

The impact of internet addiction on the aggressive behavior of schooled adolescents

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Abstract:

This study examines the impact of levels of internet addiction and aggressive behavior among adolescents in a school context while exploring gender differences in these variables. Using a descriptive method, data were collected using scales measuring internet addiction and aggressive behavior. The study involved 120 second-year high school students, including both male and female participants. Results indicated a significant effect in levels of internet addiction and aggressive behavior, with dependent students showing higher levels of aggression, statistically significant gender differences were also observed in aggressive behaviour: boys were more likely to resort to physical aggression, while girls tended to use more verbal and relational aggression. These findings underscore the importance of awareness and preventive measures to address internet addiction and its potential impact on adolescent behavior. Further research is needed to better understand the complex interaction between internet addiction, gender, and aggressive behavior among adolescents in order to inform targeted interventions aimed at promoting healthy online behaviors and mitigating associated risks.

Keywords: Internet addiction - Schooled Adolescents - Aggressive behavior

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Introduction

Adolescence is a crucial transition period from childhood to adulthood, characterized by major somatic changes that bring the child physically closer to adulthood while social constraints often keep the adolescent in an ambiguous position. This passage can create an imbalance often expressed through the so-called "adolescent crisis," where physiological transformations challenge established cultural norms (Coslin, 2019).

In recent years, adolescents have faced new challenges, among which internet addiction holds a prominent place. The internet has become an essential tool in the world of work, communication, and information. Internet addiction manifests as an online browsing dependency, often used as an escape from the realities and difficulties of daily life. For some, the virtual world seems to offer safety and stability absent in the real world.

This dependence can lead to aggressive behavior when faced with reality. Aggression, a primitive form of communication, often testifies to the anger and helplessness felt by the individual. It can be perceived as a means of attack or defense guided by emotions or rationality. Today, it is often associated with intentional acts of violence that exceed the limits of what is considered acceptable.

Thus, in this study, we will focus on the relationship between internet addiction in adolescents and aggression, exploring how this dependency can influence aggressive behaviors and reactions to reality.

1- Research problem:

Adolescence is a crucial period in human development. It is marked by profound biological, mental, and social transformations. According to the World Health Organisation (WHO), this phase, which lasts from age 10 to 19, represents a transition from childhood to adulthood,



often accompanied by complex changes that influence the behaviour, identity, and mental health of individuals (WHO, 2014). In this context, adolescents are particularly vulnerable to external influences, especially those associated with the rise of digital technologies and the Internet.

With the widespread use of digital tools, the Internet has become a central element in the daily lives of adolescents. Although it is a valuable source of opportunities for learning, communication, and entertainment, excessive use can have significant negative effects. Internet addiction, often described as a behavioural dependency characterised by compulsive and uncontrolled use, is likely to cause psychological, social, and academic disruption in young users (Young, 1998).

This addiction sometimes acts as a form of escape from social, family, or academic pressures. However, it also exposes adolescents to problematic behaviour, including a significant increase in aggressive behaviour. Aggression, defined as a set of intentional behaviours aimed at harming others, can manifest itself in a variety of ways, ranging from verbal aggression to violent physical behaviour (Anderson & Bushman, 2002).

Recent research also suggests that the impact of Internet addiction on aggressive behaviour may vary according to gender. Boys, for example, are often associated with forms of physical aggression, whereas girls tend to display more subtle aggressive behaviour, such as verbal or relational aggression (Card & Hodges, 2008). Similarly, gender could influence the level and nature of Internet addiction, with boys tending to be more attracted to online video games, while girls often prefer social networks, which could lead to differences in their behaviours associated with this addiction (Ko et al., 2008).

These observations raise two fundamental questions: How does Internet addiction influence aggressive behaviour among adolescents at school? And how does gender modulate these dynamics, both in terms of addiction and aggression?

2- Hypotheses:

Impact of Internet addiction on aggression:

- Internet addiction has a significant impact on adolescents' levels of aggression. Adolescents with a high level of Internet addiction show more frequent and more intense aggressive behaviour than those with a low level of addiction.

Gender differences:

- Boys with a high level of Internet addiction mainly display forms of physical aggression.
- Girls with a high level of Internet addiction display more forms of verbal or relational aggression.

3- Reasons for choosing the theme:

This theme was chosen because of the rapid growth of Internet addiction among teenagers, a group that is particularly vulnerable to its negative effects, especially aggression. As adolescence is a critical phase of development, it is essential to understand the impact of this addiction on problematic behaviour, such as aggression, which disrupts the school and social climate.

In addition, the exploration of gender differences in the way addiction and aggression manifest themselves is still insufficient, although it is crucial for tailoring interventions. Finally, this research aims to provide educational and social solutions to promote healthy Internet use and reduce aggressive behaviour among young people.

4- Research objectives:

- Measure the impact of Internet addiction on levels of aggression among teenagers at school.



- Identify the dominant forms of aggression (physical, verbal, relational) in adolescents as a function of their level of Internet addiction.
- Explore gender differences in levels of Internet addiction among teenagers.
- Examine gender variations in the forms and levels of aggression associated with Internet addiction.
- Provide recommendations for better understanding and reducing aggressive behavior linked to Internet addiction in adolescents.

5- Definition of key concepts:

5.1- Adolescence:

Adolescence is defined by the World Health Organization as "the period of human growth and development that occurs between childhood and adulthood, between the ages of 10 and 19 years." This transition phase is characterized by rapid physical growth and significant psychological changes. It represents the transition from child to adult, marked by somatic transformations and social adjustments (Pierre, 2019).

5.2- Internet addiction:

Internet addiction, also known as cyber dependence, is a disorder characterized by repetitive behavior aimed at obtaining pleasure or relieving inner discomfort despite the negative consequences. This results in excessive use of the technologies and communication tools offered by the internet, leading to psychological, social, or professional difficulties (Groupe financier, 2013).

5.3- Aggressiveness:

Aggressiveness is defined as an instinctive force allowing the individual to impose the satisfaction of their territorial or fundamental drive needs. It is a primitive form of communication where the individual expresses their anger or feeling of helplessness. It can be



considered a means of attack or defense influenced by the individual's feelings or reason to obtain something (Bachelor, 2016).

6- Operationalization of key concepts:

6.1- Adolescence:

Adolescence is operationalized as a period of human development that occurs between childhood and adulthood, between the ages of 10 and 19 years. It involves key stages of cognitive, biological, and social development.

- **Cognitive level:** Development of abstract thinking, knowledge, and logical reasoning.
- **Biological level:** Puberty onset, end of physical growth, significant changes in sexual organs and body characteristics.
- **Social level:** Preparation for adult social roles, integration into the professional world, and formation of intimate relationships.

6.2- Internet addiction:

Internet addiction is operationalized as the total score of the second-year high school students' responses to the internet addiction scale developed by **Kimberly Young**. The total score determines the level of internet addiction (**low, medium, high**) among the students.

6.3- Aggressiveness:

Aggressiveness is operationalized as the total score of the second-year high school students' responses to the aggressive behavior scale for adolescents (Egyptian version) adapted to the Algerian environment by **Amel Baza**. The total score determines the level of aggressiveness (low, medium, high) among the students and includes three dimensions:

- **Physical aggressive behavior**
- **Verbal aggressive behavior**
- **Anger**



7- Research method:

The method used in our research is the descriptive method, which aims to describe the phenomenon studied. This approach is particularly suitable when the objective is to analyze a large population quantitatively. According to Aktouf (1987), the descriptive method consists of conforming ideas to concrete data from observation to confirm, nuance, or reject initial hypotheses. Moreover, this method is considered a complete approach that organizes all stages of research, from hypothesis formulation to verification (Lasarre, 1978). Thus, our study is based on a descriptive approach to examine the effect of internet addiction on aggressiveness among schooled adolescents by analyzing collected data in a detailed and systematic way.

8- Research tools:

A scale is a technique that assigns a score to individuals to classify them according to their responses to questions constructed from selected indicators. It is used to evaluate and classify individuals or groups on a scale ranging from more to less or from an extreme attitude in one direction to the opposite extreme (Angers, 1997). We used two scales in our research:

1. Young's Internet Addiction Scale (1998)
2. Amel Baza's Aggressive Behavior Scale for Adolescents

8.1- Definition and application of young's Internet addiction scale:

Young's Internet Addiction Scale, based on the DSM-IV pathological gambling criteria, comprises twenty items evaluated on a five-point Likert scale ranging from "rarely" to "always." This scale was validated and translated into French by Khazaal et al. (2008). The scale scoring is based on the total score obtained:

- **Score 20-49:** Non-excessive internet use

- **Score 50-79:** Problematic internet use with potential consequences on daily life

-**Score 80-100:** Problematic internet use with severe repercussions on daily life

Reliability and validity of Young's Internet addiction scale:

Studies have shown the reliability and validity of Young's Internet Addiction Scale. The subscales have moderate to good internal consistency, with Cronbach's alpha coefficients ranging from 0.54 to 0.82. The results have been confirmed in several languages, including English, Italian, and French. This scale measures various aspects of internet addiction, such as withdrawal, social problems, time management, performance, and reality substitution, making it a reliable tool for assessing this phenomenon (Keser & Hafise, 2013).

8.2- Amel Baza's aggressive behavior scale:

Based on Foulds' (1965) earlier work on general punishment, it was developed to measure children's aggressive behavior. It consists of four basic dimensions:

1. Physical Aggressive Behavior
2. Verbal Aggressive Behavior
3. Hostility
4. Anger

Each subscale comprises 14 items, giving a total of 56 items for the complete scale. Responses are evaluated on a five-level scale ranging from "never" to "much too much," with scores assigned based on the frequency of the behavior.

Scoring of the aggressive behavior scale:

- Never: 0
- Rarely: 1
- Sometimes: 2
- Often: 3
- Very Often: 4

A high score on the scale indicates a high level of aggressiveness or anger, while a low score indicates a low level. Scores can be



calculated for each dimension separately or for the overall score, providing a detailed assessment of individuals' aggressive behavior.

9- Research site:

The Mohamed Boudiaf High School, located in the municipality of Tazmalt in the Bejaia province, plays a central role in the region's education. Founded in 1986, it was the first high school established in Tazmalt, marking an important milestone in local educational history. With a capacity of 591 students, the school accommodates a diverse student population of 319 girls and 272 boys. It offers six educational streams covering a wide range of disciplines, including mathematics, experimental sciences, economic management, as well as letters and foreign languages.

The Mohamed Boudiaf High School is thus a dynamic and stimulating learning environment that provides the region's youth with the opportunity to pursue their education in a modern setting conducive to their academic and personal development.

10- Sampling:

The simple random sampling method we used to select the study participants was a transparent and fair process. Here's how we proceeded:

- 1- **Complete list of individuals in the study population:** We had an exhaustive list of all second-year high school students at Mohamed Boudiaf High School for the 2020-2021 academic year.
- 2- **Assigning numbers to each population element:** Each student on the list was assigned a unique number.
- 3- **Drawing numbers:** We drew numbers to select participants for our study. The numbers were randomly drawn from a basket, box, or hat, ensuring that each student had an equal chance of being selected.



- 4- **Inclusion of all population elements in the draw:** We ensured that all students on the list were part of the initial draw to guarantee the representativeness of the sample.
- 5- **Maintaining fairness in the selection process:** If the population was limited and we had to repeat the draw, each drawn number was returned to the basket to avoid biasing the chances of selection for the remaining students.

Regarding the composition of our sample, we included a total of 120 second-year high school students at Mohamed Boudiaf High School, divided between boys and girls. Here is the sample distribution by gender:

Table 1: Presentation of the sample by gender

Gender	Number	Percentage
Boys	49	40.83%
Girls	71	59.17%
Total	120	100%

11- Conducting the survey:

The conduct of our survey at Mohamed Boudiaf High School was organized as follows:

- ✓ **Clarification of the study objective:** The study's objective was to understand the impact of internet addiction and aggressive behavior among second-year students.
- ✓ **Administration of the Scales:** The two scales were applied to a total of 120 students, comprising both girls (71) and boys (49). The students were selected from the second-year classes.
- ✓ **Survey duration:** The survey was conducted over two days, May 3rd and 4th. This duration was chosen based on student availability while avoiding disrupting their academic activities.
- ✓ **Management of incomplete scales:** Of the 150 scales distributed, we collected 135 completed scales. However, 15 scales were



incomplete, so we excluded them from our analysis. In total, we collected 120 completed scales for our study.

12- Statistical tools used:

In this research, several statistical tools were used to analyze the data, including the mean, standard deviation, t-test, percentiles, and the Kolmogorov-Smirnov test. The calculations were performed using the SPSS software (Statistical Package for the Social Sciences).

13- Presentation and analysis of results:

13.1- Results of the first hypothesis:

We assumed that there is a significant difference in the degrees of aggressiveness among students based on their levels of internet addiction (non-addictive, addictive).

Our study required dividing the variable of internet addiction into levels through percentiles, which falls within the group calibration method with the quantification style. However, we used the Kolmogorov-Smirnov test to ensure our data followed a normal distribution. The following table shows the results obtained.

Table 2: Results of the Kolmogorov-Smirnov Test for the Variable of Internet Addiction

Variable	Mean	Standard Deviation	K-S Z	df	Sig
Internet Addiction	68.79	13	0.076	120	0.088

From the results in the table above, we can deduce that the scores obtained in our application of the Internet Addiction Scale follow a normal distribution, as the significance level is greater than 0.05. The graph below illustrates this.

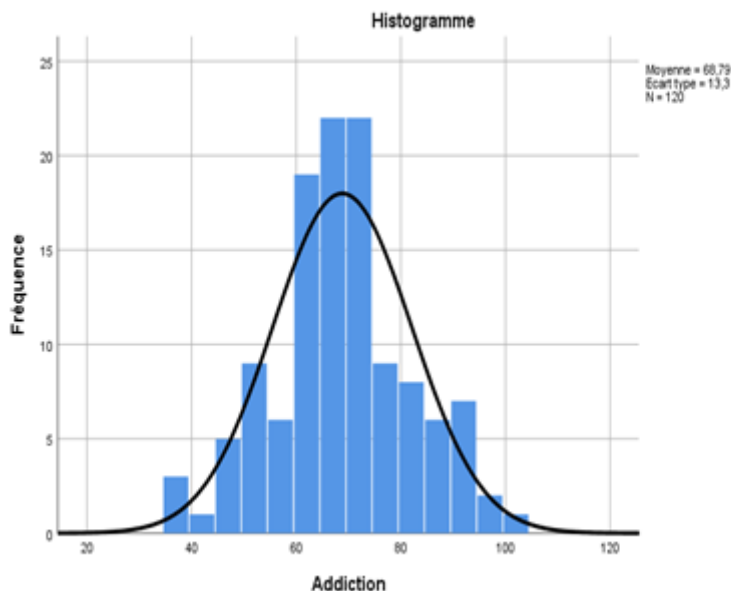


Figure N°1: Natural Distribution Curve for Internet Addiction Scores

The division into levels concerning the variable of internet addiction using percentiles shows that those with scores below 33% fall into the non-addictive category, while those whose scores exceed 66% fall into the addictive category. Finally, the average range between 33% and 66% represents the risk category. The following table indicates the levels of internet addiction risk among students.

Table 3: Different Internet Addiction Categories (Calibration)

Variable	Non-Addictive Category	Addiction Risk Category	Addictive Category
Internet Addiction	30 - 63	64 - 73	74 and above

For effective statistical configuration, we eliminated the middle category as it is a range (addiction risk) that does not give us a significant difference.

To test the first hypothesis, we used the t-test to study the difference between two groups:

The first group contains the degrees of aggressiveness among students who are not addicted.

The second group contains the degrees of aggressiveness among addicted students. The following table clarifies the results obtained.

Table 4: Difference in degrees of aggressiveness among students based on their internet addiction level (No-addictive, addictive)

Addiction Levels	N	Mean	Standard Deviation	t	df	Sig
No-Addictive	42	128	25.41	-9.33	79	0.000* *
Addictive	39	179	24.22			

The results of applying the t-test for two homogeneous independent samples were estimated at -9.33 at the 0.000 level and 79 degrees of freedom, meaning that there are statistically significant differences in the degrees of aggressiveness among students based on their internet addiction levels (non-addictive, addictive). Specifically, these results favor the students who are addicted.

This is confirmed by the arithmetic mean. As shown in the table, the mean aggressiveness score among non-addictive students (N = 42) is estimated at 128, with a standard deviation of 25.41. In contrast, the mean aggressiveness score among addicted students (N = 39) is estimated at 179, with a standard deviation of 24.22. Given these results, the first hypothesis is confirmed.

13.2- Results of the second hypothesis:

To test the second hypothesis, which states that ‘Boys tend to show mainly physical forms of aggression, while girls show more verbal or relational aggression,’ we analysed the frequencies of the different types of aggression (physical, verbal, and relational) according to gender. The data were organised in a cross-tabulated table for statistical interpretation, and a Chi-square (χ^2) test was performed.

➤ Data presentation in SPSS

Table 5: The data were organised in a cross-tabulated contingency

Gender	Physical aggression	Verbal aggression	Relational aggression
Boys	35	10	4
Girls	10	30	31
Total	45	40	35

Results from SPSS

Table 6: Chi- square test results

Statistic	value	df	P-value
Chi-square (X^2)	40,67	2	< 0,001

Table 7: Adjusted standardized residual

Gender	Physical aggression	Verbal aggression	Relational aggression
Boys	+4.2	-2.6	-3.5
Girls	-4.2	+2.6	+3.5

The value of $\chi^2 = 40.67$ with 2 degrees of freedom is highly significant ($p < 0.001$). This indicates that the differences observed between boys and girls in terms of forms of aggression are not due to chance.

Adjusted standardised residuals:

The residuals show which categories contribute most to significance:

Boys show an over-representation in physical aggression (+4.2), indicating that they display this type of aggression more often than predicted by the model.

Conversely, girls are under-represented in physical aggression (-4.2) but over-represented in verbal aggression (+2.6) and relational aggression (+3.5).

The results show significant differences between boys and girls in the forms of aggression, with physical aggression predominating in boys and verbal and relational aggression in girls. So we can say that **the second hypothesis is confirmed.**

14. Discussion of results:

➤ Discussion of the first hypothesis:

The results of our study confirm the existence of a significant relationship between internet addiction and aggressiveness levels among adolescents. This finding aligns with several previous studies that have established a link between excessive internet use and aggressive behaviors (Anderson et al., 2010; Yen et al., 2007).

Internet addiction can exacerbate aggressive behaviors by providing easy access to violent online content, promoting negative social interactions, and disrupting the psychological balance of young people. Our results support the idea that internet addiction can act as a risk factor for developing aggressive behaviors among adolescents, emphasizing the importance of increased awareness and preventive measures.

Internet addiction can increase aggressive behavior among schooled adolescents for several interdependent reasons:

Exposure to violent online content: Addicted adolescents are often exposed to violent content such as violent video games, aggressive videos, or aggressive interactions on social networks. This repeated exposure can normalize violence and lead to the imitation of aggressive behaviors in real life (Anderson et al., 2010).

Negative social interaction: Addicted adolescents may be more inclined to participate in negative social interactions online, such as cyberbullying or arguments on discussion forums. These interactions can trigger aggressive responses from adolescents, exacerbating their aggressive behavior in real life (Yen et al., 2007).

Deficit in social skills: Internet addiction can lead to social isolation and a deficit in social skills among adolescents. Consequently, they may struggle to regulate their emotions and resolve conflicts peacefully, which can translate into aggressive behaviors when faced with stress or frustration (Ko et al., 2008).

Impact on emotional well-being: Internet addiction can negatively affect adolescents' emotional well-being, increasing stress, anxiety, and depression levels. Untreated mental health issues can contribute to the emergence of aggressive behaviors as a maladaptive mechanism for coping with negative emotions (Yen et al., 2007).

These results can be discussed according to **Bandura's social learning theory** to explain the relationship between internet addiction and aggressive behavior among schooled adolescents. According to this theory, aggressive behavior can be learned through observation and imitation of aggressive models, as well as reinforcement of these behaviors. Here's how this theory can be applied to the relationship between internet addiction and aggressiveness among adolescents:



Modeling aggressive behaviors: Addicted adolescents are often exposed to online aggressive models, such as violent video game characters, aggressive videos, or heated discussions on social networks. Observing these aggressive behaviors may lead adolescents to imitate these models, especially if they perceive these behaviors as being rewarded or valued by their online community.

Reinforcement of aggressive behaviors: Online interaction can provide positive reinforcement for aggressive behaviors, such as attention from peers or satisfaction in dominating others. For example, an adolescent who bullies another on social networks may receive likes or positive comments from their peers, reinforcing their aggressive behavior and encouraging them to continue.

Desensitization to violence: Repeated exposure to violent online content can lead to desensitization to violence, meaning adolescents may become less sensitive and reactive to violent stimuli. This desensitization can make aggressive behaviors more acceptable or normal for adolescents, increasing the likelihood that they will adopt these behaviors in their own lives (Le Bourdonnec, 2017).

Another factor that can increase the phenomenon of aggressiveness is that schools that limit or prohibit internet access during class hours may create tensions and feelings of anxiety among adolescents, especially those who are highly dependent on the internet. Adolescents who are used to regularly using the internet may experience withdrawal symptoms when this access is suddenly taken away, particularly during class hours. These symptoms may include irritability, restlessness, anxiety, and difficulty concentrating, which can disrupt their ability to participate in school activities and focus on their studies.

In summary, internet addiction can increase aggressive behavior among schooled adolescents by exposing them to violent content,

promoting negative social interactions, compromising their social skills, and affecting their emotional well-being. These factors interact in a complex way to influence adolescents' aggressive behavior, highlighting the importance of prevention and intervention to reduce the risks associated with internet addiction.

➤ **Discussion of the second hypothesis:**

The results confirm the hypothesis that boys express mainly physical aggression, while girls show more verbal or relational aggression. Although these observations are in line with global trends reported in international literature, there are significant specificities in the Algerian context, influenced by cultural, social, and educational norms.

Previous studies have highlighted significant gender differences in forms of aggression. Crick and Grotpeter (1995) showed that boys express mainly physical aggression, often associated with direct and confrontational behaviour. This type of behaviour is often linked to a male socialisation that values physical domination and competition (Connell, 2005).

Girls, on the other hand, tend to favour relational aggression, a form of behaviour designed to damage interpersonal relationships. This phenomenon can be attributed to social norms that encourage girls to maintain an appearance of passivity while using more subtle means to express their conflicts (Underwood, 2003). Current results confirm these observations, with girls over-represented in verbal and relational aggression.

Differential socialisation theory (Eagly, 1987) explains that cultural expectations shape the behaviour of boys and girls from an early age. Boys are often encouraged to express their physical strength and assertiveness, which may explain their tendency to resort to physical aggression. Girls, on the other hand, are socialised to value

interpersonal relationships and avoid direct conflict, leading them to use more subtle forms of aggression, such as relational aggression.

Social dominance theory (Sidanius & Pratto, 1999) maintains that individuals seek to maintain their hierarchical position within a group. For boys, this may take the form of a display of physical dominance, particularly in contexts where competition is valued, such as school or sports environments. Girls, on the other hand, may use relational strategies to maintain their social position, resulting in verbal or relational aggression.

Digital environments, such as online video games, also play a role in these differences. Studies have shown that boys are more likely to play competitive or violent games, which can reinforce their tendency to express physical aggression (Anderson et al., 2010). Girls, on the other hand, spend more time on social networks, where conflicts often take verbal or relational forms (Ybarra & Mitchell, 2004).

In the school context, boys may express their physical aggression in situations of direct confrontation, while girls use relational aggression to influence the social dynamics between their peers (Crick & Bigbee, 1998). These specific dynamics need to be taken into account when designing educational programs to prevent and manage aggressive behaviour.

Conclusion:

This study revealed the significant role of internet addiction in increasing aggressive behaviour among school-going adolescents while also highlighting gender differences. The results show that adolescents with high levels of internet addiction display more aggressive behaviour than those less affected. Specifically, boys tend to express forms of physical aggression, while girls show more verbal or relational aggression. These trends reflect both global influences

and specific features of the Algerian context, particularly in terms of social and educational norms.

Internet addiction acts as a catalyst for aggressive behaviour through a number of mechanisms: exposure to violent content, negative social interactions online, and disruption of emotional well-being. These findings underline the need for systematic intervention tailored to Algerian realities.

Recommendations:

To meet the challenges posed by Internet addiction and its repercussions on teenagers' behaviour, it is essential to put in place measures tailored to the Algerian socio-cultural context. Schools need to incorporate educational programs focusing on responsible use of the internet, highlighting the risks associated with addiction and their consequences for well-being and interpersonal relationships. Teachers must be trained to detect the early signs of problematic behaviour and offer appropriate support.

At the same time, extracurricular activities such as sports, art, and culture should be promoted to offer enriching alternatives to excessive Internet use. These initiatives can help to strengthen teenagers' social skills and prevent the emergence of aggressive behaviour.

The role of parents is also fundamental. Families need to be made more aware of the dangers of Internet addiction. Practical workshops could be organised to help parents establish clear rules, monitor Internet use, and maintain an open dialogue with their children.

At the national level, efforts must be made to strengthen regulations on digital content accessible to minors. Close collaboration with telecom operators could facilitate the introduction of effective restrictions and filtering tools.



Finally, psychological support centres should be set up to provide specialised help for teenagers facing problems of addiction and aggressive behaviour. Local associations and communities can play an active role in providing a supportive environment and promoting positive values.

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