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Research paper

The Mediating Role of Metacognition in the Relationship between Dark Triad Personality Traits and Smartphone Addiction among Tehran Universities Students

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Abstract

The present study aimed to investigate the influence of metacognitive beliefs on the relationship between the dark triad of personality and smartphone addiction. The research method was descriptive-correlational using structural equation modeling. The statistical population consisted of all university's students in Tehran in 2023. A sample of 457 students was selected using the voluntarily sampling method, and responded to the Dirty Dozen Scale, the Metacognitive Beliefs Questionnaire, and the Smartphone Addiction Scale. Pearson's correlation method and structural equation modeling were used for the statistical data analysis. The results showed that the dark triad of personality had a positive and significant relationship with smartphone addiction, with metacognition as mediator. Accordingly, metacognitive beliefs played fundamental roles in the tendency to become addicted to smartphones. Therefore, it is suggested that designing interventions based on metacognition should be considered in the treatment of smartphone addiction.

Keywords: Dark triad personality traits, metacognition, smartphone addiction, university student

Introduction

Smartphone-based technology is advancing at an unprecedented rate. Compulsive smartphone use is considered a form of human addiction to technology, characterized by a behavioral pattern similar to Internet or drug addiction (Ting and Chen, 2020). Based on the theoretical model of interaction of Person-Affect-Cognition-Execution (I-PACE) in the field of behavioral addictions, different personality traits can cause a variety of disorders related to smartphones and other addictive behaviors. A comprehensive theoretical framework is provided by this model to systematize personality traits and emotional and cognitive mechanisms that contribute to addictive behaviors (Brand, 2019)**.** The dark triad of personality consists of three undesirable and antisocial personality traits that research indicates are positively associated with problematic use of smartphones and online activities (Servidio et al., 2021). Metacognitive beliefs are one of the underlying mechanisms that can play a role in explaining the relationship between the dark triad of personality and smartphone addiction. Metacognitive beliefs refer to people's beliefs about their cognition, internal states, and coping strategies (Wells, 2002).

Research shows that metacognitive beliefs are related to behavioral addictions and problematic smartphone use. Therefore, based on the mentioned cases, the present study aimed to explore the general hypothesis that metacognition acts as a mediator in the association between the dark triad of personality and smartphone addiction.

Method

The research method was descriptive-correlational using structural equation modeling. The statistical population consisted of all university's students in Tehran city during 2023. A sample of 457 students was selected using the voluntarily sampling method. An online invitation was sent to the participants to complete the research questionnaires. Participants provided informed consent before completing the questionnaires. The criteria for entering the research included age between 18 and 35 years and studying at the universities of Tehran, and the exclusion criteria included the incompleteness of the questionnaires. Descriptive analysis of collected data was performed using SPSS-27 software, while structural equation analysis was conducted using Amos-26 software.

Tools

Smartphone Addiction Scale (SAS): This 33-item scale with six subscales was developed by Kwon et al. (2013) based on a 6-point Likert degree. Its internal consistency with Cronbach's alpha was reported to be 0.96. In this study, Cronbach's alpha was 0.94 for the total scale scores, ranging from 0.67 to 0.87 for the subscales.

Metacognitive Beliefs Questionnaire (MCQ-30): Wells and Hatton (2004) developed this 30-item questionnaire, which has five subscales that respond on the 4-point Likert scale. Cronbach's alpha coefficients between 0.72 and 0.93 showed the reliability of this scale. In the present study, alpha coefficients between 0.75 and 0.85 were obtained.

Dark Triad Dirty Dozen (DTDD): The Dark Triad Dirty Dozen was designed by Johnson and Webster in 2010 with 12 questions and three components of narcissism, Machiavellianism, and psychopathy, and is scored based on a 5-point Likert scale. Cronbach's alpha coefficients for the total scale and components were obtained between 0.76 and 0.87. In this study, Cronbach's alpha was 0.77.

Results

Before proceeding with the structural equations, the correlation between variables was assessed using Pearson's coefficient, and the findings are recorded in Table 1 of the correlation matrix for the research variables. The relationships between the dark triad of personality, smartphone addiction, and all metacognitive components were statistically significant at the 0.01 level, as illustrated in Table 1.

Table 1: Correlation coefficients of research variables

Variables	1	2	3	4	5	6	7
1. Smartphone addiction	-						
2. Cognitive confidence	38	-					
3. Positive beliefs	26	21	-				
4. Self-consciousness	12	14	35	-			
5. Uncontrollability and danger	40	42	29	39	-		
6. Need to control thoughts	33	41	30	39	66	-	
7. Dark triad of personality	35	15	24	17	29	24	-

All correlations were significant at the 0.01 level; All numbers are multiplied by 100.

Using the structural equation modeling method, we examined direct and indirect effects, and the results are shown in Table 2.

As can be seen in Table 2, dark personality traits positively and significantly predicted smartphone addiction (β=0.35). Metacognitive beliefs also positively and significantly predicted smartphone addiction (β=0.38). Additionally, there was a positive and significant prediction of metacognitive beliefs by dark personality traits (β=0.35).

Table 2: The structural direct and indirect effects

Effects	Independent variable	Mediator	Dependent variable	Non Standard coefficients	Standard coefficients	P
Direct effect	**DT**		**SA**	0.54	0.35	0.001
	MB		**SA**	0.62	0.38	0.001
	DT		**MB**	0.54	0.35	0.001
Indirect effect	**DT** ⟹	**MB** ⟹	**SA**	0.33	0.13	0.001

DT= Dark triad of personality; **MB**= Metacognitive beliefs; **SA**= Smartphone Addiction

By utilizing the bootstrap method with 2500 sampling iterations, it was determined that the indirect effect of the dark triad of personality on smartphone addiction, mediated by metacognitive beliefs, was statistically significant ($\beta = 0.13$, $p<0.05$) as shown in Table 2.

Discussion and Conclusion

People who possess dark personality traits may find it challenging to manage their emotions, increasing their susceptibility to excessive smartphone usage. The presence of metacognitive beliefs appears to increase the risk of smartphone addiction in these individuals, according to the research findings**.** Dark personality traits are associated with negative emotions like depression and anxiety, and these negative psychological states are also linked to metacognitive beliefs and excessive smartphone usage. The interaction of personality traits and metacognitive beliefs has been observed in various fields, such as self-regulation and cognitive control, rumination experience, and worry. The current research findings emphasize the significance of considering metacognitive beliefs in understanding smartphone addiction. Designing interventions based on metacognition should be considered in the treatment of smartphone

addiction in people with dark personality traits. Due to the cross-sectional design and questionnaire-based data collection, establishing causal relationships between variables is challenging. Since the clinical profile of the participants in terms of psychological disorders was not examined, future studies can explore the relationships among research variables using a longitudinal design or conducting qualitative interviews considering the clinical profile of the participants.

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Conflicts of interest

None to declare.