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Investigating the Risk and Protective Factors of Internet Addiction Among Adolescents through the Lens of Cognitive Behavioral Theory: A Cross-Sectional Study

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Graduate Studies

INVESTIGATING THE RISK AND PROTECTIVE FACTORS OF INTERNET ADDICTION AMONG ADOLESCENTS THROUGH THE LENS OF COGNITIVE BEHAVIORAL THEORY:

A CROSS- SECTIONAL STUDY

A THESIS SUBMITTED BY:

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Declaration of Authorship

I, Noura Sherif Shaltout declare that this thesis titled, “Investigating the risk and protective factors of Internet addiction among adolescents through the lens of cognitive behavioral therapy: a cross- sectional study” and the work presented in it are my own. I confirm that:

• This work was done wholly or mainly while in candidature for a research degree at this University.

• Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated.

• Where I have consulted the published work of others, this is always clearly attributed.

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• I have acknowledged all main sources of help.

• Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself.

Signed: Noura Sherif Shaltout

3rd of July 2024

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Abstract—Introduction: The Internet has become a central part of modern life, enhancing education, providing means of global communication, and facilitating access to information and entertainment. However, an attendant risk of excessive Internet use is becoming unconsciously addicted to virtual online activities, especially when large tech companies design their products in a way that makes them addictive to users. These companies have the tools and knowledge that allow them to manipulate and transform the behavior of their target audience. Thus, this study aimed to investigate the potential risk and protective factors for Internet addiction among adolescents. Methodology: This cross-sectional study employed a self- administered assessment tool to investigate the determinants of Internet addiction among female and male students aged 17–21 years at the American University in Cairo (AUC). Using non-random convenience sampling, the study involved a quantitative approach that included responses from 171 participants. Building on the cognitive behavioral therapy (CBT) elements identified in the literature, this study focuses on maladaptive self-beliefs, behavioral patterns, and negative feelings as risk factors of compulsive Internet use. Other potential mediators, including self-efficacy, risk perception, and socio-demographic characteristics, were investigated as mediators of the association between the potential determinants of Internet addiction and the level of Internet addiction. Validated assessment tools from previous studies were used as references to identify the potential protective and risk factors. Correlation and multiple linear regression analysis were conducted to investigate the association between the proposed protective and risk factors and mediators of Internet addiction and the level of addiction using SPSS. Results: The analysis of participants showed that 30% were males, while 70% were females, with the majority falling in the age range of 18 to 20 years. A significant discrepancy in addiction rate was found between males and females (p=0.001). Multiple linear regression analysis revealed a significant positive association between mal-adaptive self-cognitions, risk perception, and the number of female siblings and Internet addiction in the sample, as evidenced by p- values of 0.005 and 0.01 and 0.017 respectively. Additionally, a notable negative association was found between self- efficacy and the level of Internet addiction, with a p-value of 0.001. Conclusion: Maladaptive self-beliefs, risk perception, and self-efficacy and the number of female siblings were found to be strong potential factors of Internet addiction. This, in turn, makes it imperative to develop effective strategies that address the potential determinants of Internet addiction among adolescents in Egypt.

Keywords- Adolescents, Behavioral Addiction, Internet Addiction, Risk and Protective Factors.

Introduction

Internet has become a central part of modern-day life, enhancing education 1), providing means of global communication , facilitating access to information and making ways of entertainment easier and instantaneous (3). An attendant risk though of excessive Internet use is to become unconsciously addicted to virtual online activities, which in turn affects our daily life functioning areas such as occupation, school, physical and mental health, and relationships (4). This in turn explains why research in the area of Internet addiction has gained popularity in the last few decades.

In fact, large tech companies design their products in a way that makes them addictive to the users. They have the tools and knowledge that allow them to manipulate and transform the behavior of their target audience, not only in online interactions but also in their daily offline activities (5). In the same context, the addictive pattern experienced online on social media platforms and gaming websites has been metaphorically compared to the boiling frog soup example, where the boiling water is usually heated up gradually so that the frog doesn't anticipate that it will be boiled to death (6). Ironically, the top leading tech companies manipulate their users in the exact same way, they predict their preferences and expected behavior throughout their previous online interactions and tailor accordingly the content that should be displayed for each and every user to boost him/her with a dopamine hit every once in a while. This will in turn keep the user hooked and obsessed with the pleasure he/she experiences online, which subsequently guarantees a compulsive pattern of usage among their target audience (7)

This in turn explains why the number of Internet users has grown exponentially in the last few years, actually, the number of Internet users in January 2021 was 4.66 billion users worldwide (8). Notably, Internet addiction was found to be more prevalent in collectivist nations than it is among individualistic ones when the culture of compulsive Internet use was studied (9). A collectivist culture values the preferences and goals of the group over the desires and needs of individuals and where members of a society feel strongly involved in each other's life (10), whereas an individualistic society favors autonomy, personal achievements, and self-direction (11). This, in turn, proves that our society which happens to be collectivist by nature is more vulnerable to Internet addiction.

Previous literature actually shows that Internet addiction is prevalent in the MENA region than in the European region and the Americas (12). Similarly, excessive Internet use with all its subtypes, including gaming disorders and social media addiction was found to be more common in the Middle Eastern region than it is in European countries (12). A suggested explanation for this phenomenon was that people with social and economic disadvantages in less developed nations are more prone to Internet addiction. In other words, people with lower quality of life in developing countries tend to use the Internet compulsively to overcome the

social inadequacies experienced in their less privileged societies and to interact with the outer environment (13).

Most importantly, studies conducted in Egypt to detect the prevalence of Internet addiction reported a high prevalence of Internet addiction, especially among adolescents, for instance, a study conducted to detect the level of Internet addiction among Egyptian medical students at Sohag university reported a prevalence rate of cyber addiction that almost reached 50%. (14). This is because adolescents are usually the most vulnerable age group to any form of addiction, as there is often an increased risk of psychological crisis among teenagers, most often accompanied by periods of anxiety, mood swings, and depression, and mostly manifested in the form of aggression, social isolation and addictive behavior (15). In fact, the remarkable level of Internet literacy today among teenagers (16) along with unlimited access to the Internet, typical freedom from parental interference at this age, and a flexible daily routine (17) made adolescents more likely to get addicted to new technological methods of communication that any other age group. This can be attributed to the pleasure experienced online and the instant gratification granted through unlimited number of anonymous interactions with others, a sense of social acceptability and an impression of belonging to a virtual community (18).

In fact, previous studies clearly show the significant health risks posed by addictive Internet use among adolescents (19). For instance, a study conducted in Port Said to identify the physical and psychological consequences of addictive Internet among nursing students use shows that sleep disturbances and headache and overweight are strongly associated with excessive Internet use (20). Other psychosocial disorders are also attributed to Internet addiction among adolescents, including anxiety (21) higher levels of impulsivity (22), aggressive behavior (23), social isolation (24), and in extreme cases suicide ideation (25). Thus, assisting adolescents and protecting them from becoming compulsive Internet users is crucial; close attention needs to be given to teenagers, and strategies need to be implemented at schools and universities to protect adolescents from the risks of Internet addiction.

The vulnerability of adolescents to Internet addiction along with the high prevalence of problematic Internet use reported among Egyptian teens in turn explains the expansion of existing literature that directly tackle Internet addiction among adolescents in Egypt. Several studies have already been conducted to detect the prevalence, consequences, and causes of Internet addiction among adolescents in Egypt (26). However, there is still a significant need for a well-established theoretical framework to identify the determinants of pathological Internet use among Egyptian adolescents and their level of awareness and intention to challenge this addictive behavior. Accordingly, effective strategies that directly address the risk factors and needs of our target population can be designed and implemented in the future.

Thus, the aim of this study is to point out the protective and risk factors of Internet addiction among adolescents in Egypt and to assess their perception of the problem and their intention to overcome an addictive behavior that they have already developed or are likely to develop in the future. We will identify the determinants of pathological Internet and the level of

awareness about Internet addiction and its consequences in AUC students in the American University in Cairo through a cross-sectional study. This will be conducted through an assessment form with validated tools for the measurement of Internet addiction and the psychosocial determinants that predict compulsive Internet use.

Literature Review

1-Internet Addiction

Internet addiction (IA) was introduced as a new disorder in mid-1990s (27). Since then, several terms have been used in previous literature to understand the nature of this form of addiction, including Internet addiction disorder, maladaptive Internet use, pathologic Internet use, problematic Internet use, and compulsive Internet use (28). Eventually, Dr. Kimberly S Young, a psychologist, and an expert in the field of Internet addiction defined this phenomenon stating that "Internet addiction is an impulse control disorder that does not involve an intoxicant" (29). In fact, Internet addiction has been acknowledged as a significant mental health issue worldwide since the American Psychiatric

Association recommended handling "Internet Use Disorder" further in the fifth edition of the diagnostic and statistical mental health manual back in 2012 (30). It's also worth mentioning that Internet gaming disorder was included in the 11th classification of the international classification of disease in order to meet the contemporary global challenges related to the harmful overuse of digital technologies (31).

2-Co-Addictions

Research suggests that other forms of addiction including substance-use disorder and pathological gambling share common attributes with Internet addiction. That's to say that Internet addiction exhibits the same behavioral and neurological characteristics as pathological gambling and excessive substance (32). In fact, all forms of addictions stimulate certain sites in the brain known as the "pleasure pathway or reward center" once stimulated, more dopamine along with opiates and other neurochemicals are released (33). Similarly, Internet addiction may increase dopamine release through the reward it provides to excessive Internet users in chat rooms, social networking games, emails, and text messaging applications, etc. Over time, Internet users develop tolerance, or the need for increasing brain stimulation to keep up the level of dopamine, so that they can avoid the experience of withdrawal symptoms (34).

3-Theoretical Framework

It's argued that abstinence-based recovery approach is not often effective in treating Internet addiction as the Internet has become an integral part of our daily lives, instead, experts claim that wise and controlled use of the Internet is much more effective to deal with problematic Internet use (35). According to previous literature, behavioral interventions developed according to psychosocial theoretical frameworks linking the potential intrinsic and extrinsic factors of a certain maladaptive behavior were found to be more effective than those lacking a

theoretical basis (36). In fact, cognitive behavioral therapy has shown effective outcomes in behavioral change interventions addressing Internet addiction among adolescents (37). Cognitive behavioral therapy (CBT) was initially developed back in the 1960's, when Aaron Beck, an American psychiatrist, started to notice cognitive distortions or invalid thoughts among his patients with depression. Notably, Beck's observations led him to start seeing depression as a cognitive disorder rather than just a mood disorder (38). The cognitive behavioral theory entails that one's behavior and beliefs affect his or her physical and emotional health and consequently his well-being in general, and that the associations between one's perception or beliefs, behaviors, physical reactions, and feelings are all synergetic (39). This model was developed to alleviate the psychological distress associated with any kind of mental disorder by helping patients to come up with strategies in order to cope with their invalid cognitions and maladaptive behavior (40)

The effectiveness of CBT in the programs addressing Internet addiction among adolescents was demonstrated in many previous studies (39). In fact, CBT addresses the unique features of this phenomenon, by approaching the maladaptive behaviors associated with problematic Internet use, the invalid cognitions that might lead to it, and the emotions that trigger this form of addiction (37). The first phase of CBT is a behavioral approach that deals with both the actual problematic Internet use and the impaired professional and social offline activities resulting from Internet addiction. In other words, the role of the first step in CBT is to minimize problematic Internet use and keep it confined to the major legitimate purposes, along with encouraging compulsive Internet users to give preference to the real-life professional, social, and family commitments that are usually impaired at the expense of other virtual online engagement and interactions (41).

Then, the second phase is implemented to overcome the existing denial among heavy Internet users, so that it addresses the underlying cognitive beliefs behind the development of Internet addiction. This means that the main role of this phase is to emphasize the wrong perceptions among compulsive Internet users, such beliefs include; preferring the online self over the actual real self, perceiving one's self as worthless in the offline world, or perceiving the actual world as less desirable than the online world. In fact, this phase helps excessive Internet users to unleash their limiting beliefs and to re-assess those thoughts, once they become aware of their misleading self-perceptions, they can start challenging them on their own without professional assistance (42)

In fact, the main elements being addressed in the cognitive behavioral therapy (thoughts, behavior and emotions) will help us to gain a profound understanding about the determinants of Internet addiction, which will in turn help us to formulate a comprehensive assessment that predicts the exact key factors behind Internet addiction within the population of interest. Thus, effective strategies can be developed later according to our results to address the specific needs of our population. In other words, the CBT will help us to figure out the key factors that account for Internet addiction in the targeted population, is it a common invalid self-perception such as low self-esteem or some sort of negative feelings that trigger an adolescent emotional

needs and makes them more likely to compensate for their inadequacies through online activities.

Methodology

Research Design

This is a cross-sectional study using a self-administered assessment form.

Population and Sampling Strategy

The target population for this study was undergraduate students attending the American University in Cairo (AUC), Egypt. This population was chosen due to their increased access to technology and potential for high Internet usage. The specific age range targeted was 18-21 years old, considering this is a common age range for university students and a period of development where Internet use patterns can be established.

A non-random convenience sampling approach was employed for this study. This method was chosen due to its practicality for data collection within a limited timeframe within the university setting.

Data collection occurred on the AUC campus. Students within the target age range (18-21 years old) were approached in person and invited to participate.

The study sample initially consisted of 200 participants. After filtration of the data collected to remove irrelevant responses (responses that were not within the targeted age group and responses with missing information or entries), the variables being investigated were examined on a pool of 171 students.

Inclusion Criteria

-Female and male undergraduate students enrolled in AUC

-Students who are physically/ cognitively able to complete the assessment tool.

-Students of 18-21 years old.

Research Method

The suggested research will be a quantitative cross-sectional study designed through public and classroom recruitment of students within the population of interest. According to the literature

review conducted, the key elements being addressed in cognitive behavioral therapy (CBT), including maladaptive cognitions, addictive behaviors, and negative feelings were used as factors potentials associated with compulsive Internet usage within the target population. Other factors, including self-efficacy, risk perception, and socio-demographic characteristics were used as potential mediators of the relationship between false cognitions, maladaptive behavioral patterns and depressive or anxiety symptoms, and Internet addiction

Conceptual Framework

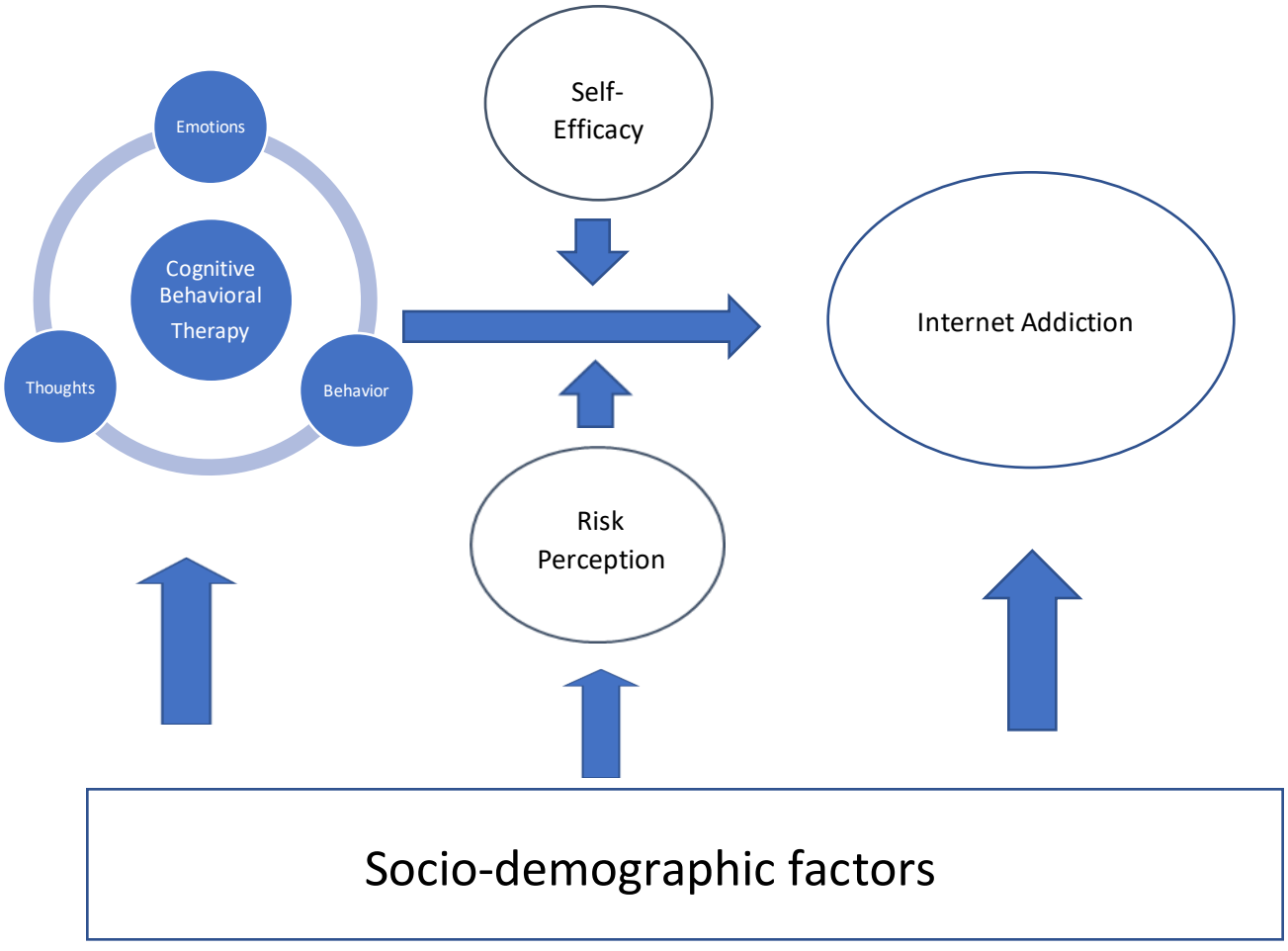

Figure 1: Maladaptive thoughts, behaviors, and emotions were used as factors associated with Internet addiction, potentially mediated by self-efficacy, risk perception, and socio-demographic factors.

Data Collection Method

A self-administered assessment form was developed (see annex) on Google form in English. Data collection occurred on the AUC campus. Students within the target age range (18-21 years old) were approached in person and invited to participate. Two strategies were used for recruitment:

Public Setting Recruitment: Students in common areas on campus were approached and asked if they would be willing to participate in a study on Internet addiction. Those who agreed were provided with a brief overview of the study and its objectives. They were then directed to a digital assessment tool accessible through a scanned QR code.

Classroom Recruitment: With instructor permission, classrooms where a large number of undergraduate students within the target population were enrolled were visited. A short motivational video about Internet addiction and its potential risks was presented to the class. Following the video, students were invited to participate in the study and complete a digital assessment tool accessible through a scanned QR code.

Based on the Cognitive Behavioral Therapy (CBT) and the Potential Risk factors identified from previous literature the following assessment tools were used:

Table 1: Assessment Tools

Component	Description	Tools Used
Socio-demographic Factors	Age, sex, their parent marital status (married/ divorced/ widowed), the age (closest age gap), number and gender of their siblings	
Internet Addiction Level	The severity and level of addictive behavior	Compulsive Internet use scale (43)
Entertainment Websites and Social Media Usage	-The most used social media and entertainment applications (if any) (Facebook, Instagram, Youtube, Tiktok, Other) -The most used gaming applications (if any) (Fortnite-MineCraft-PUBG-Pocket Estimation- FiFa Mobile-Other) -The number of hours spent online/day (this does not include using the Internet for study or work purposes)	Self-developed questions

	-When and where do you intensively use social media or entertainment apps:(When you are with your friends/ When you wake up in the morning/ At night / At bed time just before you sleep) - When and where do you intensively use gaming websites: (When you are with your friends/ When you wake up in the morning/ At night / At bed time just before you sleep)	
Gaming Addiction Screening	The rate at which you gaming websites/apps are used daily and the effect of this on the way you function	Developed with the help of the Lowa State university questionnaire; based on diagnostic criteria for addictive gambling behavior (44)
Emotions (CBT)	Depression symptoms: mood, withdrawal of interest in life activities, and feelings of hopelessness, uselessness Anxiety symptoms: tension, nervousness and Restlessness	-11-ITEM Kutcher Adolescent Depression Scale: KADS-11 (45) -Social Anxiety Scale for adolescents (46)
Thoughts (CBT)	Feelings of personal inadequacy and inferiority self-deprecation, feelings of uneasiness, and marked discomfort during interpersonal interactions	Developed based on previous literature available about the maladaptive cognitions associated with excessive Internet use (47)
Behavior (CBT)	Feelings of annoyance and irritability, urges to break things, frequent arguments and uncontrollable outbursts of temper	Self-developed. The behavioral patterns associated with Internet addiction in previous literature were used to develop this part.
Self-Efficacy	Their self-perceived potential to overcome the barriers towards behavioral change and to survive any form of relapse	An edited version of the health self-efficacy questionnaire to be aligned with Internet addiction (48)
Risk Perception	The level of awareness about the risk of excessive Internet usage	Self-developed questions

		(Developed according to the suggested risks of Internet addiction in previous literature)

A pilot test was carried out during the week of Nov 22, 2022, in order to spot any difficulties associated with the timeline taken to fill up the assessment form, whether the language used to formulate the questions is easily understood, and whether any sensitive language needs to be changed. The survey was handed accordingly to 2 freshmen and 2 sophomore AUC students who were all timed while answering the survey, and asked to share their comments about the questions, the length of the survey, and the language used afterward. The average time to fill up the survey was 10-15 minutes.

According to the feedback taken from the students in the pilot test, the assessment form was modified as follows:

1. Keeping only the questions that focus on the key points and removing the repeated questions that address points already tackled previously in the form to make the whole fom shorter and to the point.
2. Changing the wording of some questions to make them less complicated and easy to read and understand
3. Removing some sentences addressing the predicted maladaptive cognitions that were thought to be provocative like “I’m a failure when I’m offline”, “I’m worthless offline” and “Nobody loves me offline”
4. Removing the word “Seldom” as advised by one of the students (she claimed that the target population may not be familiar with this word)

Data Analysis

Chi squared tests were used to test the correlation between age and gender and the usage of different online applications, and t- tests were carried out to compare the mean addiction scores corresponding to different socio-demographic factors including age, gender, number and gender of siblings and parents marital status.

Additionally, a correlation analysis was conducted between all variables being investigated. Then, a multi-regression analysis was conducted to demonstrate the relationship between the suggested protective and risk factors of compulsive Internet use and the level of Internet addiction.

Results

Table 2: Socio-demographic Characteristics of Respondents

Variable	Category	N (%)
Gender	Male	51 (30)
	Female	120 (70)
Age	17-18	55 (32.2)
	18-19	44 (27.7)
	19-20	41 (24)
	21	31 (18.1)
Parents Marital Status	Married	141 (82)
	Divorced	22 (13)
	Widowed	12 (5)

Table 2, shows the distribution of respondents, notably there is a considerable percentage of male respondents (30%) yet, a majority of females (70%) in the sample. The majority of the sample falls within the 17–19 age range, according to the age distribution. Also, most respondents are from married parental households (82%), with a smaller percentage coming from divorced (13%) or widowed (5%) backgrounds

Internet Usage Patterns

Table 3: Patterns of Social Media and Entertainment Apps Usage among Participants of Different Age-Groups.

App		N (%) Age					
		17-18	19	20	21	Total	Chi^2
Facebook	Yes	3 (5.5)	4 (9.1)	2 (4.9)	3 (9.7)	12 (7)	1.12 (ns)
	No	52 (94.5)	40 (90.9)	39 (95.1)	28 (90.3)	159 (93)	
Instagram	Yes	24 (43.6)	16 (36.4)	21 (51.2)	19 (61.3)	80 (53.2)	5.1 (ns)
	No	31 (56.4)	21 (63.6)	20 (48.8)	12 (38.7)	91 (46.8)	
TikTok	Yes	34 (61.8)	22 (50)	23 (43.9)	13 (41.9)	79 (46.2)	3.5 (ns)
	No	21 (38.8)	22 (50)	18 (56.1)	18 (58.1)	92 (53.8)	
YouTube	Yes	8 (14.5)	3 (6.8)	1 (2.4)	4 (12.9)	16 (9.4)	4.9 (ns)
	No	47 (85.5)	41 (93.2)	40 (97.6)	27 (87.1)	155 (90.6)	
Other	Yes	7 (12.7)	4 (9.1)	4 (9.8)	1 (3.2)	16 (9.4)	2.1 (ns)
	No	48 (87.3)	40 (90.9)	37 (90.2)	30 (96.8)	155 (90.6)	

In table 3, Chi-squared tests were conducted to evaluate the association between age and app usage. Obviously, Instagram and TikTok are more popular among younger age groups (within the 17-18 age group category), but Facebook and YouTube have a more even distribution throughout different age ranges. Across age ranges, the 'Other' category exhibits comparatively constant usage. Chi-squared tests indicate that there is no statistically significant relationship between age and app usage across all apps examined.

Table 4: Patterns of Gaming Apps Usage among Participants of Different Age Groups.

App	Usage	N (%)					
		Age				Total	Chi^2
		17-18	19	20	21		
Fortnite	Yes	4 (7.3)	1 (2.3)	0	3 (9.7)	8 (4.7)	5.2 (ns)
	No	51 (92.7)	43 (97.7)	41 (100)	28 (90.3)	163 (95.3)	
MineCraft	Yes	2 (3.6)	2 (95.5)	3 (7.3)	1 (3.2)	8 (4.7)	0.92 (ns)
	No	53 (96.4)	42 (4.5)	38 (92.7)	30 (96.8)	163 (95.3)	
PubG	Yes	8 (14.5)	4 (9.1)	2 (4.9)	2 (6.5)	16 (9.4)	3.03 (ns)
	No	47 (85.5)	40 (90.9)	2 (4.9)	29 (93.5)	155 (90.6)	
Pocket Estimation	Yes	0	2 (4.5)	3 (7.3)	3 (9.7)	8 (4.7)	5.1 (ns)
	No	55 (100)	42 (95.5)	38 (92.7)	28 (90.3)	163 (95.3)	
FIFA	Yes	6 (10.9)	4 (9.1)	4 (9.8)	3 (9.7)	17 (9.9)	0.1 (ns)
	No	49 (89.1)	40 (90.9)	37 (90.2)	28 (90.3)	154 (90.1)	
Other	Yes	44 (20)	37 (84.1)	30 (73.2)	19 (61.3)	130 (76)	5.9 (ns)
	No	11 (80)	7 (15.9)	11 (26.8)	12 (38.7)	41 (24)	

In table 4, Chi-squared tests are used to analyze the association between age and app usage. According to the data, there is no significant correlation between age and app usage.

Table 4: Patterns of Social Media and Entertainment Apps Usage among Participants of Different Gender.

App	Usage	N (%)			
		Gender		Total	Chi^2 (p)
		Male	Female		
Facebook	Yes	2 (3.9)	10 (8.3)	12 (7)	1.1 (ns)
	No	49 (96.1)	110 (91.7)	159 (93)	
Instagram	Yes	24 (47.1)	56 (46.7)	80 (46.8)	0.002 (ns)
	No	27 (52.9)	27 (52.9)	91 (53.2)	
TikTok	Yes	20 (39.2)	72 (60)	79 (46.2)	6.2 (0.013)
	No	31 (60.8)	48 (40)	92 (53.8)	
YouTube	Yes	8 (15.7)	8 (6.7)	16 (9.4)	3.4 (ns)
	No	43 (84.3)	112 (93.3)	155 (90.6)	
Other	Yes	2 (3.9)	14 (11.7)	16 (9.4)	2.5 (ns)
	No	49 (96.1)	106 (88.3)	155 (90.6)	

In table 5, Chi-squared tests were used to analyze the relationship between gender and social media applications usage. Gender has a significant impact on TikTok usage patterns, as evidenced by the observed relationships ($\chi 2 = 6.2$, $p = 0.013$). No significant correlation between gender and social media usage was noted for Facebook, Instagram, YouTube, and other apps ($p > 0.05$)

Table 5: Patterns of Gaming Apps Usage among Participants of Different Gender.

App	Usage	N (%)			
		Gender		Total	Chi^2 (p)
		Male	Female		
Fortnite	Yes	2 (3.9)	6 (5)	8 (4.7)	1.1 (ns)
	No	49 (96.1)	114 (95)	163 (95.3)	
Minecraft	Yes	4 (7.8)	4 (3.3)	8 (4.7)	0.002 (ns)
	No	47 (92.2)	116 (96.7)	163 (95.3)	
PubG	Yes	2 (3.9)	14 (11.7)	16 (9.4)	6.2 (0.113)
	No	49 (96.1)	106 (88.3)	155 (90.6)	
Pocket Estimation	Yes	5 (9.8)	3 (2.5)	8 (4.7)	4.3 (ns)
	No	46 (90.2)	117 (97.5)	163 (95.3)	
FIFA	Yes	10 (19.6)	7 (5.8)	17 (9.9)	7.5 (0.006)
	No	41 (80.4)	113 (94.2)	154 (90.1)	
Other	Yes	21 (41.2)	20 (16.7)	41 (24)	11.8 (0.001)
	No	30 (58.8)	100 (83.3)	130 (76)	

In table 6, chi-squared tests were carried out to examine gender disparities in the gaming apps usage. Obviously, Gender disparities in Fortnite, Minecraft, PubG, and Pocket Estimation usage are not significant, however there are notable variations in FIFA (p=0.006) and "Other" games (p=0.001) usage, where males show higher usage rates than girls..

Level of Addiction by Socio- demographic Status

Table 6: Level of Addiction among Participants of Different Socio-demographic Factors.

Socio-Demographic Factor	Social Media and Entertainment Apps Addiction Level		
	Category	Mean (SD)	t/ F (p)
Age	17-18	21.96 (5.2)	0.346 (ns)
	19	21.36 (4.11)	
	20	21.24 (5.1)	
	21	20.81 (5.9)	
Gender	Male	19.52 (4.5)	*-3.187 (0.002)
	Female	22.24 (5.00)	
Parents Marital Status	Married	21.39 (4.9)	0.307(ns)
	Divorced	21.17 (6.1)	
	Widowed	22.75 (4.9)	
Number of Male Siblings	None	22.13 (5.1)	3.00 (0.03)
	One	22.44 (4.39)	
	Two	23 (3.92)	
	Three	19.74 (4.86)	
Number of Female Siblings	None	20.53 (4.7)	2.7 (0.046)
	One	21.16 (4.69)	
	Two	19.88 (5.14)	
	Three	22.93 (5.14)	

In table 7, The t-test results show a significant difference in addiction levels across genders, with males having lower mean addiction scores than females (t = -3.187, p = 0.002). The number of male and female siblings significantly affects addiction levels, with those having two male siblings and those with three female siblings showing the highest mean addiction scores (t = 3.00, p = 0.03) and (t = 2.7, p = 0.0046) respectively. In contrast, age, parents' marital status, and the number of female siblings do not show statistically significant differences in addiction levels

Table 7: Level of Gaming Addiction among Participants of Different Socio-demographic Factors

Socio-demographic Factor	Gaming Apps Addiction		
	Category	Mean (SD)	t/ F (p)
Age	17-18	11.4 (4.4)	0.18 (ns)
	19	11.4(4.0)	
	20	11.8 (4.0	
	21	12.1 (4.4)	
Gender	Male	12.8 (4.0)	2.5 (0.015)
	Female	10.8 (4.2)	
Parents Marital Status	Married	11.5 (4.1)	0.58 (ns)
	Divorced	13.3 (6.2)	
	Widowed	11.6 (3.0)	
Male Siblings	None	12.5 (5.1)	1.37 (ns)
	One	11.3 (3.1)	
	Two	9 (2.7)	
	Three	11 (3.1)	
Female Siblings	None	11.5 (3.62)	0.288 (ns)
	One	11 (2.94)	
	Two	12.3 (4.89)	
	Three	12 (5.34)	

In table 8, the data shows the relationship between socio-demographic characteristics and addiction to gaming applications, represented by mean scores and standard deviations. Gender differences in addiction levels are significant, with males exhibiting higher mean scores than females (t = 2.5, p = 0.015). Age, parents' marital status, and the number of male and female siblings do not show statistically significant differences in gaming app addiction levels.

Table 8: Total Level of Addiction (Social Media/ Entertainment Apps) among Participants of Different Socio-demographic Factors.

Socio-demographic Factor	Level of Gaming and Entertainment Addiction		
	Category	Mean (SD)	t/ F (p)
Age	17-18	40.3 (13.1)	0.18 (ns)
	19	41.7 (12.8)	
	20	41.9 (14.9)	
	21	39.3 (13.8)	
Gender	Male	33.4 (8.9)	-4.74 (0.001)
	Female	44 (13.9)	
Parents Marital Status	Married	40.4 (13.2)	0.415 (ns)
	Divorced	43.3 (12.8)	
	Widowed	43 (12.8)	
Male Siblings	None	43.4 (13.6)	2.6 (0.05)
	One	41.81 (13.1)	
	Two	35 (3.9)	
	Three	37 (13.4)	
Female Siblings	None	38.47 (13.2)	4.1 (0.008)
	One	40.2 (13.2)	
	Two	32.13 (7.9)	
	Three	45.38 (13.7)	

In table 9, *the data shows that males exhibit significantly lower mean scores compared to females (t = -4.74, p = 0.00), suggesting a gender-based disparity. Also, participants who don't have female siblings have lower mean gaming and social media addiction scores (38.47) compared to those with one (40.2), and three female siblings. Whereas, participants with 2 female siblings have the lowest addiction score (32.13). Obviously, the observed difference in addiction levels between the categories of male and female siblings is statistically significant (p=0.05), (p=0.008) respectively, as opposed to age, parents' marital status, and the number of male siblings do not show statistically significant differences in addiction levels.*

Table 9: Correlation Analysis between Potential Behavioral, Emotional and Cognitive Risk Factors of Internet Addiction and the Level of Internet Addiction.

	Thoughts	Behavior	Feelings	Self-Efficacy	Risk Perception	Social-Media Addiction	Gaming Addiction	Total Level of Addiction
Thoughts	-							
Behavior	0.229**	-						
Feelings	0.335**	0.646**	-					
Self-efficacy	-0.213**	-0.123**	-0.203**	-				
Risk-perception	-0.79	0.155*	0.167*	0.244*	-			
Social- Media Addiction	0.314**	0.243**	0.351**	-0.507*	0.014	-		
Gaming Addiction	0.027	0.171	0.219*	-0.209*	0.030	0.380**	-	
Total Level of Addiction	0.237**	0.186*	0.297**	-0.278**	0.131	0.611**	0.809**	-

*: $P < 0.01$

**: $P < 0.05$

In table 10, social media addiction shows a significant positive correlation with various psychological dimensions and behavioral patterns, including thoughts, feelings and the behavioral patterns being investigated. Similarly, gaming addiction is associated with feelings and social media addiction. Overall addiction levels, including both social media and gaming addiction, notably correlate positively with social media addiction, feelings and behavior. In contrast, all three types of addiction have a significant negative correlation with self-efficacy.

Table 10: Prediction Model: Multiple Linear Regression Addiction Scores of Potential Cognitive, Emotional and Behavioral Risk Factors of Internet Addiction.

	Model 1			Model 2		
	B	ß	P	B	ß	P
Constant	29.512	-	0.000	33.206	-	0.000
Behavior	0.089	0.039	0.909		0.213	
Thoughts	0.258	0.196	0.015	0.280	0.194	0.005
Risk Perception	0.494	0.195	0.031	0.549		0.010
Feelings	0.139	0.060	0.555			
Self-efficacy	-0.353	-0.244	0.003	-0.401	-0.298	0.000
Male Siblings	-1.194	-0.115	0.149			
Female Siblings	1.280	0.129	0.110	1.988	0.199	0.019
Age	0.536	0.044	0.592			
Parents Marital Status	0.679	0.19	0.809			

Model 1:

r^2=0.22

f= 4.526

p= 0.000

Model 2:

r^2=0.20

f= 0.288

p= 0.000

Discussion

The sample consists of a variety of participants, with a significant percentage of male respondents (30%) and a majority of female respondents (70%). Notably, gender has a remarkable impact on TikTok usage patterns, as demonstrated by the observed associations. However, no significant association between gender and usage behaviour was found for other social media platforms including Facebook, Instagram, YouTube, and "other" applications ($p > 0.05$). Similarly, chi-squared tests investigating gender discrepancies in the use of gaming applications reveal that there are no notable variations in usage trends for Fortnite, Minecraft, PubG, and Pocket Estimation. There are significant differences in the usage of FIFA ($p=0.006$) and "Other" games ($p=0.001$) though, with males showing higher usage rates than females. Findings also reveal significant differences in overall addiction levels between genders, with males showing lower average social media addiction scores compared to females and females showing lower gaming addiction scores than males. The means of the overall addiction scores though, are higher among females than males

The number and gender distribution of siblings also show a strong association with addiction levels. Notably, the mean addiction scores of adolescents with a different number of male and female siblings are significantly different ($t = 3.00$, $p = 0.03$) and ($t = 2.7$, $p = 0.0046$), respectively. Additionally, the final regression model shows that self-efficacy and maladaptive cognitions are the most significant psychosocial factors of Internet addiction among adolescents ($p= 0.000$ and $p= 0.005$) respectively, followed by the number of female siblings and risk perception of compulsive Internet use ($p=0.010$ and $p= 0.019$), respectively.

The fact that females in the study sample are more likely to have higher addiction levels to social media than males is aligned with the findings of another study conducted among southern Spanish university students back in 2019 (49). In fact, some factors seem to be moderating the association between gender and social media addiction, including socio psychological factors in females and a combination of social and biological factors in males (49)

In light of the significant inter-gender difference in addiction levels to Tiktok that was evident in the study sample, with females showing a higher level of addiction to Tiktok, it is worth mentioning that this finding is aligned with a study conducted among secondary school students in a sub-district in Gresik, Indonesia , where the level of Tiktok addiction in a sample of middle school students falls in the lowest category of Internet addiction identified in the study among male students and in the middle category among female students (50)

Notably another meta-analysis conducted back in 2020 to examine gender-related social media and online gaming addiction differences in different regions worldwide also support this study findings. In other words, the fact that males are more prone to gaming addiction and females are more likely to have higher levels of social media addiction suggested in this study is also

evident in the meta-analysis, with a moderating influence of the geographic region on the association between gender and the levels of addiction (51).

In contrast, many studies report a higher level of Internet addiction among males, which can be linked to the way males use Internet. Males are more likely to get engaged in activities that are more predictive of Internet addiction like cybersex, pornography and online gaming, whereas females most often use the Internet to chat, write blogs, send messages or update personal home page (52)

The higher level of Internet addiction among males in many studies was associated with the fact that they have a stronger desire to feed their self- esteem by getting engaged in online gaming experiences (52). It's also suggested that higher levels of Internet addiction among males may be associated with the fact that males don't usually seek social support through interpersonal relationships, so they are more likely to get engaged in compulsive online gaming as a coping mechanism or as means of distraction from negative emotions or stressors (52). Additionally, higher IA among male adolescents is thought to be associated with a higher level of family supervision among female adolescents than male adolescents, along with a higher level of cautiousness among females when they get engaged in new relationships online compared to males (53)

Other studies reveal a higher level of Internet addiction among females with emotional difficulties such as subjective unhappiness or depressive symptoms than males with similar problems. This in turn provides a possible explanation to the higher level of Internet addiction among females found in our study sample. In other words, factors including unhappiness and depressive symptoms that were already identified in previous studies as moderators of higher Internet addiction levels in females than males with the same conditions, can also be linked to higher levels of addiction among females than males in our sample (Ha & Hwang, 2014)

The inter-gender differences in the patterns and intensity of Internet addiction entails the adoption of a tailored approach to address the different patterns of compulsive Internet usage between different genders. In other words, a one-size-fits-all approaches to Internet addiction prevention and treatment may not be effective. Instead, understanding how females and males differ in their vulnerabilities and preferred platforms can inform the development of gender-specific interventions.

Notably, self- efficacy was also linked to lower levels of Internet addiction in previous studies (Du & Zhang, 2022), (Bakioğlu, 2020b). It's worth mentioning though, that different aspects of self- efficacy are addressed in the other studies. In this study we examined self-efficacy in terms of the extent to which someone shows readiness and belief in his/ her capability to cut down on compulsive Internet usage. Other studies address self- efficacy in general or social self-efficacy and its effects on the level of Internet addiction.

Nevertheless, even other aspects of Internet addiction come in line with this study (55). In other words, all forms of self- efficacy are negatively correlated with Internet addiction. Self-

efficacy was also identified as a mediator of the relationship between Internet addiction and many other factors that are thought to be associated with Internet addiction. For example, a study conducted in Turkey among a group of undergraduate students back in 2020 revealed that self- efficacy is a mediator of the relationship between Internet addiction and loneliness. That's to say that a compulsive Internet user usually breaks from his social connections with his/ her surrounding community, which in turn gradually reflects on his/ her capability and belief to establish new relationships, i.e. his social self- efficacy and increases his loneliness.

Notably, this research stands out by tackling the cognitive aspects associated with Internet addiction. Previous literature focus mainly on the behavioral aspect of Internet addiction. In contrast, this study expands the limited body of literature addressing mal-adaptive cognitions as determinants of Internet addiction, and introducing new maladaptive self-beliefs related to self- esteem and self-image that were found to be associated with Internet addiction among adolescents. This in turn may guide specialists to help their clients in coming up with counter thoughts that challenge the potentially existing mal-adaptive thoughts, as a part of cognitive behavioral therapy adopted to overcome Internet addiction.

Unexpectedly, this study shows a significant positive correlation between risk perception of compulsive Internet usage and the level of Internet addiction. This is contradicted with another study that was carried out in China back in 2011 with the aim of examining the effect of individual health differences including awareness and acceptance of Internet addiction as a new mental illness. The latter study concluded that health risk perception was associated with a higher degree of accepting Internet addiction and a higher extent of willingness to change maladaptive Internet behavior (56).

A possible explanation of the positive co-relation between Internet addiction and risk perception within our sample is that awareness of Internet addiction risks does not necessarily guarantee action. That's to say that fear can have a negative impact, as it has the potential to result in anxiety and further reliance on Internet to cope with negative feelings. Additionally, adolescents could have misinterpreted the potential risks of problematic Internet usage, focusing on extreme scenarios or failing to see the indicators of their risky behavior online. However, this study emphasizes the significance of adopting effective and comprehensive approaches for preventing Internet addiction. In fact, effective programs should go beyond raising awareness and include methods such as teaching self-management skills and using anxiety reduction techniques. These tools will in turn equip adolescents to make informed and healthy decisions regarding their Internet usage.

The present study also examined the potential association between parental marital status and adolescent Internet addiction, hypothesizing that increased Internet use could be more prevalent among high-conflict families as a way to cope up with the existing stresses within these families or due to the lack of parental attention. However, the results do not support this correlation which may be attributed to various factors, including the potential impact of more

pronounced risk factors within the sample, the necessity to investigate the nuances within marital categories (such as levels of conflict), or the likelihood that Internet addiction is more susceptible to recent family events rather than long-term marital status. Despite the inconclusive results, this study shows an urgent need for additional investigation into the potential impact of parental marital dynamics on adolescent Internet usage.

Strengths and Limitations

This is the first study to investigate the risk and protective factors of Internet addiction among adolescents using the elements of the cognitive behavioral therapy models as potential protective and risk factors of Internet addiction among adolescents. Also, this is the first study that provides a compiled version of already existing validated tools alongside other modified tools to assess the cognitive and behavioral determinants of Internet addiction. However, since the assessment tool is new, it lacks established reliability and validity compared to standardized Internet addiction measures. This in turn suggests the repetition of the study several times, with a smaller sample size to better assess the clarity and effectiveness of the results in regards to CBT. It would also be helpful to compare and analyze the data obtained alongside results from validated Internet addiction measures if possible, which will help identify potential discrepancies arising from the new tool. After further analysis and modification, the developed tool can guide future longitudinal research, providing the missing causal link between the potential protective and risk factors of Internet addiction.

This study's findings, while informative for AUC students, cannot be confidently generalized to all adolescents due to limitations in sample size. This is because sampling error potentially increases the chance of missing important subgroups within the adolescent population. Also, since statistical power is lower with smaller samples, the study might lack the power to definitively say they're real effects and not just random chance. Therefore, the results likely represent the experiences of AUC students, but they don't necessarily apply to all adolescents.

Notably, the focus on AUC students also introduces a socioeconomic bias, restricting the generalizability of the results. Since the AUC community is known for its high socioeconomic status (SES) demographic, the findings wouldn't demonstrate the experiences of adolescents from lower SES standards. In fact, socioeconomic factors including Internet access, parental involvement, and online interests and preferences create a digital divide between different social standards. These variations can potentially influence the risk factors for Internet addiction. Additionally, adolescents from affluent families might have a stronger sense of future security, as they anticipate having better opportunities for a stable employment after graduation. This could affect their motivations for Internet use compared to adolescents from lower SES backgrounds who might use online activities to compensate for feelings of helplessness related to job prospects. Thus, future research should strive for a more inclusive sample that involves adolescents from all socio-economic levels to gain a deeper understanding of the different Internet usage patterns across different socioeconomic groups.

Conclusion

This study examines the risk and protective factors behind Internet addiction among adolescents, specifically through the lens of Cognitive Behavioral Therapy (CBT) models. This in turn provides new insights by unleashing some of the potential determinants of Internet addiction among adolescents.

One of the key findings in this study is the identification of gender disparities in Internet addiction susceptibility, which emphasizes the need for prevention and treatment models that take inter-gender differences into account. Additionally, the research highlights the protective role of self-efficacy, adolescents with a strong sense of self-belief and ability to manage challenges seem to be less vulnerable to Internet addiction. This emphasizes the importance of fostering self-efficacy among adolescents to empower them in overcoming the temptations they encounter everyday on different online platforms.

Additionally, the study highlights the importance of developing a more nuanced understanding of the association between risk perception and Internet addiction. Adolescents might not fully grasp the potential dangers of spending too much time on the Internet, which can create a misguided sense of safety. It is crucial to emphasize the significance of educational programs that promote awareness regarding the adverse effects of Internet addiction.

This study also highlights the significance of developing comprehensive prevention strategies. Addressing the complex nature of Internet addiction requires a comprehensive approach, thus, taking into account various risk factors, such as social isolation or low self-esteem, and incorporating interventions that promote protective factors like self-efficacy and healthy coping mechanisms, may lead to a more effective approach.

The study's limitations also offer valuable insights for future research. For example, validating the newly developed CBT-based assessment tool on a larger scale will strengthen its reliability and generalizability and will provide a comprehensive approach for future researches to examine the association between cognitive and behavioral factors and Internet addiction. Also, exploring Internet addiction across socioeconomic divides is crucial as socioeconomic factors can influence access to technology, social support systems, and mental health resources, potentially impacting Internet addiction prevalence and treatment outcomes.

By building on these findings, researchers and intervention specialists can develop more effective strategies to tackle Internet addiction in adolescents. By addressing the factors identified as determinants of Internet addiction, a comprehensive CBT approach can be developed to help adolescents achieve healthy Internet use habits.

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Annex

Compulsive Internet Use Assessment Tools

Table 2: Socio-Demographic Information

Age	
Gender	
Parents Marital Status	(married/ divorced/ widowed)
Age of sibling with closest age gap (if any) Please write N/A if this doesn't apply to you	
Number of Siblings	Male: Female:

Table 3: Internet Usage Related Questions

The Most Used Social-Media and Entertainment Applications	Facebook-Instagram-Youtube- Tiktok-Other
The Most Used Gaming Applications	Fortnite-MineCraft-PUBG-Pocket Estimation- FiFa Mobile- Other
Number of Hours Spent Online per day (this does not include using the Internet for study or work purposes)	1-2 hours 3-4 hours 5-6 hours 7-8 hours
When and Where do you intensively use social media or entertainment apps	When you are with your friends/ At college/ At work/ During your classes/During the weekend/When you wake up in the morning/ At night / At bed time just before you sleep/ Other
When and where do you intensively use gaming websites	When you are with your friends/ At Work/ At college/ During

	your classes/ During the weekend/ When you wake up in the morning/ At night / At bed time just before you sleep/ Other

Table 4: Compulsive Internet Use Scale

Please go through the following sentences and describe the rate at which you ***use social media and entertainment applications*** and their effects on the way you function

You find it difficult to stop using the Internet when you are online?	Never Sometimes Often Very Often
You continue to use the Internet despite your intention to stop?	Never Sometimes Often Very Often
Others (e.g., partner, children, parents) say you should use the Internet less?	Never Sometimes Often Very Often
You prefer to use the Internet instead of spending time with others children, parents)?	Never Sometimes Often Very Often
are you short of sleep because of the Internet?	Never Sometimes Often Very Often
You look forward to your next Internet session	Never Sometimes Often Very Often
You unsuccessfully tried to spend less time on the Internet	Never Sometimes Often Very Often
You neglect your daily obligations (work, school, or family life) because you	Never

prefer to go on the Internet?	Sometimes Often Very Often
You go on the Internet when you are feeling down?	Never Sometimes Often Very Often
You feel restless, frustrated, or irritated when you cannot use the Internet?	Never Sometimes Often Very Often

Table 5: Gaming Addiction Screening

Please go through the following sentences and describe the rate at which you ***gaming websites/apps*** daily and the effect of this on the way you function

Please write (N/A) if you do not use gaming websites/ applications

Over time, have you been spending much more time playing video games, learning about video game playing, or planning the next opportunity to play?	Never Sometimes Often Very Often
Do you need to spend more time and money on video games to feel the same amount of excitement as other activities in your life?	Never Sometimes Often Very Often
Have you tried to play video games for shorter durations of times but have been unsuccessful?	Never Sometimes Often Very Often
Do you become restless or irritable when you attempt to cut down or stop playing video games?	Never Sometimes Often Very Often
Have you played video games as a way to escape problems or negative feelings?	Never Sometimes Often Very Often
Do you sometimes skip household chores in order to play more video games?	Never Sometimes Often

	Very Often
Have you ever done poorly on a school assignment, test, or work assignment because you spent so much time playing video games?	Never Sometimes Often Very Often

Table 6: Depression Scale

How often have you had the following feelings/thoughts/difficulties over the last week

Low mood, sadness, feeling down, depressed,	Never Sometimes Often Very Often
Irritable, losing your temper easily, feeling pissed off, losing it.	Never Sometimes Often Very Often
Sleep Difficulties - different from your usual trouble falling asleep, lying awake in bed.	Never Sometimes Often Very Often
Feeling decreased Interest In: hanging out with friends; being with your best friend; being with your partner / boyfriend / girlfriend; going out of the house; doing school work or work; doing hobbies or sports or recreation	Never Sometimes Often Very Often
Feelings of worthlessness, hopelessness, letting people down, not being a good person.	Never Sometimes Often Very Often
Feeling tired, feeling fatigued, low in energy, hard to get motivated, have to push to get things done, want to rest or lie down a lot	Never Sometimes Often Very Often
Trouble concentrating, can't keep your mind on schoolwork or work, daydreaming when you should be working, hard to focus when reading, getting "bored" with work or school.	Never Sometimes Often Very Often
Feeling worried, nervous, panicky, tense, keyed up, anxious	Never Sometimes

	Often Very Often
Physical feelings of worry like headaches, butterflies, nausea, tingling, restlessness, diarrhea, shakes, or tremors	Never Sometimes Often Very Often
Thoughts, plans, or actions about suicide or self-harm	Never Sometimes Often Very Often

Table 7: Social Anxiety Scale

Do you mind

Initiating a conversation with a member of the opposite sex	Never Rarely Sometimes Most Often Always
Attending a party or other social gathering with people you don't know very well	Never Rarely Sometimes Most Often Always
Speaking up, answering questions in class/participating in class discussions	Never Rarely Sometimes Most Often Always
Presenting in front of a small group or in a classroom setting	Never Rarely Sometimes Most Often Always
Attending overnight group activities such as camps, school trips, etc.	Never Rarely Sometimes

	Most Often Always
Speaking to a store clerk, bank teller, etc.	Never Rarely Sometimes Most Often Always
Asking a stranger for directions	Never Rarely Sometimes Most Often Always
Telephoning to ask for information or to speak to someone you don't know very well (score whatever is greater)	Never Rarely Sometimes Most Often Always
Entering a classroom or social group once the class or activity is already underway	Never Rarely Sometimes Most Often Always
Speaking with authority figures: i.e. teachers, counselor, principal, police officers, clergy, physician, etc.	Never Rarely Sometimes Most Often Always
Eating in public	Never Rarely Sometimes Most Often Always
Asking someone for a date	Never Rarely Sometimes

	Most Often Always

Table 8: Assessment of Maladaptive Self-Cognitions

On a scale from 1 to 5, 1 being the lowest and 5 being the highest, to what extent do you agree with the following statements

I am only good on the Internet	1 2 3 4 5
The Internet is my only friend	1 2 3 4 5
People treat me badly offline.	1 2 3 4 5

Table 9: Behavioral Assessment

On a scale from 1 to 5, how often have you been through the following situations or had the triggers or urges to behave as follows in the past week.

Small things made you feel irritated or annoyed	1 2 3 4 5
You had extreme anger outbursts over little things	1 2 3 4 5

You had urges to break things or to throw whatever you had in hands	1 2 3 4 5
Took minor situations and made them more important and urgent than necessary	1 2 3 4 5
Talked without thinking and overshared intimate details about yourself	1 2 3 4 5
Overreacting by getting physical in the spur of the moment	1 2 3 4 5

Self-Efficacy Assessment

On a scale from 1 to 5, how often have you been through the following situations or had the triggers or urges to behave as follows in the past 5 days

I can manage to reduce the time spent online:

Table 10

Even if I need a long time to develop alternatives	1 2 3 4 5
Even if I have to try several times until it works.	1 2 3 4 5
Even if I have to rethink my entire pattern of Internet usage.	1 2

	3 4 5
Even if I do not receive a great deal of support from others when making my first attempts	1 2 3 4 5

I can manage to reduce the time spent online:

Table 11:

Even when I have worries and problems.	1 2 3 4 5
Even if I feel depressed.	1 2 3 4 5
Even when I feel tense	1 2 3 4 5
Even when I am tired	1 2 3 4 5
Even when I am busy.	1 2 3 4 5
Even if I have to make a detailed plan	1 2 3 4 5

Risk Perception Assessment

On a scale from 1 to 5 to what extent do you consider yourself aware about the following Internet addiction risks

Aware means that you don't only agree with the statement but that you are also aware of the way Internet addiction causes the health risk mentioned (you have heard several talks or podcasts, watched documentaries, or read books about the risk mentioned)

Table 12:

Internet addiction is one of the main reasons behind impaired sleep	1 2 3 4 5
Internet addiction is one of the main reasons behind higher levels of anxiety and impulsivity*	1 2 3 4 5
Compulsive Internet users are more likely to develop aggressive behavior patterns	1 2 3 4 5
Internet addiction causes confusion of self-identity	1 2 3 4 5
In extreme cases Internet addiction may lead to suicide ideation	1 2 3 4 5

Impulsivity: is an urge to act spontaneously without thinking of the consequences