

Investigating the Mediating Role of Emotional Intelligence in the Association Between Mobile Phone Addiction and Level of Aggression Among Health-care Students

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Abstract

With an emphasis on the mediating role of emotional intelligence, the current study aimed to investigate the connection between health-care students' addiction to mobile phones and aggression. A sample of 200 students (ages ranged between 17 and 19 years) pursuing a health-care degree program from DIT University participated in the study. Standardized instruments, including the Mobile Phone Addiction Scale, the Aggression Questionnaire, and the Emotional Intelligence Scale, were administered to assess the respective constructs. The data were collected after getting consent from each participant individually. Findings revealed a significant positive correlation between mobile phone addiction and aggression. Emotional intelligence was also found to be associated with both mobile phone addiction and aggression. Mediation analysis indicated that emotional intelligence partially mediated the relationship between mobile phone addiction and aggression. Specifically, higher levels of mobile phone addiction were linked to lower emotional intelligence, which in turn was associated with increased aggression. Emotional intelligence plays a partial mediating role in the association between mobile phone addiction and aggression among health-care students. These findings highlight the importance of developing emotional intelligence as a potential intervention to reduce the negative behavioral outcomes associated with excessive mobile phone use.

Keywords: Aggression, Emotional Intelligence, Health-care Students, Mobile Phone Addiction

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Introduction

In recent years, the widespread adoption of smartphones has fundamentally reshaped the ways in which individuals, particularly college students, interact, communicate, and manage their daily lives. While mobile technology offers significant advantages - ranging from increased connectivity to enhanced access to information - it also brings with it new psychological and behavioral challenges. Among the most pressing concerns is mobile phone addiction (MPA), a behavioral pattern characterized by excessive or compulsive use of smartphones that disrupts an individual's daily functioning and well-being (Mascia, Agus, & Penna, 2020). Parallel to the rise of MPA is a growing concern over increasing levels of aggression among youth and emerging adults, particularly in academic settings. This study examines how mobile phone addiction relates to aggression in students' population pursuing health-care degree program, with a focus on emotional intelligence (EI) as a potential mediating factor.

Several studies have reported a positive relationship between mobile phone addiction and aggression. Arun & Das, (2021), in a study involving 200 college students from Kerala, found a significant correlation between mobile

phone addiction and aggression, although no gender differences were reported in the relationship. Similarly, Wu, Yang, Wu, & Huang, (2023) found that MPA is positively associated with aggression in a sample of 621 Chinese college students. Their findings emphasized that mobile phone addiction is not just a matter of habit or preference, but is linked to deeper emotional and psychological patterns that may manifest as hostile or aggressive behaviors.

This link is further supported by Chang, YAN, & Shen, (2023), who demonstrated through structural equation modeling that mobile phone addiction mediates the relationship between family dysfunction and adolescent aggression. Their study indicated that when family function is compromised or when individuals fear negative evaluation, the resulting stress often leads to rumination and increased mobile phone usage, both of which contribute to heightened aggression. This pathway underscores the complex interplay between environmental, emotional, and behavioral factors in shaping aggressive tendencies among youth.

Adding another layer to this understanding, Samaraein, Ahmadi, & Pourzargar, (2023) found that self-control negatively correlates with cyber aggression, and that mobile phone

addiction mediates this relationship. Adolescents with lower self-control were more likely to exhibit cyber aggression, a behavior facilitated by their increased reliance on mobile devices. The study highlighted how MPA can serve as both a symptom and a facilitator of aggression, particularly in digital spaces.

Emotional Intelligence as a Protective Factor

While the connection between MPA and aggression is increasingly well-documented, less attention has been paid to factors that might mediate this relationship. One promising determinant is emotional intelligence (EI), defined as the ability to regulate, understand, manage and perceive emotions effectively in oneself and others (Mayer, Salovey, & Caruso, 2008). A growing number of research suggests that higher levels of EI lead to lower levels of aggression and better psychological outcomes. García-Sancho, Salguero, & Fernández-Berrocal, (2016) conducted both longitudinal studies and cross-sectional to examine the role of Ability Emotional Intelligence (AEI) in predicting aggression. They found that AEI was negatively associated with physical aggression, even after controlling for personality traits, and predicted physical aggression over time in adolescents. However, AEI did not significantly predict verbal aggression, suggesting a nuanced relationship between different types of aggression and facets of EI.

Johnston, (2003) reported a strong negative correlation between emotional intelligence and aggression in adolescents' sample, with EI accounting for significant variance in physical aggression. Regression analysis revealed that stress management and intrapersonal skills were particularly important in predicting lower aggression, while anger and hostility were significant predictors of increased aggression. These findings are consistent with those of Bibi, Saleem, Khalid, & Shafique, (2020), who observed that EI negatively correlates with hostility and anger among university students of Pakistan. The study also found that physical aggression was more prevalent among males, although no gender differences emerged for overall EI or aggression levels.

Furthermore, Megías, Gómez-Leal, Gutiérrez-Cobo, Cabello, & Fernández-Berrocal, (2018) elaborated on the mechanisms linking EI to aggression by introducing the role of negative affect (NA). Their results showed that emotional management directly predicted aggression, while emotional perception was

indirectly linked to aggression through NA. These findings suggest that EI influences aggression both directly and through its effect on emotional experiences, emphasizing the need to consider intermediary variables in these psychological processes.

Castillo, Salguero, Fernández-Berrocal, & Balluerka, (2013) demonstrated the practical benefits of EI through a two-year intervention study among adolescents in Spain. Participants who received EI training exhibited significantly lower levels of verbal and physical aggression, anger, and hostility compared to a control group. The intervention was especially effective in enhancing empathy among males, supporting the idea that emotional skills can be developed and have lasting behavioral effects. Peláez-fernández, Extremera, & Fernández-berrocal, (2015) explored how perceived aggression and emotional intelligence (PEI) interact across genders. Their results indicated that gender moderates the relationship between PEI and aggression, with women showing higher levels of frustration and emotional attention, and men displaying more direct aggression. Repair, a key component of EI, was negatively related to aggressive tendencies in both genders, underscoring its role as a protective factor.

Linking Emotional Intelligence and Mobile Phone Addiction

In addition to moderating aggression, emotional intelligence appears to play a critical role in reducing mobile phone addiction. Mascia, Agus, & Penna, (2020) examined the relationship between smartphone use, EI, and self-regulation among Italian adolescents. The findings confirmed that self-regulation, an ability closely tied to EI significantly affects students' quality of life and is inversely related to smartphone addiction. Notably, the relationship between self-regulation and well-being was moderated by the level of smartphone addiction, implying that high addiction levels can undermine the protective role of EI.

Sechi, Loi, & Cabras, (2021) reinforced these findings by showing that trait EI and self-esteem act as protective factors against internet addiction. Younger individuals were more vulnerable to addictive behaviors, and those with higher EI and self-esteem were more capable of handling their online behavior responsibly.

These studies collectively suggest that emotional intelligence may serve a dual role in the context of MPA and aggression; not only can it reduce aggressive tendencies directly, but it can also minimize the negative effects of mobile phone addiction, which in itself is a risk factor for aggression. Thus, EI may act as a mediating variable that explains part of the link between MPA and aggression.

Rationale and objectives

Given the converging evidence from the above mentioned studies, it is clear that the association between mobile phone addiction and aggression is robust and multi-faceted. While MPA has been consistently linked to increased aggression, the mechanisms underlying this relationship remain underexplored. Moreover, emotional intelligence appears to have protective effects against both aggression and addictive behaviors, yet its mediating role in the relationship between MPA and aggression has not been fully examined.

To bridge this gap, the present study investigates the extent to which emotional intelligence mediates the association between mobile phone addiction and aggression among health-care students. In doing so, it builds on and integrates findings from multiple streams of research ranging from studies on self-regulation and cyber aggression to longitudinal investigations of emotional abilities and behavior. By incorporating emotional intelligence into this framework, this study seeks not only to enhance theoretical understanding but also to inform practical interventions aimed at reducing aggression and improving emotional well-being among young adults.

Based on the existing literature, the hypothesis was formulated as: 'Emotional Intelligence will mediate the relationship between mobile phone addiction and aggression.'

RESEARCH METHODS

Participants and study design

The study included a sample of 200 students. A cross-sectional survey with one-time assessment was administered between September and October 2024. Participants (age ranged between 17 and 19 years) were selected using a convenience cluster sampling technique, targeting students enrolled in Health-care degree program at DIT University, a private and leading institution located in Northern India. The selected age range

represents late adolescence and emerging adulthood, a developmental period characterized by heightened emotional reactivity, identity formation, and increased vulnerability to behavioral addictions, including mobile phone addiction. This age group is also particularly sensitive to peer influence and emotional regulation challenges, making it a relevant population for examining the interplay between emotional intelligence, mobile phone addiction, and aggression (Arnett, 2000; Steinberg, 2005).

Students participated in the study voluntarily and were informed that they could withdraw at any time without facing any consequences. Data collection was facilitated by trained research assistants who provided standardized instructions to ensure clarity and consistency. Respondents completed the all three questionnaires, which required approximately 30-40 minutes to complete. The consent was obtained from each participant prior to the data collection.

Assessments

(i) Mobile Phone Addiction using Mobile Phone Addiction Scale (MPAS)

This scale was developed by Dr. A. Velayudhan & Dr. S. Srividya (2012) which is a self-report and valid scale for the assessment of mobile phone addiction. The instrument consists of 37 items rated using a 5-point Likert scale. The total score ranged from 37 to 185, with higher scores indicating a higher level of mobile phone addiction. A high degree of mobile phone addiction is indicated by a total score of 57 points or higher, a moderate level is indicated by a score between 40 and 57, and a low level is indicated by a score of 40 points or less.

(ii) Level of Aggression applying The Buss-Perry Aggression Questionnaire (BPAQ)

This questionnaire was developed and standardized by Arnold H. Buss and Mark Perry in 1992. It is a widely used tool for measuring aggression and has demonstrated strong psychometric properties. With a Cronbach's alpha of 0.84, the questionnaire has strong internal consistency, suggesting accurate measurement across all items. Additionally, it exhibits strong test-retest reliability, with a correlation of 0.86 over a four-week period, confirming its stability over time. In terms of validity, the BPAQ has solid construct validity, as it correlates strongly with other established measures of aggression as well as related constructs such as anger and hostility,

reinforcing its effectiveness in assessing aggressive tendencies (Buss & Perry, 1992).

(iii) Emotional Intelligence Level using Emotional Intelligence Scale

The scale was constructed and standardized by Dr. Arun Kumar Singh and Dr. Shruti Narain (2014). The 31 items on the scale evaluate four fundamental components of emotional intelligence such as Managing Relationships, Understanding Emotions, Empathy and Understanding Motivation. It is suitable for administration to individuals aged 12 years and above. With a test-retest reliability rating of 0.86, the scale exhibits high psychometric qualities and a concurrent validity coefficient of 0.86, both statistically significant at the 0.01 level.

Data analysis

The demographic details of the participants were compiled using descriptive statistics. To investigate the connections between the main research variables, Pearson correlation analysis

Table 1: Descriptive Statistics

Variable	Mean	Std. Deviation	Minimum	Maximum	Range	Skewness	Kurtosis
Mobile Phone Addiction (MPA)	100.23	23.29	57.00	168.00	111.00	0.467	0.023
Emotional Intelligence (EI)	20.06	5.24	7.00	29.00	22.00	-0.299	-0.586
Aggression (AGG)	71.60	15.23	36.00	108.00	72.00	-0.107	0.005

Correlational Analysis

Pearson correlations showed that MPA was significantly negatively correlated with EI ($r = -.637, p < .001$) and positively correlated with AGG ($r = .467, p < .001$). Additionally, EI was negatively correlated with AGG ($r = -.509, p < .001$) (Table 2 for the correlation matrix).

Table 2: Correlations Among Variables

Variable	Mobile Phone Addiction	Emotional Intelligence	Aggression
Mobile Phone Addiction	1	-0.637**	0.467**
Emotional Intelligence	-0.637**	1	-0.509**
Aggression	0.467**	-0.509**	1

Regression Analysis

A simple linear regression (Table 3) indicated that MPA significantly predicted EI, $R^2 = .406, F(1, 198) = 135.32, p < .001$, explaining 40.6% of the variance. MPA had a significant negative effect on EI, $B = -0.143, SE = 0.012, t = -11.63, p < .001$.

Similarly, another regression analysis showed that MPA significantly predicted AGG ($R^2 = .218, F(1, 198) = 55.33, p < .001$), explaining 21.8% of the variance. MPA had a significant positive effect on AGG, $B = 0.306, SE = 0.041, t = 7.44, p < .001$.

Another regression analysis showed that EI significantly predicted AGG, $R^2 = .259, F(1, 198) = 69.25, p < .001$, explaining 25.9% of the variance. EI had a significant negative effect on AGG, $B = -1.480, SE = .178, t = -8.322, p < .001$.

was performed statistical software. A mediation analysis was conducted to evaluate the mediating function of emotional intelligence in the association between aggression and mobile phone addiction. The significance of the mediation effects was assessed using the bootstrapping technique, which involved computing 95% bootstrap confidence intervals (CIs) and drawing 5,000 resamples. AMOS version 17.0 and SPSS version 18.0 were used for all statistical analyses.

RESULTS

Descriptive Analysis

The current study aimed to investigate the association between mobile phone addiction (MPA), emotional intelligence (EI), and aggression (AGG) among participants ($N = 200$). Descriptive statistics (Table 1) revealed the mean scores and standard deviations for MPA ($M = 100.23, SD = 23.29$), EI ($M = 20.06, SD = 5.24$), and AGG ($M = 71.60, SD = 15.23$).

Table 3: Regression Analysis: Emotional Intelligence as a Mediator

Model	B	SE	β	t	p	95% CI (Lower)	95% CI (Upper)
Outcome: EI							
Constant	34.43	1.27	-	27.15	.000	31.92	36.93
MPA	-0.14	0.01	-0.637	-11.63	.000	-0.17	-0.12
Outcome: AGG							
Constant	76.54	8.76	-	8.74	.000	59.27	93.81
MPA	0.16	0.05	0.306	3.10	.002	0.06	0.26
EI	-1.03	0.23	-0.509	-4.58	.000	-1.48	-0.59

Mediation Analysis

A mediation analysis using Hayes’ Process Model 4 revealed that EI partially mediated the relationship between MPA and AGG, $R^2 = .294$, $F(2, 197) = 40.93$, $p < .001$. The direct effect of MPA on AGG was significant, $B = 0.158$, $SE = 0.051$, $p = .002$, and the indirect effect of MPA on AGG through EI was also significant, effect = 0.148, boot SE = 0.045, 95%CI [0.048, 0.226]). This suggests that MPA influences AGG both directly and indirectly via its impact on EI (Table 4 for direct and indirect effect estimates from the mediation analysis).

Table 4: Direct and Indirect Effects of Mobile Phone Addiction on Aggression via Emotional Intelligence

Effect Type	Effect	Boot SE	Boot LLCI	Boot ULCI
Direct Effect (MPA → AGG)	0.157	0.051	0.057	0.258
Indirect Effect (MPA → EI → AGG)	0.148	0.045	0.048	0.226

Note: Bootstrapping with 5000 samples was conducted for indirect effects.

DISCUSSION

The present study aimed to explore the relationships among mobile phone addiction (MPA), emotional intelligence (EI), and aggression (AGG) in a sample of health-care students ($N = 200$). The findings provide important insights into the psychological consequences of excessive mobile phone use, highlighting both direct and indirect pathways through which MPA influences aggressive behavior via EI.

Mobile Phone Addiction and Emotional Intelligence

The results indicate a significant negative association between mobile phone addiction and emotional intelligence, suggesting that as mobile phone addiction increases, emotional intelligence tends to decrease. The regression analysis further confirmed that MPA significantly predicted EI, accounting for 40.6% of the variance. This finding aligns with the reasoning that excessive mobile phone use can impair communication skills, which are critical for developing and maintaining

emotional intelligence (Muppalla, Vuppalapati, Pulliahgaru, & Sreenivasulu, 2023).

Individuals who are heavily reliant on mobile phones often reduce face-to-face interactions, leading to fewer opportunities to practice and enhance their ability to understand and respond to others' emotions. They could find it difficult to successfully express their own feelings and to read nonverbal cues like body language and facial expressions. This lack of interpersonal engagement can weaken their self-awareness and social awareness, two key components of EI. Consequently, they may experience difficulty understanding their own motivations and emotional states, as well as empathizing with others. Such deficits in emotional intelligence can lead to misunderstandings, miscommunication, and strained interpersonal relationships (Alshakhsi, et al., 2022).

Mobile Phone Addiction and Aggression

The findings also reveal a significant positive correlation between MPA and AGG, with MPA accounting for 21.8% of the variance in AGG. This suggests that individuals with higher levels of mobile phone addiction are more

likely to exhibit aggressive behaviors. One reasonable explanation for this relationship is that excessive mobile phone use fosters feelings of frustration, isolation, or irritability, particularly when individuals are disconnected from their devices or encounter delays in digital communication. This frustration may manifest as verbal or physical aggression in real-life interactions (Khoo & Yang, 2021).

Furthermore, MPA may reduce individuals' ability to manage conflicts constructively, as their reliance on virtual interactions limits their exposure to real-world problem-solving scenarios. Over time, this may exacerbate aggressive tendencies, as individuals lack the emotional regulation skills necessary to cope with challenging or stressful situations.

Emotional Intelligence and Aggression

EI was found to be negatively correlated with AGG, with regression analysis showing that EI significantly predicted AGG, accounting for 25.9% of the variance. This finding underscores the protective role of emotional intelligence in mitigating aggression. Individuals with higher emotional intelligence are better equipped to understand and regulate their emotions, empathize with others, and resolve conflicts in a non-confrontational manner. Conversely, individuals with low EI are more likely to misinterpret others' intentions, react impulsively, or escalate conflicts, leading to increased aggressive behavior (Babatunde, Haruna, & Omotayo, 2023).

The Mediating Role of Emotional Intelligence

A key contribution of this study is the identification of EI as a partial mediator in the relationship between MPA and AGG. The mediation analysis revealed that MPA influences AGG both directly and indirectly through its impact on EI. This finding suggests that while mobile phone addiction may directly contribute to aggression, its effect is amplified by its detrimental impact on emotional intelligence.

As excessive mobile phone use reduces opportunities for meaningful interpersonal interactions, it hampers individuals' ability to develop and maintain EI. Lower EI, in turn, contributes to misunderstandings and conflicts, which are likely to escalate into aggression. For example, individuals with low EI may misinterpret benign behaviors as hostile or fail to express their emotions constructively, resulting in unnecessary confrontations or arguments.

Implications and Recommendations

The findings of this research have important implications for addressing the psychological consequences of mobile phone addiction. Interventions aimed at reducing MPA should emphasize the significance of maintaining a healthy balance between virtual and face-to-face interactions. Programs that promote effective communication skills, emotional regulation, and empathy may help mitigate the negative impact of MPA on emotional intelligence and aggression.

The findings highlight the importance of integrating emotional intelligence (EI) programs in health-care education to reduce aggression linked to mobile phone addiction. Curriculum-based EI training, workshops, screening, counselling, and peer mentorship can enhance emotional regulation, empathy, and professional competence, supporting students' well-being and future patient care responsibilities.

Additionally, educational campaigns could raise awareness about the potential harms of excessive mobile phone use, particularly its effect on interpersonal relationships and emotional well-being. Encouraging individuals to engage in activities that foster social connections, such as team-based exercises, community events, or mindfulness practices, may also help improve EI and reduce aggressive tendencies.

Limitations

Despite the study's contributions, this has certain limitations. The cross-sectional design limits the ability to establish causal relationships among mobile phone addiction, emotional intelligence, and aggression; therefore, longitudinal studies are needed to examine directionality and temporal effects. Additionally, reliance on self-report measures may introduce response biases. Future research should incorporate multi-method approaches, including behavioral assessments and objective digital usage data.

CONCLUSION

In conclusion, the findings of this research highlight the complex interplay between mobile phone addiction, emotional intelligence, and aggression. Mobile phone addiction negatively impacts emotional intelligence, which in turn increases the likelihood of aggression. These results underscore the need for targeted interventions to reduce mobile phone addiction and enhance emotional intelligence as a means

to foster healthier interpersonal relationships and minimize aggressive behavior. Future research could further explore these relationships in diverse populations and examine the long-term effects of reducing mobile phone use on emotional intelligence and aggression.

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