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Technological Addiction and Narcissistic Traits Among Business, Medical, and Psychology Pupils: Implications and Policies

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ABSTRACT

Technology has brought a positive revolution to the world; however, it also has disadvantages, such as addiction. This addiction not only causes mental health problems but is also linked to narcissistic traits, particularly among pupils engaged in problematic gaming and social media use. In Pakistan, such studies are limited; therefore, the present study evaluated technological addiction—operationalized as gaming addiction and social media addiction—and its relationship with narcissistic traits among business, medical, and psychology pupils. The study also examined mean differences across these groups. A cross-sectional correlational design with purposive sampling was employed to collect data from 225 pupils aged 18 to 30, enrolled in private and public universities in Karachi, Lahore, and Gujranwala. Three instruments were utilized: the Bergen Social Media Addiction Scale, the Gaming Addiction Scale

for Adolescents (Shorter Version), and the Narcissistic Personality Inventory (Shorter Version). Results indicated a significant relationship between gaming addiction, social media addiction, and narcissistic traits. Furthermore, medical pupils scored significantly higher on narcissistic traits and social media addiction compared to business and psychology pupils, while no significant differences were found in gaming addiction. The study offers important implications, including the need for mental health awareness programs, a stronger role for educational institutions, and promoting limitations on the use of technological applications.

Keywords: *technological addiction, gaming addiction, social media addiction, narcissistic traits, pupils*

INTRODUCTION

Technology is the application of conceptual knowledge to achieve practical goals, especially in a reproducible way. The word technology can also refer to the products resulting from such efforts, including both tangible tools such as utensils or machines and intangible ones such as software. It plays a key role in economic growth, education, and business across the globe (Ridwannudin et al., 2015; Risling, 2017; Rolando et al., 2025). However, excessive and compulsive use of the Internet or online activities can lead to negative consequences in various aspects of an individual's life. Technology addiction may involve various forms of online activity, including social media, gaming, gambling, and problematic use of other online activities such as online romantic relationships. Such activities can result in wasted study time, negatively affect academic performance, and harm overall well-being (Gugliandolo et al., 2020; Irfan et al., 2025; Khan et al., 2024; Sherer & Levounis, 2025).

Technological addiction in the current context is operationalized as gaming addiction and social media addiction. Gaming addiction, also called Internet gaming disorder, is a condition characterized by severely reduced control over gaming habits, resulting in negative consequences in many aspects of life, including self-care, relationships, school, and work, as well as declining psychological well-being (Bashir et al., 2024; Muhdiarta et al., 2025; Rege & Karachiwala, 2025; Sachdeva & Verma, 2015; Shahid et al., 2024). Social media addiction is the obsessive use of and focus on social media websites and apps, even though such use causes negative consequences that affect daily life, studies, and relationships (Kalınkara & Talan, 2025; Luo et al., 2025).

Earlier research has shown a strong relationship between social media addiction and gaming addiction with narcissistic traits among pupils. Narcissistic traits can be defined as believing they are superior to others and can only spend time with or be understood by equally special people, being critical of and looking down on people they feel are not important, expecting special favors, and taking advantage of others to get what they want (Chen, 2024; Król & Karczewska, 2024).

A correlational study surveyed 200 male high school pupils in Sahneh, Iran. Using validated questionnaires, results indicated a significant positive relationship between narcissistic personality traits and online gaming addiction, showing that higher narcissism was associated with greater levels of problematic gaming behavior among adolescents (Zandi Payam & Mirzaeidoostan, 2019). Another study surveyed 239 high school pupils in Kosovo (ages 12–17) to examine relationships between game addiction and personality traits. Using parametric tests, results showed game addiction was negatively associated with tender-mindedness and positively associated with neuroticism, while no link was found with extraversion, age, gender, or grade level (Basha, 2021).

A cross-sectional study surveyed 250 Pakistani young adults (ages 18–30) to compare PUBG and Ludo players. Using standardized scales, results showed a significant positive relationship between online gaming addiction and narcissism. PUBG players reported higher narcissism than Ludo players, though no group differences emerged in overall gaming addiction levels (Shahid et al., 2025). Another correlational survey examined 101 PUBG gamers in Pakistan aged 13–30 using standardized scales. Results showed a significant negative relationship between PUBG addiction and narcissistic tendencies, suggesting higher gaming addiction was linked with lower narcissism, highlighting a contrasting pattern to commonly reported positive associations in gaming research (Nawaz et al., 2020). An earlier study surveyed 596 Turkish university pupils to examine factors linked with Internet gaming disorder. Using structural analysis, results showed narcissism was indirectly associated with gaming disorder through cyberloafing. Findings highlighted a significant relationship between narcissistic tendencies and problematic gaming behaviors among young adults in Turkey (Yilmaz et al., 2023).

A cross-sectional study surveyed 23,532 Norwegians (ages 16–88) using the Bergen Social Media Addiction Scale and Narcissistic Personality Inventory-16. Findings indicated excessive social media use was linked to younger age, female gender, and narcissistic traits, explaining 17.5% of variance. Results highlighted the relationship between narcissism and addictive social media use (Andreassen et al., 2017). Another study examined 123 vocational pupils in Indonesia using linear regression to assess narcissism's contribution to social media addiction. Results showed narcissism explained 53.9% of variance, indicating a strong positive relationship. Findings confirmed that narcissistic traits significantly predict addictive social media use among adolescents (Sesva et al., 2022).

A recent study investigated 609 university pupils in Istanbul, Turkey, aged 18–30, using the Social Media Addiction Scale-Adult Form and Narcissistic Personality Inventory-13. Data analyzed through non-parametric tests revealed a positive relationship between social media addiction and narcissism, with differences observed by gender, follower count, and time spent online (Kurunç, 2023). Another earlier study surveyed 604 university pupils from Belarus (n = 403) and Ukraine (n = 201; Mage = 21.5) using multiple psychological scales. Findings showed positive associations between social media addiction and narcissism in Belarusian males and females and Ukrainian males, underscoring cultural similarities in this psychological relationship (Sheinov & Dziavitsyn, 2022).

A cross-sectional study surveyed 705 adults aged 18–61 using the Scale of Narcissism in Social Media and the Bergen Social Media Addiction Scale. Analysis revealed a significant positive relationship between narcissism and social media addiction, highlighting the close connection between narcissistic tendencies and excessive engagement with social media (Akdeniz, 2022). Another study surveyed 400 individuals aged 17–41 using the Social Media Addiction Scale and Short Dark Triad Scale. Bivariate correlations revealed a positive relationship between narcissism and social media addiction, alongside other dark triad traits, confirming the link between narcissistic tendencies and excessive social media use (Hussain et al., 2023). A correlational study surveyed 257 young adults in Pakistan (ages 18–25) using validated psychological scales. Results showed problematic social media use was positively associated with narcissistic traits. Moreover, narcissism significantly mediated the relationship between social media use and cyberbullying perpetration, underscoring its central role in maladaptive online behavior (Zahra et al., 2025).

According to gratification theory, individuals seek self-validation, admiration, and self-expression via online platforms (Ruggiero, 2000). This aligns with the relationship between gaming addiction and social media addiction with narcissistic traits, as individuals with online platform addiction may seek recognition, admiration, a sense of belonging, manipulate others, and gain attention through chats, posts,

and other online activities. In Tehran, Iran, 300 high school pupils participated in a study examining social media addiction. Findings showed a significant relationship between narcissistic personality tendencies, the need to communicate, and the desire for approval with social media addiction. Structural equation modeling confirmed these relationships, underscoring how narcissism and unmet psychological needs heighten vulnerability to excessive online engagement (Haeri et al., 2021). In a study of 405 World of Warcraft players, researchers examined the relationship between narcissism and problematic gaming. Findings showed that vulnerable narcissistic traits—marked by insecurity, hypersensitivity, and need for reassurance—were linked to problematic gaming through emotion dysregulation and escapism (Di Blasi et al., 2020).

Rationale

Youth enroll in universities and medical colleges to pursue higher education and contribute productively to society. With rapid modernization and technologization, pupils increasingly rely on the internet for academic purposes, while online platforms and AI tools have made learning more accessible. At the same time, excessive use of platforms such as gaming and social media can foster narcissistic traits. Although existing literature highlights strong associations between social media addiction, gaming addiction, and narcissism, little is known about how these patterns differ across academic disciplines. This study focuses on Business, Medical, and Psychology pupils, as these groups often display behaviors linked with narcissistic tendencies yet remain underexplored in research. Business pupils may emphasize their expertise in commerce, Medical pupils often perceive themselves as prestigious due to the competitive nature of their field, and Psychology pupils may develop a sense of intellectual superiority from their subject knowledge. When combined with excessive use of gaming and social media, such attitudes may reinforce narcissistic traits. Therefore, the objective of this study is to examine differences in gaming addiction, social media addiction, and narcissistic traits among Medical, Psychology, and Business pupils. This research seeks to fill a gap in the literature, provide direction for future studies, and inform targeted interventions.

Hypotheses

1. There is likely to be a positive and significant relationship between gaming addiction, social media addiction, and narcissistic traits among business, medical, and psychology pupils.
2. There are likely to be significant mean differences in gaming addiction, social media addiction, and narcissistic traits among business, medical, and psychology pupils.

METHOD

The study employed a cross-sectional correlational design and a purposive sampling technique to measure online gaming addiction, social media addiction, and narcissistic traits among 225 business, medical, and psychology pupils aged 18 to 30, from both genders, who had been using online games and social media for at least one year. The instruments included the Gaming Addiction Scale for Adolescents (GASA) shorter version, a 7-item Likert scale ranging from “never” (1) to “very often” (5), with a Cronbach’s alpha of 0.94 (Lemmens et al., 2009). In the present study, the scale demonstrated a reliability coefficient of 0.75, which is considered satisfactory. The Bergen Social Media Addiction Scale (BSMAS), a six-item Likert scale (1–5) developed by Andreassen et al. (2016), reported an internal consistency of 0.80. The Narcissistic Personality Inventory (short version), a 16-item scale developed by Ames et al. (2006), uses a Likert response format ranging from 0 to 1 to assess narcissism and has a reported Cronbach’s alpha of 0.72.

All ethical considerations were strictly observed throughout the research process. This included obtaining permissions from the original scale authors, securing approval from relevant authorities, and obtaining informed consent from participants, who were assured of their privacy, anonymity, and right to withdraw at any stage without adverse consequences. No psychological or physical harm was inflicted on participants, and all data were reported accurately and transparently. Ethical approval for the study was obtained from the research ethics committee for publication purposes. The procedure adhered fully to APA ethical guidelines. Data were collected from Lahore, Karachi, and Gujranwala, specifically from medical colleges and universities (both private and public), and limited to Business, Medical, and Psychology pupils. Demographic information (e.g., gender, age, field of study) was collected, and participants were briefed about the study objectives to minimize bias. Only those who met the inclusion criteria and provided consent were included, with all ethical standards followed in line with the APA 7th edition code of conduct. The data, after collection, was entered into IBM SPSS version 26 for analysis purposes. Pearson product-moment correlation was used to examine the relationship between the study variables, and one-way ANOVA was utilized to find mean differences among business, medical, and psychology pupils with respect to the study variables: gaming addiction, social media addiction, and narcissistic traits.

RESULTS

Table 1

Characteristics of Participants (N=225)

Characteristics	*f*	*%*	*M*	*SD*
Age			22.27	2.35
Gender				
Men	130	58		
Women	95	42		
Field of Study				
Business	79	34		
Medical	83	34		
Psychology	63	32		

Note. *f*=Frequency*; %*= Percentage*; M*= Mean*; SD*= Standard Deviation

Table 1 presents the demographic characteristics of the participants. Of the total sample (N = 225), 130 (58%) were men and 95 (42%) were women. The participants' mean age was 22.27 years (SD = 2.35). With respect to field of study, 79 (34%) were enrolled in business programs, 83 (34%) in medical programs, and 63 (32%) in psychology programs.

Table 2

Relationship of Social Media Addiction, Gaming Addiction and Narcissistic Traits (N= 225)

Variables	1	2	3
1. Social Media Addiction	-	.54**	.13*
2.Gaming Addiction		-	.15*
3. Narcissistic Traits			-

Note. *$p<.05$, **$p<.01$

Table 2 presents the correlations among social media addiction, gaming addiction, and narcissistic traits. Social media addiction was positively correlated with gaming addiction, $r = .54$, $p < .01$, and with narcissistic traits, $r = .13$, $p < .05$. Gaming addiction was also positively correlated with narcissistic traits, $r = .15$, $p < .05$.

Table 3

Mean differences among Business, Medical and Psychology Pupils with Respect to Study Variables (N=225)

	BP(n=79)		MP(n=83)		PP(n=63)				
Variables	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*	Cohen's *d*
GA	18.03	6.06	19.27	6.85	19.39	6.05	1.06	.34	0.24
SMA	15.13	5.03	18.62	6.61	16.71	5.72	7.23	.001	0.61
NT	11.93	4.02	13.56	2.61	12.04	4.93	4.36	.01	0.38

Note. **$p<.01$, **$p<.001$, SMA=Social Media Addiction, GA= Gaming Addiction, NT= Narcissistic Traits, BP= Business Pupils, MP= Medical Pupils, NT= Narcissistic Traits

A one-way analysis of variance was conducted to examine group differences among Business, Medical, and Psychology pupils on gaming addiction, social media addiction, and narcissistic traits. For gaming addiction, there was no significant difference among groups, $F(2, 222) = 1.06$, $p = .34$, Cohen's $d = 0.24$, indicating a small effect size. For social media addiction, the analysis revealed a significant effect of group membership, $F(2, 222) = 7.23$, $p = .001$, Cohen's $d = 0.61$, reflecting a medium effect size. Post hoc comparisons indicated that Medical pupils ($M = 18.62$, $SD = 6.61$) reported higher social media addiction compared to Business pupils ($M = 15.13$, $SD = 5.03$) and Psychology pupils ($M = 16.71$, $SD = 5.72$). For narcissistic traits, group differences were also significant, $F(2, 222) = 4.36$, $p = .01$, Cohen's $d = 0.38$, suggesting a small-to-medium effect size. Medical pupils ($M = 13.56$, $SD = 2.61$) scored higher on narcissistic traits compared to Business pupils ($M = 11.93$, $SD = 4.02$) and Psychology pupils ($M = 12.04$, $SD = 4.93$).

DISCUSSION

The world is becoming modernized, and technology is advancing rapidly. Although there are many benefits of technology in business and education, its addiction is detrimental to youth, particularly in Pakistan, where awareness about the excessive use of online platforms such as gaming and social media is very limited. Substantial literature exists regarding the relationship between technological addictions (i.e., gaming addiction and social media addiction) and narcissistic traits among pupils. However, a gap remains in comparing Business, Medical, and Psychology pupils. The core idea of this study was to examine mean comparisons of the study variables within these groups in Pakistan, since such studies are not widely conducted, and to propose targeted implications.

The first hypothesis of the study was supported, as the correlational analysis revealed a significant positive relationship between gaming addiction, social media addiction, and narcissistic traits among Business, Medical, and Psychology pupils. A recent study aligns with the present research, showing that problematic social media use has a significant relationship with narcissistic traits among participants with

intermediate education in Pakistan (Zahra et al., 2025). Another study reported that online gaming addiction is strongly associated with narcissistic traits among college and university pupils in Pakistan (Shahid et al., 2025). The reason behind such results could be increasing digitalization in Pakistan, where pupils consistently and excessively use social media and gaming platforms. As smartphones provide easy access to these applications, pupils often misuse them. From a psychological perspective, self-admiration, recognition, and validation have become easier to attain through excessive use of social media and gaming, as these platforms conveniently reinforce narcissistic tendencies and foster addictive behavior.

The second hypothesis of the study was also supported, as the one-way ANOVA indicated that Medical pupils scored significantly higher on social media addiction and narcissistic traits compared to their counterparts in Business and Psychology. For gaming addiction, however, the differences among pupil groups were not significant. Previous studies have also reported higher levels of social media addiction among medical pupils compared to pupils from other academic fields (Alfaya et al., 2023; Anwar et al., 2025; Sadiq et al., 2025; Shahid et al., 2024). However, it is noteworthy that findings vary across contexts, and the present study fills the gap by examining mean differences across Business, Medical, and Psychology pupils within the same dataset. The significantly higher scores of Medical pupils on social media addiction and narcissistic traits may be attributed to self-admiration associated with being medical pupils, who perceive themselves as future doctors occupying positions of prestige and authority in society. Another reason for higher scores on narcissistic traits and excessive social media use could be coping mechanisms adopted to overcome the intense workload of medical studies; excessive social media use and self-admiration may help them maintain self-worth and resilience in such a demanding environment. In contrast, the nonsignificant group difference in gaming addiction could be explained by the widespread popularity of online games across academic fields, which reduces discipline-specific variations and keeps the overall variance low.

LIMITATIONS AND RECOMMENDATIONS

The first limitation of the study is the small sample size of 225 pupils; future studies should focus on larger samples for better generalizability. The second limitation is that data were only collected from pupils in Karachi, Lahore, and Gujranwala due to convenience; future research should collect data from different regions of Pakistan, preferably through cost-effective methods such as online surveys. The third limitation is that only three academic fields were included (Business, Medical, and Psychology); future studies should include pupils from Engineering, Literature, and other fields. Additionally, gender participation was imbalanced; future studies should ensure gender balance to allow for gender-based comparisons and provide more comprehensive literature with practical implications.

IMPLICATIONS AND POLICIES

The study results highlight the need for comprehensive implications. Mental health professionals should raise awareness regarding online addictive behaviors and their detrimental effects. Emphasis should be placed on promoting empathy among university pupils, particularly medical pupils, as they are the most affected. Media should play a positive role in spreading awareness, and universities should encourage social interaction and physical activities rather than technological overuse. Counseling services should be provided within universities, and pupils should be encouraged to seek psychological support to overcome addiction and reduce narcissistic traits by recognizing their negative consequences. Policymakers should develop tailored mechanisms in the education sector, such as preventive strategies. For example, a national campaign could emphasize healthy technology use, warning signs of addiction, and narcissistic tendencies. Collaboration with telecom companies could also be emphasized, such as implementing

reminders about excessive screen time and sending break notifications, which may help reduce problematic technology use.

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