

## Do Factors Such As Sex and Playing Sports Influence Social Network Addiction in Adolescents?

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**ABSTRACT:** The utilization of social networks among the adolescent population has increased significantly, becoming an essential habit due to its daily usage for communication, education, leisure, among other purposes, leading to increased digital sedentary behavior. While the virtual environment brings numerous advantages, it also poses considerable risks that significantly impact their physical and emotional health, affecting various contexts in which young people interact. This research aims to analyze whether sex and sports participation influence variables such as obsession with social network, lack of personal control in social network usage, excessive usage, and satisfaction with being connected to social network. A quantitative, descriptive, correlational cross-sectional design was employed for data analysis. The sample comprised 522 adolescents aged between 14 and 18 years ( $16.34 \pm 1.25$  years) from various educational institutions in the city of Madrid. The instruments used included The Social Networking Addiction Test (SNA) and Factor II of the Social Media Addiction Scale-Student Form. Results confirm a statistically significant relationship between the participants' sex and the variables, indicating that adolescent females tend to exhibit more obsessions, engage in higher social network usage, and experience greater emotional satisfaction in using social networks compared to males. Furthermore, statistically significant differences were found between adolescents who engage in sports activities and those who do not. Participants involved in sports displayed fewer obsessions with social networks, showed greater personal control, had lower social network consumption, and felt less satisfaction with being connected.

**Keywords:** adolescents, addiction, social networks, sex, satisfaction.

### I. INTRODUCTION

Adolescents use social networks (hereinafter referred to as SMNs) daily, considering them a space dedicated to leisure, enjoyment, and entertainment, often forgetting to use them responsibly [1].

The virtual sphere has made it easier for adolescents to communicate, navigate, connect, and even educate themselves through SMNs and the internet [2]. It's essential to have knowledge about the dangers or risks posed by digital channels [3], such as behavioral problems, dependency, or abuse [4;5].

The World Health Organization shows that addiction to SMNs is not currently included in the diagnostic classifications that determine non-substance addictions. However, when referring to this type of addiction, it is considered as "problematic internet use." Nonetheless, other addictions such as those related to video games, as well as gambling, are included in diagnostic manuals as behavioral addictions [6].

In this same vein, there are experts who consider addiction to SMNs or the virtual realm as a profoundly serious issue, labeling it as a highly prevalent behavioral addiction disorder [7]. Nevertheless, there is no consensus among researchers regarding diagnostic criteria concerning the prevalence of SMNs addiction disorders, making it challenging to accurately assess the actual cases [8]. Furthermore, there is no scientific agreement across various studies, not only in Spain but also in other countries, regarding the existence of addictive or problematic behaviors related to the online or technological sphere among adolescents [9;10;11;12]. These studies exhibit discrepancies in results, likely due to various factors such as cultural or economic differences, among others [8]. In this context, the German Research Institute (DAK) indicates certain criteria for assessing dependent or addictive behavior related to SMNs: persistent and obsessive thinking about SMNs across different domains (educational, familial, social, etc.), as well as mood changes (e.g., irritability, depression, restlessness) if there's no access to the internet or any technological device enabling connection. Additionally, lack of control in technology usage leads to academic, familial, and personal problems.

Consequently, inadequate sleep, a strong desire for new online friendships, and continuous engagement in online activities are common [13]. Likewise, it's also shown [14] that approximately 85% of adolescents spend around 3 hours a day on social networks, contrasting with other experts suggesting the time spent connected ranges from 6 hours to 14 hours [15]. Continuing on this line, according to a study conducted in Spain by the United Nations International Children's Emergency Fund [16], it's evident that due to the COVID-19 pandemic, internet usage among the adolescent population has excessively increased, with around 65-85% using SMNs, and out of these, 40% do not responsibly use the internet due to ignorance of its risks. However, 16.9% have parental controls in place to ensure responsible use of SMNs.

Similarly, according to certain data provided by the National Institute of Statistics [17], adolescents between 16 to 24 years old have an abusive internet usage pattern, specifically marked at 99.9% for males and 99.6% for females. Furthermore, within mobile devices, there are intelligent services or programs that grant instant internet access regardless of circumstance or time. Notably, accessibility to electronic devices and applications increases with age among adolescents.

However, various experts [18] assert that adolescents engage in excessive and continual use of SMNs because at a younger age, more time is spent connected, unlike adults. Additionally, it has been observed that adolescents experience unease and anxiety when unable to connect to SMNs or lack information about what is happening on technological platforms, intensifying obsessions regarding SMNs usage [19]. In addition, young individuals feel frustration when their expectations or interests are not met. Hence, many opt to retreat into the virtual world to fulfill their needs, deriving satisfaction from staying connected, albeit risking personal and social isolation on a face-to-face level [20].

Moreover, excessive use of SMNs leads to emotional disturbances [21], primarily manifesting in anxious-depressive symptoms among adolescents [11]. Additionally, it significantly impacts adolescents' self-concept [22], with those who use SMNs extensively having lower self-concept levels socially and educationally [23].

In relation to the aforementioned issues, another study [24] confirms that SMNs have a detrimental effect on the health of many adolescents. It is a reality that many young individuals lack awareness about the pathologies that technology can induce in their psychological health. However, it is positive to note that this population acknowledges that excessive use of SMNs can lead to addiction and other associated risks [25].

It is also important to highlight that the disproportionate increase in SMNs consumption among adolescents has raised certain health risks, such as inactivity and a decline in physical activity [23]. Promoting healthy habits, such as engaging in sports, becomes crucial to deter behaviors leading to increased SMNs consumption among adolescents [26]. Given that sports serve as a protective factor offering numerous benefits for physical health [27], mental health [28], as well as in the contextual or social sphere [29], it enhances certain healthy habits that aid adolescents in feeling emotionally better, positively influencing their quality of life [30]. This fosters the acquisition of both personal and social skills, allowing adolescents to improve their relationships with peers, fostering cooperation, teamwork, and a sense of autonomy [31].

In reference to the aforementioned, it is important to note that adolescent motivation will play an essential role in engaging in sports activities [32]. Therefore, the implementation of policies or activation programs is necessary to promote healthy behaviors or counteract inappropriate ones [33], especially within the educational sphere [34]. It's crucial for adolescents to be sensitized, aware, and receive training in strategies and tools to responsibly use social networks, where they learn the advantages of proper usage in various aspects of their daily lives: familiar, academic, and social [35].

Based on the above, our objective is to analyze whether the participants' sex and engagement in sports influence variables such as SMNs obsession, lack of personal control, excessive use, and satisfaction from being connected. We propose the following hypotheses:

Hypothesis 1: Female adolescents who excessively use SMNs exhibit more obsessive behaviors, less self-control, higher usage, and satisfaction from being connected to SMNs compared to male adolescents.

Hypothesis 2: Engagement in sports activities appears to indicate a lesser inclination among adolescents towards the use and abuse of SMNs, presenting fewer obsessive behaviors, greater self-control, lower usage, and less satisfaction when using SMNs.

## II. RESEARCH METHOD

### 2.1 Design

This study was conducted using a quantitative, descriptive, and correlational cross-sectional design. The Mann-Whitney U statistical test was applied to compare the association between the independent variable (sex) and the dependent variables (obsession, lack of personal control, excessive use of SMNs, and satisfaction from connection). Additionally, to perform the comparison between the independent variable (engagement in sports) and the dependent variables (obsession, lack of personal control, excessive use, and satisfaction from SMNs).

## 2.2 Participants

The target population consisted of students attending Compulsory Secondary Education, Baccalaureate, and Vocational Training. The sample was obtained through convenience sampling from educational institutions. The final sample consisted of 522 adolescents. Of the participants, 64.4% were females, 34.1% were males, with 1.5% excluded due to non-specification of their sex (whether male or female), ranging in ages from 14 to 18 years old ( $M= 16.3359$ ,  $SD= 1.24980$ ).

## 2.3 Research Instruments

The survey was developed using Google Forms and administered online, incorporating psychometrically validated measurement instruments. A survey was conducted among adolescents aged 14 to 18 years. The virtual questionnaire includes the following tests:

- a) The Social Networking Addiction Test (SNA) [36], which assesses three dimensions: obsession with SMNs, lack of personal control in the use of SMNs, and excessive use of SMNs. It consists of 24 Likert-type items where the student must select one of the following response options: always, almost always, sometimes, rarely, and never. It has a reliability index of 0.88.
- b) The Social Media Addiction Scale-Student Form [37], where only Factor II: Satisfaction was utilized to measure the pleasure an individual experiences while being connected. It includes 7 Likert-type items with response options ranging from never to always. It exhibits an internal consistency of 0.93.

## 2.4 Process

Firstly, we contacted educational institutions through an informative letter explaining the type of research to be conducted with the students, ensuring anonymity and confidentiality of data. Secondly, after obtaining consent from the institutions, permission was sought from the parents (via email), attaching necessary documents.

Upon obtaining permissions, the questionnaire was administered to the students using Google Forms. Researchers conducted the survey in person in some institutions while using email in others. The questionnaire was administered to natural groups or classes between October 2022 and February 2023. The duration of the questionnaire was 20 minutes.

All students were adequately informed about the purpose, the confidential and voluntary nature of their participation (after parental approval), the anonymity of their responses, and that this research was approved by the University of Extremadura.

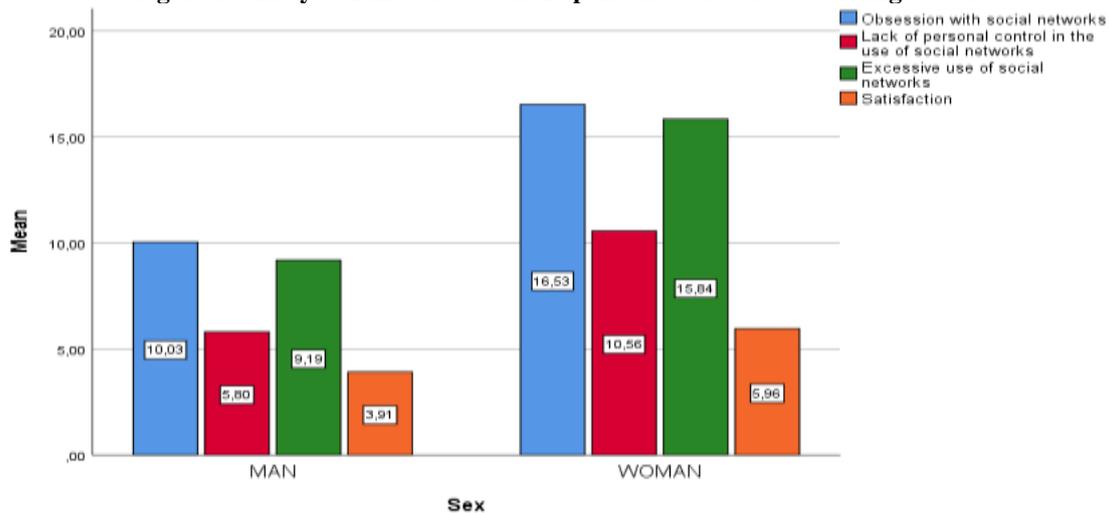
## III. DATA ANALYSIS

A descriptive and graphical analysis of the main variables under study in our work was conducted. The data were analyzed using the statistical software IBM SPSS version 26. Central tendencies and dispersion were calculated to determine the sample characteristics. As the criteria for normality were not met in our case, non-parametric tests were employed due to the skewness and non-normal distribution of the study variables. In the inferential part, the non-parametric Mann-Whitney U test was used to compare the means of the two groups statistically, to analyze if significant differences exist between them. Moreover, to analyze the association among the study variables and dimensions, Spearman's correlation was applied. It's important to note that all statistical tests were conducted with a confidence level of 95%.

## IV. RESULTS

Firstly, it was observed that the means of the two groups (males and females) in the analyzed variables are different. This indicates that the obsession with SMNs, lack of personal control, excessive usage, and the perceived satisfaction when adolescents (girls and boys) use SMNS differ (Figure 1).

Figure 1: Analysis Different Means Dependent Variables according to Sex



Secondly, upon conducting the Mann-Whitney U test for independence, the previously observed findings were confirmed ( $p < .05$ ). Therefore, we can accept the hypothesis that there is a statistically significant difference in the mean value of the sex variable. This suggests that there are differences between sexes, with these differences being more pronounced in each of the variables among females compared to males (Table 1).

Table 1: Comparison between dependent variables (obsession with social networks, lack of personal control over social networks, excessive use of social networks and satisfaction with SMNs) and the independent variables of sex and sport.

			Obsession with social networks (SMNs)	Lack of control staff in the use of social networks (SMNs)	Excessive use of social networks (SMNs)	Satisfaction
Sex	Man	Half	10.03**	5.80**	9.19**	3.91**
		DT	4.90**	4.10**	6.10**	4.68**
	Women	Half	16.53**	10.56**	15.84**	5.96**
		DT	6.35**	3.70**	5.14**	5.35**
Do you do sports?	NO	Half	17.04**	10.64**	15.98**	6.14**
		DT	6.38**	3.81**	5.05**	5.49**
	YES	Half	12.91**	8.10**	12.36**	4.90**
		DT	6.34**	4.51**	6.54**	5.05**

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\* $p < .001$

The data obtained in Table 1 confirm that the Mann-Whitney U statistic shows statistically significant differences in the study variables (obsession with social network, lack of personal control over SMNs, excessive use, and satisfaction from SMNs) concerning sex. Confirming Hypothesis 1: Female adolescents who excessively use SMNs exhibit more obsessive behaviors, less self-control, higher usage, and satisfaction from being connected to SMNs compared to male adolescents.

Moreover, Table 1 shows that the Mann-Whitney U statistic points out statistically significant differences in the study variables (obsession with social network, lack of personal control over SMNs, excessive use, and satisfaction from SMNs) concerning engagement in sports activities. Confirming Hypothesis 2: Engagement in sports activities appears to indicate a lesser inclination among adolescents towards the use and abuse of SMNs, presenting fewer obsessive behaviors, greater self-control, lower usage, and less satisfaction when using SMNs.

In Table 2, Spearman's correlation showed that the association between obsession with SMNs and lack of personal control is positive, high, and strong ( $r = .763$ ), writing down that an increase in obsession leads to an increase in lack of control over SMNs. Additionally, it is demonstrated that there is a positive and moderate association between obsession with SMNs and excessive use of SMNs ( $r = .663$ ), confirming that an increase in

obsessions also leads to increased excessive usage. Similarly, it is also found that obsession with SMNs correlates positively and moderately with the satisfaction of connection ( $r = .444$ ), showing that an increase in obsession leads to increased satisfaction.

Regarding the information in this table, it is also evident that lack of personal control over SMNs and excessive use of SMNs are positively related, exhibiting a very high and strong association ( $r = .826$ ), indicating that an increase in lack of personal control leads to increased excessive use of SMNs. Similarly, lack of personal control and satisfaction from being connected have a positive correlation of moderate intensity ( $r = .566$ ), indicating that an increase in lack of personal control leads to increased satisfaction from connection. Finally, it is affirmed that excessive use of SMNs and satisfaction from connection are positively related with moderate intensity ( $r = .565$ ).

**Table 2: Spearman Dimension Correlation**

Rho Spearman		Lack of personal control in the use of social networks (SMNs)	Excessive use of social networks (SMNs)	Satisfaction
Obsession with social networks (SMNs)	r	0.76 **	0.66**	0.44**
	Next.	$p < 0.05$	$p < 0.05$	$p < 0.05$
Lack of personal control in the use of social networks (SMNs)	r		0.82**	0.57**
	Next.		$p < 0.05$	$p < 0.05$
Excessive use of social networks (SMNs)	r			0.57**
	Next.			$p < 0.05$

## V. DISCUSSION

This research shows that women tend to be more obsessive than men. These findings align with the assertions made in studies [38; 39], suggesting that women are more obsessive than men. However, they contradict the findings of studies such as [40], which claim that the male sex is more obsessive than the female sex regarding SMNs, and [54], which suggest that men exhibit more obsessive behaviors compared to women. These discrepancies might stem from differences in sample sizes and cultural variations among the studies' participants. Furthermore, some researchers scientifically demonstrate direct correlations among females between obsessions and excessive SMNs use, indicating that an increase in one leads to an increase in the other due to negative attitudes influencing obsessive behavior and increasing SMNs consumption [41].

In relation to the above, it is proved that women exhibit less personal control in their use of SMNs compared to men. This confirms what was suggested in [39] and contradicts the findings of [54], which showed that males had less self-control compared to females. This study's contrasting data might be due to its small sample size and diversity in cultural backgrounds and nationalities.

Moreover, it is asserted that women tend to use SMNs more than men. These data support the findings in [8; 14], indicating that females tend to excessively apply SMNs. Similarly, [42; 43] state that women utilize SMNs more than men. However, these findings contradict other studies by authors [44], suggesting that males use SMNs more than females, indicating that men spend more hours on SMNs. Additionally, some experts [11], suggest that women use SMNs the least. These discrepancies among authors may arise from variations in the samples used. However, in other research, such as the study by author [38], no significant differences were found based on sex in excessive SMNs use.

In like manner, it is verified that women tend to have higher satisfaction in using SMNs. Our findings align with the research conducted by [45], demonstrating that women exhibit a greater need to stay connected compared to men.

Additionally, it is important to note that our research confirms the association between the analyzed variables in the study and the participants' sex. Therefore, it is essential to highlight that these data are supported by the research of [46], which states that women have a higher addiction to SMNs than men. Similarly, supported by the study of [47], proving that females have a higher dependence on SMNs compared to males. This is further confirmed by the data provided in the study by [48], revealing that addiction to SMNs affects females more.

Correspondingly, it is crucial to mention that the results indicate a direct correlation between obsession with SMNs and lack of personal control in its use. Our findings align with the research of [49], indicating that as obsessions with SMNs increase, self-control decreases due to SMNs usage.

Simultaneously, the data affirm a direct correlation between lack of personal control and excessive use of SMNs. In line with our results, we find the research by [12], demonstrating a positive relationship between excessive internet use and lack of personal control when SMNs is excessively used. Additionally, in their study

[50], they indicate that increased problematic or abusive usage decreases self-control in SMNs. In this regard, our study is also supported by research [49], highlighting that increased SMNs usage decreases personal and social skills, leading to a loss of control in app usage. Due to these aforementioned reasons, individuals experience difficulties in various aspects of their lives, including challenges in the educational sphere, impacting cognitive performance and school learning [51].

Furthermore, the results demonstrate a direct correlation between obsession with SMNs and excessive use, between obsession with SMNs and satisfaction from being connected, between lack of personal control and satisfaction from being connected, and between excessive use of SMNs and satisfaction from being connected. However, while the reviewed scientific literature does not explicitly specify the direct association between these variables, it does provide indicators suggesting its existence, although these studies have not conclusively confirmed it.

It is important, regarding the factor of sports, to note that the data seem to confirm that individuals engaged in sports exhibit fewer obsessions with SMNs compared to those who do not engage in sports. These findings are supported by the research of [52], which demonstrates that those who do not engage in sports and use SMNs have poorer emotional health and show many obsessions regarding SMNs. Additionally, those involved in sports exhibit more personal control in the use of SMNs compared to those who do not participate in sports. This is corroborated in the same direction by the study of [52], indicating that individuals who do not engage in sports display a greater lack of personal control in using SMNs applications.

However, engaging in sports reduces excessive use of SMNs, while not participating in sports increases abusive utilization of SMNs. These data have been confirmed both by the research of [53], indicating an increase in SMNs usage with decreased physical activity, and in the studies by [26], revealing that adolescents spending more time on technology engage less in physical activities. Similarly, authors [52], suggest that sports reduce risky behaviors, such as excessive use of SMNs.

Moreover, individuals involved in sports experience less satisfaction in using SMNs compared to those who do not engage in sports, who exhibit greater satisfaction with being connected, confirming what was indicated in the research by [45], which suggests that sedentary adolescents (those not participating in sports) seem to have more problems or a greater need to stay connected than adolescents engaged in sports. In any case, it should be mentioned that a positive association has been found between the study variables and the factor of sports.

Finally, in the light of the data obtained, it is important to note the scarcity of studies regarding the influence of obsession, lack of personal control, excessive usage, and satisfaction with connection in SMNs addiction concerning the variable of sports. Furthermore, considering SMNs addiction, sex, engagement in sports, and adolescence, our findings provide information applicable to both school and family settings. This information raises awareness among parents and teachers regarding this issue of digital addiction, allowing for the planning of activities aimed at promoting healthy leisure through sports activities among this population of study. Therefore, these initiatives steer adolescents away from spending excessive hours on screens and provide them with healthy non-digital entertainment, introducing them to other routines that involve real-world interactions, fostering parental relationships, camaraderie, as well as instilling values, norms, and supervision by adults.

It is crucial for adults to advise adolescents about the importance of responsible technology usage, since reducing the time spent on SMNs, for example, benefits sleep patterns and helps prevent emotional disturbances caused by excessive technology use. For these reasons, students engaged in sports display fewer obsessive behaviors, less lack of control, lower SMNs usage, and less satisfaction with being connected. Our findings align with [52], indicating that sports diminish or eliminate risky behaviors and promote mental health. In this regard, we have not found literature indicating that sports do not act as a protective factor against SMNs addiction.

## VI. CONCLUSIONS

The findings from this research on social network addiction among adolescents aged 14 to 18 demonstrate the following:

Firstly, adolescent girls who excessively use social networks exhibit more obsessive behaviors, less self-control, higher usage, and satisfaction with being connected to SMNs compared to adolescent boys. Secondly, engagement in sports seems to indicate a lower inclination among adolescents toward the use or abuse of SMNs. Adolescents participating in sports display fewer obsessive behaviors related to SMNs, greater personal control in its usage, lower SMNs consumption, and less satisfaction with being connected compared to those not engaged in sports. Therefore, it appears that sports serve as a protective factor against the dangers and risks associated with addictive or abusive behavior related to SMNs.

Thirdly, there are several positive and significant associations among the study variables, notably between obsession with SMNs and the variables of lack of personal control, excessive usage, and satisfaction

with SMNs. Moreover, a positive relationship is found between the lack of personal control, excessive usage, and satisfaction with SMNs. Likewise, a similar association is observed between excessive SMNs usage and satisfaction with SMNs.

Furthermore, a positive association is evident between participants' sex and the study variables (obsession, lack of control, excessive usage and satisfaction with SMNs). Additionally, a direct and significant correlation exists between the aforementioned study variables and the variable of engaging in sports.

**Limitations:** One limitation observed in our study is its cross-sectional nature, which does not allow for delving into the causal relationships among the analyzed variables. For this reason, future research with different study designs is recommended to confirm and corroborate the findings of this study.

**Contributions of the work:** As recommendations, we suggest implementing the practical applications found in this research in both classroom and family settings. This is crucial because there are warning signs of SMNs abuse based on sex and preventive indicators such as engagement in sports that help reduce adolescents' digital abusive consumption, which educators and parents should be aware of. Raising awareness about abusive consumption by professionals and in the family, setting helps promote responsible usage of SMNs by adolescents. Therefore, adults should establish rules and boundaries regarding minors' technology usage, making them aware of the risks that impact their physical and psychological health, affecting other aspects of their lives such as personal, family, and social spheres.

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