Nomophobia: Effects of Smartphone Dependence and Separation on Stress, Anxiety, Memory and Cognition in Developing Adolescent Brain

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In this mobile age, smartphones are considered the latest evolution of mobile technologies. Although the mobility of smartphones helps people satisfy basic needs, it also causes problems associated with phone overuse. Technology overuse and its effects is an underappreciated problem among U.S. adolescents. Research has revealed that the developing adolescent brain is more vulnerable to external stressors. As “Nomophobia”, a modern age psychological fear of being unable to communicate through mobile phones, is considered a stressor, the aim of this study was to investigate the effects of smartphones dependence and separation on stress, anxiety, memory and cognition in adolescents. Adolescents (N=54, 14-18 years) were tested in two different laboratory settings; Smartphone Possession (SPP) and Smartphone Separation (SPS), using a crossover design. Dependence was assessed by Smartphone Use Questionnaire and Nomophobia Questionnaire (NMP-Q). A series of behavioral, physical and cognitive tests, assessing anxiety (STAI), stress (BP/Heart Rate), attention (Stroop), impulsivity (Driving Game) and working memory (SynWin), were used. Paired t test was used to compare and analyze data in two settings (SPP and SPS) using GraphPad Prism. Pearson correlation and path analysis were used to test the relations among the variables. The results clearly indicate that adolescents are vulnerable to phone-separation related stress and anxiety which subsequently affect aspects of cognition, attention, impulsivity and working memory, supporting the hypotheses ($p<0.05$). The findings provide several advancements in this area of research toward a better understanding of how technology separation affects users and help in raising adolescent awareness to reduce the risk of neurobehavioral deficits.

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