

DOES MOBILE PHONE ADDICTION INFLUENCE EMPATHY AND CREATIVE THINKING LIFE SKILLS IN COLLEGE STUDENTS?

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ABSTRACT

The objective of the present study was to examine the influence of mobile phone addiction on Empathy and creative thinking life skills among college students. For this purpose, a total of 830 third-year graduates were selected as the sample. Data were collected using the mobile phone addiction scale developed by Singh and Mann (2022), as well as sub-scales of life skills developed by Prawit Erawan (2010). The results of the MANOVA revealed that students with a low level of mobile phone addiction had a better level of empathy life skill than students with a high level of mobile phone addiction. Additionally, students with a low level of mobile phone addiction exhibited a better level of empathy life skill than students with an average level of mobile phone addiction. Furthermore, students with a high level of mobile phone addiction demonstrated a better level of creative thinking than students with an average level of mobile phone addiction.

Keywords: Empathy, Creative Thinking, Life Skills, Mobile Phone Addiction

Mobile phone addiction, also known as smartphone addiction or problematic mobile phone use, refers to an excessive and compulsive reliance on mobile phones, often leading to negative consequences in various aspects of an individual's life. It involves an uncontrollable urge to use the phone, excessive time spent on mobile devices, and a preoccupation with virtual activities to the detriment of real-life experiences. Theoretical it is assumed that this addiction May influence positive psychological traits such as empathy

Empathy is the ability to understand and share the feelings of another person. It involves the capacity to recognize and comprehend the emotions, thoughts, and perspectives of others, and to respond with sensitivity and compassion. Empathy goes beyond mere awareness of someone else's emotions; it implies a deeper connection that allows individuals to vicariously experience and emotionally resonate with the joys, sorrows, or challenges faced by others. This emotional resonance often leads to a desire to alleviate the suffering or contribute to the well-being of the person experiencing those

emotions. Empathy is considered a fundamental aspect of social intelligence and is crucial for building positive relationships, effective communication, and fostering a sense of understanding and connection within social interactions.

The relationship between mobile phone addiction and empathy is a complex and evolving area of study. On one hand, excessive use of mobile phones may lead to a reduction in face-to-face social interactions, potentially hindering the development and expression of empathy. Spending more time on virtual communication and social media platforms might limit.

Empathy, regarded as a pivotal component of emotional intelligence, holds significant importance in contrast to both Artificial Intelligence and cognitive intelligence. Numerous studies emphasize its role as a fundamental life skill essential for enhancing social and professional well-being. Recognizing this significance, the present study delves into the literature concerning empathy life skills in relation to mobile phone addiction.

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While prior research has explored the association between mobile phone addiction and empathy or interpersonal reactivity, a substantial portion of these studies originates from foreign contexts. Furthermore, investigations have spanned across diverse populations, including adolescent, college students, university students, and nursing students. However, a noteworthy gap in the literature exists regarding the specific impact of mobile phone addiction on empathy life skills within the Indian research landscape. To address this gap, the current study focuses on empathy as a dependent variable, aiming to shed light on this crucial but understudied aspect.

The second life skill under scrutiny in this research is creative thinking, also known as divergent thinking, acknowledged as a key element in the New Education Policy of 2020. This policy underscores the imperative to foster creative thinking among school and college students. Given this directive, the investigator conducted a thorough review of literature on both creative thinking and mobile phone addiction. Previous research has yielded diverse results, and a comprehensive analysis of the literature reveals that the development of creative thinking is intricately linked to how students utilize their mobile phones.

In summary, this research aims to bridge the existing gaps in understanding by investigating the influence of mobile phone addiction on empathy, life skills and creative thinking among college students. By focusing on an Indian context and considering these crucial life skills, the study seeks to contribute valuable insights for both academia and practical applications.

The review of related literature on the effect of mobile phone addiction on empathy reveals both direct and indirect connections with various aspects of smartphone use. Studies conducted by Bernd, Sindermann, Sariyska, Luo, Melchers, Becker, Cooper, and Montag (2018) highlight the correlation between Personal Distress, a component linked to the personality trait of Neuroticism, and Smartphone Use Disorder. The findings confirm a relationship between empathy, life satisfaction, and Internet Use Disorder, extending these associations to Smartphone Use Disorder.

Late adolescents, in particular, appear to be at a heightened risk of developing problematic behaviors related to smartphone use, as indicated by existing literature (Bae, 2017; Duke and Montag, 2017; Lee, Kim and Choi (2017)). These behaviors have been associated with adverse consequences for both everyday functioning and mental health.

Further insights into the relationship between mobile phone dependence and empathy are provided by Rovithis, Koukouli, Fouskis, Giannakaki, Giakoumaki, Linardakis, Moudatsou and Stavropoulou (2021). They report a significant correlation between dependence and the altruism empathy subscale, suggesting that higher dependence is associated with lower altruism. Interestingly, the levels of empathy do not appear to be significantly affected by mobile phone dependence, with empathy being more strongly influenced by factors such as age and professional status.

Chambliss, Short, Hopkins-DeSantis, Putnam, Martin, Millington and Hartl (2015) contribute to the understanding of the impact of excessive mobile phone use on interpersonal dynamics, indicating potential effects on mutuality, the quality of communication, and empathy.

Contrasting perspectives emerge from the literature regarding the relationship between smartphone use and creativity. Rodríguez, Lozano, Mingorance, and Pérez-Mármol (2020) suggest that smartphones, depending on how they are used, may even enhance creativity. Activities such as photography, facilitated by smartphones, are proposed as potential contributors to creative thinking (Yeh, Chang, Ting and Chen, 2020).

In summary, the existing literature underscores the multifaceted nature of the relationship between mobile phone addiction and empathy. It emphasizes the significance of considering various factors such as age, professional status, and specific usage patterns in understanding the nuanced effects of smartphone use on empathy and creative thinking among college students.

Objectives

- To compare empathy life skills on the basis of three levels of mobile phone addiction among college students.

- To compare creative thinking life skill on the basis of three levels of mobile phone addiction among college students

Sample

This study was centered on the population comprising all 3rd-year graduate students enrolled in colleges located in Jalandhar, Amritsar, and Gurdaspur, affiliated with Guru Nanak Dev University, Amritsar. In the initial phase, data were collected from a total of 866 students. However, upon tabulation, it was identified that the data for 36 students were incomplete. Consequently, these individuals were excluded from the analysis, leading to a final sample of 830 students. This cohort included 334 females and 496 males, representing the specified districts.

Measures

The Mobile Phone Addiction Scale, crafted by Singh and Mann in 2022, consists of 32 statements, each offering respondents 5 response categories. To affirm content validity, the study employed the Content Validity Ratio (CVR), which yielded a robust value of .83. Additionally, reliability was ascertained through Cronbach's alpha, with a commendable coefficient of .86.

For the assessment of empathy and creative thinking, the Life Skills Scale, developed by Prawit Erawan in 2010, was utilized. This scale encompasses 27 statements, each presenting respondents with 5 response categories. Extensively employed in research within the realms of education and psychology, the author ensured construct validity and reliability through a high Cronbach's alpha coefficient of .92.

Data Collection

The data collection process for this study entailed in-person visits conducted by the investigator to institutions within the selected sample pool. After the administration of tests, both booklets and response sheets were systematically collected. The subsequent scoring process strictly adhered to the guidelines outlined in the respective manual. The gathered data underwent thorough tabulation and analysis, meticulously aligning with the predefined objectives of the study.

Results

Comparison of Empathy and Creative Thinking Life Skills of College Students on the Basis of Mobile phone addiction

In order to find out the significance of differences in the Empathy and Creative Thinking Life Skills of College Students in terms of high, average and low levels of Mobile phone addiction, Means and SDs were computed which are presented in table 1.

Table 1
Mean and Standard Deviation of Empathy and Creative Thinking Life Skills of College Students at Different Levels of Mobile phone addiction

Dependent variable	Mobile phone addiction	Mean	Std. Deviation	N
Empathy	High	36.96	4.119	232
	Average	36.75	4.276	355
	Low	37.95	3.402	243
Creative Thinking	High	29.66	3.565	232
	Average	28.96	2.947	355
	Low	28.98	3.132	243

Table 2
Summary of MANOVA for Empathy and Creative Thinking Life Skills of College Students on the Basis of Mobile phone addiction

Source	Dependent Variable	Sum of Squares	df	Mean Square	F
Mobile phone addiction	Empathy	220.884	2	110.442	6.923**
	Creative Thinking	79.294	2	39.647	3.911*
Error	Empathy	13192.832	827	15.953	
	Creative Thinking	8383.714	827	10.138	
Total	Empathy	1159770.000	830		
	Creative Thinking	714170.000	830		

** $p < 0.01$, * $p < 0.05$, NS = Not Significant at 0.05 level

The *F*-value (Table 2) for mean difference in Empathy Life Skill of College Students with high, average and low level of Mobile phone addiction is 6.923 which is significant at 0.01 level. It means that there is a significant difference in the mean scores of Empathy Life Skill of College Students on the basis of their Mobile phone addiction. Further, post-hoc tests for each pair of Mobile phone addiction were computed (applied to compare the pairwise mean difference) which are given in table 3.

The *F*-value (Table 2) for mean difference in Creative Thinking of College Students with high, average and low level of Mobile phone addiction is 6.923 which is significant at 0.01 level. It means that there is a significant difference in the mean scores of Creative Thinking of College Students on the basis of their Mobile phone addiction. Further, post-hoc tests for each pair of Mobile phone addiction were computed (applied to compare the pairwise mean difference) which are given in table 3.

Table 3
Post-hoc Tests for Comparison of Empathy and Creative Thinking Life Skills of College Students on the Basis of Three Levels of Mobile phone addiction

Dependent Variable	(I) Mobile phone Addiction	(J) Mobile phone Addiction	Mean Difference (I-J)	Std. Error	Sig.
Empathy	High	Average	.21	.337	.829
	High	Low	-.99*	.367	.026
	Low	Average	1.20*	.333	.002
Creative Thinking	High	Average	.69*	.269	.036
	High	Low	.68	.292	.067
	Low	Average	.01	.265	.998

***pd*”0.01, **pd*”0.05, NS= Not Significant at 0.05 level.

Note: The Mobile phone addiction were categorized into three levels i.e. High, Average and Low on the basis of ± 1 QD.

Table 3 shows that the comparison of Empathy Life Skill of Students on the basis of high and average levels of Mobile phone addiction is not significant at 0.05 level. It means that the mean scores of Students with average level Mobile phone addiction and high level Mobile phone addiction do not differ significantly. On the basis of this, the null hypothesis that there is no significant difference in Empathy Life Skill of College Students on the basis of high and average level Mobile phone addiction is accepted. It may be concluded that there was no significant difference in the Empathy Life Skill of Students with high and average level Mobile phone addiction.

Table 3 shows that the comparison of Empathy Life Skill of College Students on the basis of high and low level Mobile phone addiction is significant at 0.05 level. It means that the mean scores of Empathy Life Skill of College Students with low level Mobile phone addiction and high level Mobile phone addiction differ significantly. On the basis of this,

the null hypothesis that there is no significant difference in Empathy Life Skill of College Students on the basis of high and low level Mobile phone addiction is rejected. Further, the Mean Difference in the table indicates (See Figure 1) that the score of Students who use Mobile phone addiction at low level is higher than the Students who use Mobile phone addiction at high level. It may be concluded that the Students with low level Mobile phone addiction had better level of Empathy Life Skill than Students with high level Mobile phone addiction.

Table 3 shows that the comparison of Empathy Life Skill of Students on the basis of average and low levels of Mobile phone addiction is significant at 0.05 level. It means that the mean scores of Students with low level Mobile phone addiction and average level Mobile phone addiction differ significantly. On the basis of this, the null hypothesis that there is no significant difference in Empathy Life Skill of College Students on the basis of average and low level Mobile phone addiction is rejected.

Further, the Mean Difference in the table indicates (See Figure 1) that the score of Students who use Mobile phone addiction at low level is higher than the Students who use Mobile phone addiction at average level. It may be concluded that the Students with low level Mobile phone addiction had better level of Empathy Life Skill than Students with average level Mobile phone addiction.

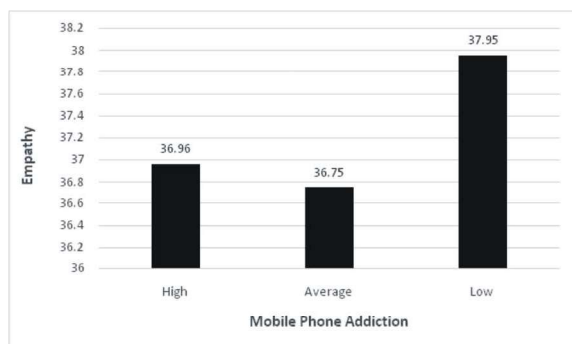


Figure 1: Comparison of Mean Scores of Empathy Life Skill of College Students on the Basis of Mobile Phone Addiction

Table 3 shows that the comparison of Creative Thinking of College Students on the basis of high and average level Mobile phone addiction is significant at 0.05 level. It means that the mean scores of Creative Thinking of College Students with average level Mobile phone addiction and high level Mobile phone addiction differ significantly. On the basis of this, the null hypothesis that there is no significant difference in Creative Thinking of College Students on the basis of high and average level Mobile phone addiction is rejected. Further, the Mean Difference in the table indicates (See Figure 1) that the score of Students who use Mobile phone addiction at high level is higher than the Students who use Mobile phone addiction at average level. It may be concluded that the Students with high level Mobile phone addiction had better level of Creative Thinking than Students with average level Mobile phone addiction.

Table 3 shows that the comparison of Creative Thinking of Students on the basis of high and low levels of Mobile phone addiction is not significant at 0.05 level. It means that the mean scores of Students with low level Mobile phone addiction and high level Mobile phone addiction do not differ significantly.

On the basis of this, the null hypothesis that there is no significant difference in Creative Thinking of College Students on the basis of high and low level Mobile phone addiction is accepted. It may be concluded that there was no significant difference in the Creative Thinking of Students with high and average level Mobile phone addiction.

Table 3 shows that the comparison of Creative Thinking of Students on the basis of average and low levels of Mobile phone addiction is not significant at 0.05 level. It means that the mean scores of Students with low level Mobile phone addiction and average level Mobile phone addiction do not differ significantly. On the basis of this, the null hypothesis that there is no significant difference in Creative Thinking of College Students on the basis of average and low level Mobile phone addiction is accepted. It may be concluded that there was no significant difference in the Creative Thinking of Students with low and average level Mobile phone addiction.

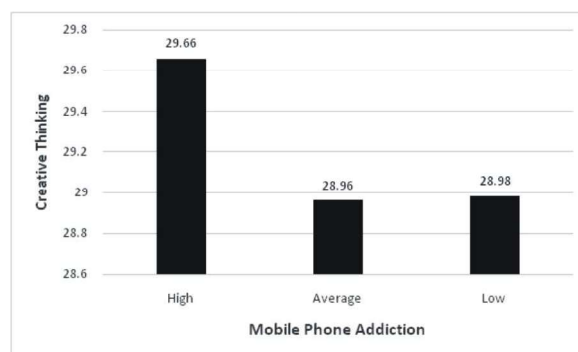


Figure 2: Comparison of Mean Scores of Creative Thinking of College Students on the Basis of Mobile Phone Addiction

Findings

1. There was no significant difference in the Empathy Life Skill of Students with high and average level Mobile phone addiction.
2. Students with low level Mobile phone addiction had better level of Empathy Life Skill than Students with high level Mobile phone addiction.
3. Students with low level Mobile phone addiction had better level of Empathy Life Skill than Students with average level Mobile phone addiction.
4. Students with high level Mobile phone addiction

- had better level of Creative Thinking than Students with average level Mobile phone addiction.
5. There was no significant difference in the Creative Thinking of Students with high and average level Mobile phone addiction.
 6. There was no significant difference in the Creative Thinking of Students with low and average level Mobile phone addiction.

Discussion

In this ongoing inquiry, pivotal findings illuminate a substantial correlation between levels of mobile phone addiction and proficiency in empathy life skills among students. Specifically, those with lower levels of mobile phone addiction exhibit a superior grasp of empathy life skills in comparison to their counterparts with high or average addiction levels, highlighting the deleterious impact of mobile phone addiction on empathetic capacities. The study meticulously probes into the intricacies of this association, elucidating that the detrimental effects stem from the erosion of genuine face-to-face interactions—a consequence of the prevalent digital culture marked by instant gratification and social comparison. Identifying excessive mobile phone use as a primary contributor, the study underscores its role in diminishing the depth of emotional connections, impeding active listening, and fostering a culture of distraction and multitasking during interpersonal exchanges. Moreover, the research underscores that the prevalence of virtual communication, coupled with the avoidance of real-life situations, contributes to a diminished physical presence, impeding the development of vital non-verbal communication skills essential for empathetic understanding. Furthermore, the constant exposure to carefully curated yet often unrealistic portrayals on social media emerges as a catalyst for empathy fatigue, desensitizing individuals to the authentic emotions of others. The literature review seamlessly extends this discourse by unveiling both direct and indirect links between mobile phone addiction and empathy, drawing parallels with related concepts such as internet addiction, internet usage disorder, and smartphone disorder. Building upon this

foundation, Bernd, Sindermann, Sariyska, Luo, Melchers, Becker, Cooper, and Montag (2018) enrich the understanding by establishing a correlation between Personal Distress and Smartphone Use Disorder, emphasizing the impact of personality traits, particularly Neuroticism, on stress and negative emotionality in social situations. The study not only validates earlier findings connecting empathy, life satisfaction, and Internet Use Disorder but also broadens the scope to encompass Smartphone Use Disorder.

Existing literature further emphasizes that adolescents, in particular, are at an elevated risk for developing problematic and addictive behaviors related to smartphone use, with documented negative consequences for daily functioning and mental health (Bae, 2017; Duke and Montag, 2017; Lee, Kim and Choi; 2017). Additionally, a negative link between Internet Use Disorder and empathy has been established in prior studies (Melchers, Chen, Zhang and Montag, 2015; Jing, Gao and Niu, 2017).

Rovithis, Koukouli, Fouskis, Giannakaki, Giakoumaki, Linardakis, Moudatsou and Stavropoulou (2021) contribute to this discourse by reporting a significant correlation between empathy and dependence, particularly between dependence and the altruism empathy subscale. Higher dependence is found to be correlated with lower altruism. Interestingly, the participants' levels of empathy do not appear to be significantly affected by mobile phone dependence, with empathy being strongly determined by increased age and professional status. In a similar vein, Chambliss, Short, Hopkins-DeSantis, Putnam, Martin, Millington and Hartl (2015) report that excessive mobile phone use may adversely impact mutuality, the quality of interpersonal communication, and overall empathy. These interconnected findings collectively underscore the nuanced relationship between mobile phone addiction and empathy, shedding light on the multifaceted nature of this intricate association.

A significant discovery in the current study unveils that students with a high level of mobile phone addiction exhibit a better proficiency in creative thinking than their counterparts with an average level of addiction. The proposition that mobile phone

addiction positively influences creative ability or divergent thinking finds support in a multitude of logical causes. Firstly, the continuous exposure to diverse content, information, and stimuli through mobile devices can enrich an individual's knowledge base, creating a fertile ground for expansive and innovative ideas. Secondly, mobile phones, functioning as versatile tools, provide access to a wide array of creative applications, facilitating engagement in activities that nurture imagination and inventive thinking. The instantaneous and uninterrupted connectivity offered by mobile phones may accelerate the pace of idea generation, allowing individuals to capture and refine creative thoughts in real-time. Moreover, the social and collaborative features inherent in mobile technology enable the seamless sharing and exchange of ideas, cultivating a collective creative environment. While mobile phone addiction exhibits potential positive effects on creative thinking, it is imperative to strike a balance between usage and mindful creative engagement to mitigate potential negative consequences associated with excessive device dependency.

The nuanced relationship between smartphones and creativity is further underscored in existing research. Rodriguez, Lozano, Mingorance, and Perez-Marmol (2020) suggest that, depending on their usage, smartphones may even enhance creativity by promoting activities such as photography (Yeh, Chang, Ting and Chen, 2020). However, a study by Upshaw, Davis, and Zabelina (2021) reports a small negative correlation ($r = .18$) between self-reported smartphone addiction and divergent thinking, specifically in generating diverse uses for common objects. Intriguingly, this study found no correlation between smartphone addiction and real-world creative achievement. Additional studies, including those by Linares and Sellier (2021) and Rodriguez, Lozano, Mingorance and Perez-Marmol (2020), reveal no significant relationships between smartphone use and various divergent and convergent thinking tasks, such as designing toys for children, generating novel responses to picture stimuli, and completing relevant word associations. Proposing future avenues of investigation, Sohn, Krasnoff, Rees, Kalk and Carter (2021) and Kaye,

Orben, Ellis, Hunter and Houghton (2020) advocate exploring not just screen time and problematic smartphone use but also delving into which apps, used in specific ways, promote creativity for distinct user profiles. This collective body of research contributes to a nuanced understanding of the intricate interplay between mobile phone addiction and creative thinking.

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