on the findings of this theme, the second and third educational sessions were designed, focusing on media literacy to help adolescents understand the reality of cyberspace and the content presented in various media, teaching them to critically analyze the content they encounter in cyberspace and have a more accurate perspective on the role models they choose for their future.

Cyberspace, in addition to its psychological impacts and its pros and cons, has had significant effects on physical health. Physical harm from addictive use of cyberspace was identified with two sub-themes and frequencies (eye strain 100%, weight gain 33.3%). This finding is consistent with other studies. Belanger et al. (2011) discovered that adolescents with internet addiction are at risk of increased physical problems, often associated with inadequate sleep among girls and overweight among boys (Bélanger et al., 2011). According to the findings of this theme, emotion regulation sessions were designed to help adolescents progress through the steps of emotion regulation training, find better pathways for each emotion at each step, make the right choices for emotional discharge, and reduce the harm caused by cyberspace.

5. Limitations & Suggestions

The limitations of the study include a relatively small and region-specific sample size, which may not be representative of the broader adolescent population, potentially limiting the generalizability of the findings. Additionally, the reliance on self-reported data from adolescents can introduce biases such as social desirability or inaccurate self-assessment. The qualitative nature of the study, while providing in-depth insights, may also be subject to the subjective interpretation of the researchers. Furthermore, the study's cross-sectional design does not allow for the examination of causal relationships between identified factors and internet addiction.

Future research should aim to include larger and more diverse samples across different regions to enhance the generalizability of the findings. Longitudinal studies could be conducted to explore causal relationships and the long-term effects of identified factors on internet addiction. Additionally, incorporating quantitative methods alongside qualitative approaches could provide a more comprehensive understanding of the phenomenon. Investigating the effectiveness of the developed educational intervention through experimental studies and exploring other potential moderating variables such as personality traits or socioeconomic status would also be valuable.

The findings of this study suggest the need for targeted educational interventions to address internet addiction in adolescents, emphasizing the development of emotional self-awareness, emotion regulation skills, and critical thinking regarding media consumption. Schools and educational institutions should integrate these interventions into their curricula to help students develop healthier relationships with technology. Mental health professionals can use the insights from this study to design more effective therapeutic approaches tailored to adolescents' specific needs. Policymakers should also consider the implications of internet addiction and support initiatives aimed at promoting digital literacy and mental well-being among young people.

Acknowledgments

We would like to express our appreciation and gratitude to all those who cooperated in carrying out this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

Authors' Contributions

All authors contributed equally.

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