

A Study on the Correlation Between Adolescents' Internet Addiction and their Relationship with Parents, Emotion Regulation, and Callous-Unemotional Traits

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ABSTRACT

The objective of this research was to examine the connections between parent-child relationships, the control of emotions, and callous-unemotional qualities, and their impact on Internet addiction in a sample of teenagers from the community. 743 adolescents between the ages of 10 and 21 completed self-report measures on their relationship with their parents (both mothers and fathers), emotion regulation (specifically cognitive reappraisal and expressive suppression), callous-unemotional traits (including callousness, uncaring, and unemotional), and Internet addiction. The findings indicated that those who saw their mothers as less available, shown a higher level of cognitive reappraisal, and exhibited more callousness were more likely to develop Internet addiction. Subsequently, the ramifications of these discoveries are examined.

KEYWORDS: *Adolescents; Internet; Addiction; Parents; Emotion; Callous-Unemotional.*

INTRODUCTION

Adolescence is characterized by significant changes in both psychological and physical features, a willingness to explore new experiences, and the development of a unique personal identity. New technologies play a significant part in this process, capturing the attention of young people as a way to foster social connections and explore a broader range of experiences.

Adolescents have extensive integration of the Internet into their everyday lives, using a wide range of devices to access it. Recent studies have shown connections between the use of modern technologies, such as the Internet and video games, and the common needs of adolescents, such as self-confirmation, a sense of belonging, and exploration of their identity. Although new technology use is considered normal and convenient for adolescents, excessive use can lead to significant psychosocial dysfunction. This can manifest in arguments and dishonesty towards family and friends, poor academic performance, and social isolation. Nevertheless, the findings from a meta-analysis conducted by Tokunaga and Rains suggest that the relationship between time spent online and problematic Internet usage is not as straightforward as one would assume.

In a broader sense, several writers have lately emphasized the risk factors associated with problematic Internet usage among teenagers, including the potential for Internet addiction. Although there are debates on the definition and standards for Internet addiction, experts generally agree that teenagers are particularly susceptible to the harmful effects of excessive Internet usage due to their limited ability to control themselves and their susceptibility to peer influence.

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The problematic use of the Internet is distinguished by some elements that are also seen in other addiction diseases. Block specifically specified the following four components: Excessive utilization of the Internet, characterized by a diminished perception of time, can lead to withdrawal symptoms such as anger, depression, and anxiety when access to the Internet is restricted. Additionally, individuals may develop an obsession with acquiring better digital technologies or spending more hours online. These behaviors can result in negative consequences such as arguments, dishonesty, underachievement, and social isolation.

In line with this perspective, we use the term "Internet addiction" in this research to denote the harmful utilization of the Internet, which is associated with negative impacts on the emotional and social aspects of teenagers' lives. Tokunaga proposed in a recent meta-analysis that physicians characterized this addiction as a deprivation of deliberate self-regulation over Internet use. Several studies have highlighted the diminished ability to regulate one's behavior among groups that are prone to addiction, such as those with anxiety or depression, frequent Internet users, and most concerning, teenagers.

Studies have shown that challenges in managing emotions are significant factors in cases of addictive behaviors, problematic internet usage, and pathological use of social networking sites. Gross et al. define emotion regulation as a specific form of affect regulation, alongside coping and mood regulation. Emotion regulation involves conscious or unconscious efforts to influence emotional experiences, and can involve increasing or decreasing different aspects of positive or negative emotions. Cognitive reappraisal and expressive suppression are two often used techniques for reducing the intensity of emotions. Reappraisal refers to the process of altering one's perception of a situation in order to reduce its emotional effect, particularly in circumstances where negative emotions are prevalent. In contrast, repression hinders the outward manifestations of internal emotions and expressive behavior.

There have been less studies investigating the relationship between emotional control and Internet addiction in teenagers compared to research on adults. These studies have mostly focused on the connection between emotional regulation and problematic Internet usage.

Empirical study on teenagers' Internet addiction also examines the potential impact of parental relationships. Existing evidence suggests that the quality of adolescents' connection with their parents has a significant impact on their psychological and social well-being [35, 36], as well as their overall life satisfaction. Furthermore, various parenting styles have been shown to be associated with distinct psychological profiles, notably in the area of self-concept.

Multiple research have examined the association between the quality of the parent-adolescent relationship and problematic Internet usage. Positive parental ties were shown to have a negative correlation with Internet addiction, whereas conflictual relationships were revealed to have a positive association with Internet addiction. When teenagers experience Internet addiction, they see their parents as lacking affection, being too involved, rejecting, and punishing.

Although many studies have investigated the association between Internet addiction in adolescence and the quality of the parent-child relationship, there is a dearth of research specifically examining the connection between teenagers' Internet addiction and parents' perceived emotional availability.

Emotional availability encompasses several factors such as support, sensitivity, and response that contribute to the emotional connection between individuals and their parents. Lum and Phares argue that this concept aligns with both theoretical and empirical findings, which suggest that parents who are emotionally accessible have a positive impact on a child's overall feeling of security. This, in turn, facilitates the development of personal and interpersonal skills.

The significance of investigating many elements, both individual and interpersonal, that might either amplify or diminish the likelihood of problematic Internet usage among teenagers is shown by all these characteristics.

Within this context, we investigated an additional variable, namely the influence of callous-unemotional (CU) qualities, which have garnered significant interest in recent research on behavioral issues. CU qualities include a collection of attributes such as absence of empathy, regret, and guilt, as well as indifference towards the adverse consequences of one's own conduct. Frick and colleagues developed the Inventory of Callous-Unemotional Traits (ICU) in response to the increasing interest in CU trait evaluation. This widely utilized self-report tool examines three dimensions: callousness, which denotes a lack of empathy, guilt, and remorse for wrongdoing; uncaring, which encompasses a disregard for one's own actions and the feelings of others; and unemotional, which refers to shallow or deficient emotional responses.

While CU characteristics have generally been seen as the central emotional aspect of psychopathy, several research have discovered their correlation with negative peer connections, limited prosocial behavior, and psychosocial difficulties in teenagers within the society. Prior studies have also emphasized the correlation between callous-unemotional qualities and aggression, substance abuse, and other psychosocial deficits in children and adolescents. Viding and McCrory proposed that based on the research results, features associated with callous-unemotional (CU) behavior may generally be regarded as a risk factor for impaired social functioning.

Until far, no study has been published that specifically examines the connection between CU qualities and Internet addiction, despite earlier studies indicating a link between CU features and psychosocial maladjustment. Based on these assumptions, the present study aimed to achieve several objectives. Initially, our objective was to examine the connections between the use of emerging technologies and the phenomenon of Internet addiction. Based on the findings of previous studies, we anticipate a direct relationship between these two factors.

RESEARCH METHODOLOGY

• Participants

The sample consisted of 266 non-referred teenagers. The research specifically included 143 (53.8%) men and 123 (46.2%) girls. The participants' ages varied from 14 to 20 years, with an average age of 16.1 years (standard deviation = 1.4). Adolescents completed a questionnaire that asked for demographic information about their parents and the structure of their household. The fathers' average age varied from 38 to 70 years, with a mean of 49.3 years and a standard deviation of 5.5 years. The mothers' average age ranged from 34 to 70 years, with a mean of 45.9 years and a standard deviation of 5.4 years.

• Measures

Demographic Information

The adolescents were requested to provide data on their age and gender, as well as their parents' age, education, and current work (individually for both dads and mothers).

Parental Care

The Parental Bonding Instrument (PBI) was used to examine the perceived quality of the connection with dads and mothers. This widely-used scale measures adolescents' judgments of two aspects of parenting: parental care and overprotection, independently for the father and mother. The set has 25 statements, with 12 pertaining to care and 13 to overprotection. The items are evaluated using a 4-point Likert scale, ranging from 0 (indicating a strong dislike) to 3 (indicating a strong like). Two scores are derived, one for the dimension of care and one for the dimension of protection. Higher scores indicate greater levels of parental care and excessive protection, respectively. For this research, we used the father and maternal care subscales of the Italian adaptation of the Parental Bonding Instrument (PBI). The scale's dependability in the present investigation was high, as shown by a Cronbach's alpha value of 0.852.

Adolescents' Mental Health Problems

The self-report version of the Strengths and Difficulties Questionnaire (SDQ) was used to assess mental health issues in teenagers, specifically focusing on social, emotional, and behavioral disorders. The assessment has a total of 25 questions that are categorized into five subscales, with each subscale consisting of five items. These subscales include conduct difficulties, emotional symptoms, peer problems, hyperactivity, and prosocial behavior. The items are evaluated using a 3-point Likert scale ranging from 0, indicating "Not True," to 2, indicating "Certainly True." The overall difficulty score may be determined by adding up the subscale scores of the negative attributions: CP, ES, PP, and HY. The dependability of the data was deemed acceptable, as shown by a Cronbach's alpha coefficient of 0.753.

Internet Addiction

The Internet Addiction Test (IAT) is a questionnaire consisting of 20 items that evaluates the degree to which internet use disrupts emotional well-being, sleep patterns, everyday activities, and social interactions. The amount of dysfunction connected to internet usage is evaluated using a six-point Likert scale, ranging from 0 (indicating that the dysfunction does not apply) to 5 (indicating that the dysfunction always applies). Higher scores on the scale indicate a greater degree of issues associated with internet use. The component analysis of the Italian IAT resulted in the

identification of two factors: "Emotional and cognitive preoccupations with the Internet and social consequences" (ECP) and "Loss of control and interference with daily duties" (LC). Both factors demonstrated strong internal consistency and convergent validity. The ECP include factors pertaining to the emotional and cognitive significance of Internet use, as well as preoccupying thoughts about the Internet while not online. It also contains items addressing the adverse societal repercussions resulting from Internet use. The LC has materials pertaining to ineffective attempts to regulate online time and the adverse effects of Internet use on everyday activities. The current study demonstrated outstanding dependability, as shown by a Cronbach's alpha coefficient of 0.906.

DATA ANALYSIS

The technique of multiple imputation (MI) was used to address missing data. Initially, the data were assessed to confirm that any missing values were randomly missing (MAR). Next, the extent of missing data was examined to ensure that no more than 10% of data were missing for any scale score. The hypothesis of MAR (Missing At Random) was confirmed, and the presence of missing data at different levels (1-3%) was deemed acceptable. A total of twenty-five multiply imputed data sets were generated. The sample's descriptive data was summarized using the measures of means and standard deviations. A t-test was conducted to see whether there were any gender disparities in the research variables. The multivariate connections indicated by our hypothesized model were examined using the two-step technique recommended by Anderson and Gerbing. Firstly, the measurement model was analyzed to assess the degree to which each latent variable was represented by its indicators. The measuring model consisted of two latent variables, namely mental health disorders and Internet addiction, along with six observable variables. More precisely, the latent variable of "mental health problems" was evaluated using four subscales of the SDQ (CP, ES, PP, and HY), whereas the latent variable of "Internet addiction" was evaluated using two subscales of the Italian IAT (ECP and LC). Based on Westland's guidelines for determining lower limits for sample size, the minimal sample size for structural equation modeling (SEM) was estimated to be 200. This estimation was based on an effect size of 0.3, a statistical power level of 0.8, and the presence of two latent variables and six observable variables.

Therefore, based on these criteria, the sample size of the current research ($n = 266$) has enough statistical power to evaluate our hypotheses. If the measurement model is deemed valid, then it may be inferred that the constructs of Mental health issues and Internet addiction are accurately reflected by the data. The structural equation model (SEM) was employed to evaluate the proposed model, which consisted of two latent factors (mental health problems and Internet addiction) and eight observed variables: two presumed antecedent variables (paternal and maternal care), one latent mediator variable (mental health problems), and one outcome variable (Internet addiction).

Prior to completing the SEM analysis, the research variables were assessed for normality using the thresholds for skewness (absolute value > 2) and kurtosis (absolute value ≥ 7). The skewness values (ranging from 0.43 to 1.87) and kurtosis values (ranging from 0.68 to 2.94) indicate that the variable scores follow a normal distribution. The model's goodness of fit was evaluated using the following indices: chi-square statistics (χ^2), the Tucker Lewis Index (TLI), the comparative fit index (CFI), the standardized root-mean-square residual (SRMR), and the root-mean square error of approximation (RMSEA), along with its 90% confidence interval (CI).

It is recommended that the desirable values for TLI and CFI fit indices are above 0.90, while for SRMR and RMSEA, they should be below 0.08. The effects were examined by estimating a 95% confidence interval using bootstrapping. The sample size of our study, which consists of two latent variables and eight observable variables, meets the minimal requirement ($n = 100$) for the model structure. The statistical analysis is conducted at an alpha level of 0.03, with a power of 0.80, and an expected effect size of 0.3.

RESULTS

Preliminary Analysis

The Levene's test for homogeneity of variances indicated that there was no significant difference in variance between females and men. A t-test conducted independently showed a significant difference in the SDQ scores between females and boys (Table 1). Female adolescents exhibited considerably greater scores on emotional symptoms compared to male adolescents, but men reported significantly higher scores on behavior problems than female adolescents. There was no notable disparity between genders in the PBI and IAT scales.

Table 1. Means (SDs) for parental and adolescent ratings

Scores for Parental Care (PBI)	Total Sample	Males	Females	<i>t</i>	<i>d</i>
Maternal Care	25.61 (5.20)	25.48 (5.04)	25.76 (5.41)	0.45	0.05
Paternal Care	23.63 (8.15)	24.39 (7.16)	22.74 (9.12)	-1.65	0.20
Scores for adolescents' mental health problems (SDQ)					
Conduct problems	3.03 (1.57)	3.20 (1.69)	2.83 (1.40)	-1.95 *	0.24
Emotional symptoms	3.89 (2.66)	2.86 (2.23)	5.10 (2.62)	7.53 **	0.92
Peer problems	2.76 (1.74)	2.63 (1.64)	2.91 (1.84)	1.32	0.16
Hyperactivity	4.78 (1.65)	4.73 (1.67)	4.83 (1.62)	0.47	0.06
Scores for adolescents' Internet addiction problems (IAT)					
Emotional and cognitive preoccupations with the Internet and social consequences	21.63 (7.48)	21.69 (7.72)	21.57 (7.22)	0.45	0.02
Loss of control and interference with daily duties	20.82 (6.56)	21.21 (6.75)	21.54 (6.29)	-1.65	0.05

Testing the Measurement Model

The measurement model and its corresponding standardized regression weights are shown in Figure 1. The fit of the measurement model was excellent, as shown by the following statistics: $\chi^2 = 13.49$, $df = 0$, $p = 0.96$, $CFI = 0.98$, $TLI = 0.97$, $RMSEA = 0.05$ (90% CI 0.00 to 0.10), $SRMR = 0.03$. The latent variables exhibited a strong association with one another ($p < 0.001$). Furthermore, all of the factor loadings were statistically significant ($p < 0.001$), indicating strong convergent validity of the indicators. Therefore, the measurement model was deemed appropriate for the further studies.

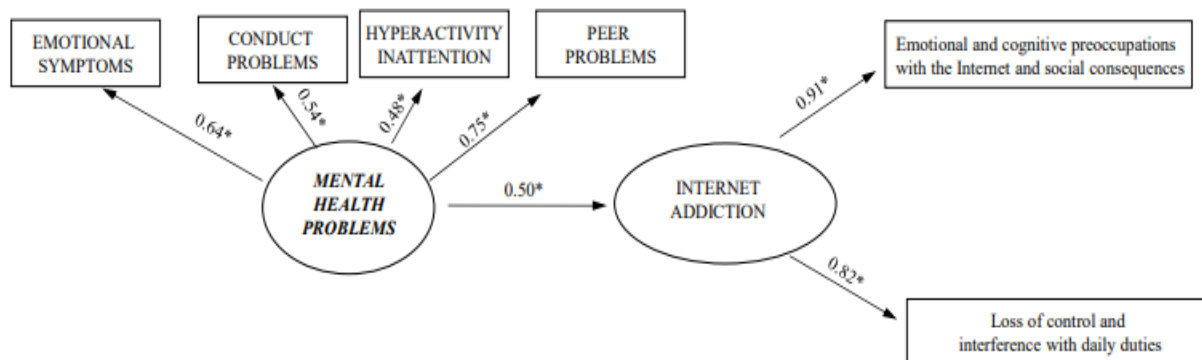


Fig.1: The measurement model and related standardized regression weights, * $p < 0.001$.

DISCUSSION

The association between internet addiction in teenagers and their relationship with parents, emotion control, and callous-unemotional qualities demonstrates an intricate network of interrelated elements. An affirmative and encouraging parental connection may work as a safeguard against excessive internet use, promoting sound emotional control and reducing callous-unemotional characteristics. On the other hand, if parents have a tense or negligent relationship, it might lead to unhealthy ways of dealing with problems, such finding comfort in online hobbies. Moreover, deficiencies in the ability to regulate emotions might make teenagers more likely to resort to the internet as a way to escape or comfort themselves, which worsens addiction tendencies. In addition, those who have callous-unemotional qualities may have a reduced vulnerability to the social repercussions of excessive internet use, which may contribute to the development of addictive behaviors. Gaining a comprehensive understanding of these connections is essential for effectively implementing specific therapies that target both internet addiction and the underlying psychological vulnerabilities in teenagers.

CONCLUSIONS

The results of our route analysis revealed possible mechanisms via which the quality of parental care might safeguard teenagers from psychological mental health issues and addictive online activities. Adolescent Internet addiction

prevention may be achieved via family-based therapies that focus on improving parent-child connections, communication, and understanding. Future research should focus on providing empirical data about the efficacy of therapies aimed at mitigating Internet addiction. Nevertheless, our findings also highlight the need of adopting a comprehensive viewpoint that covers both interpersonal and intrapersonal aspects. The results highlight the significance of an adolescent's particular features in the development of problematic and addictive internet usage, as well as the intricate nature of the emergence of dysfunctional behavior and psychopathological symptoms. Therefore, it is necessary to use a comprehensive strategy that considers both individual and environmental elements in order to fully comprehend the formation of Internet addiction in adolescents. Moreover, the attributes of the internet should also be taken into account. Further research is necessary to investigate certain sub-categories of addiction, such as gaming or social media addiction, in order to enhance the effectiveness of prevention and treatment measures. To enhance the effectiveness of treatments, it is crucial to take into account the distinct attributes of the individual teenager, their current stage of development, and the home environment.

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