



Media Release

Does Frequent Smartphone Use Lead to Daily Cognitive Failures?

Study by lead author Assistant Professor Andree Hartanto from SMU and his team examined the notion whether frequent use of smartphones may lead to daily cognitive failures

Singapore, 10 March 2023 (Friday) – A new study by the Singapore Management University finds that more frequent smartphone checking behaviour is associated with greater incidences of daily cognitive failures. However, the findings also indicate that some forms of screen time are actually associated with reduced cognitive failures.

Titled “*Smartphone use and daily cognitive failures: A critical examination using a daily diary approach with objective smartphone measures*”, it was led by Assistant Professor of Psychology Andree Hartanto (Singapore Management University) and published in the [British Journal of Psychology](#). The study team comprised co-authors Kristine Y.X. Lee, Chua Yi Jing, Frosch Y.X. Quek and Nadyanna M. Majeed.

Rationale/motivation for this study

While smartphones have brought many benefits and conveniences to users, there is continuing debate regarding their potential negative consequences on everyday cognition if used too frequently. Research has suggested that frequent smartphone use can lead to cognitive overload and decrease attentional control, which may contribute to cognitive failures such as forgetfulness, distraction, and mind wandering. Moreover, the use of smartphones can be interruptive, which may interfere with the one’s ability to focus and complete tasks.

A few cross-sectional studies have found positive associations between smartphone use and cognitive failures. However, several research gaps remain, such as the use of cross-sectional designs, confounds related to stable individual differences, the lack of validity in self-report measures of smartphone use, memory biases in retrospective self-reports, and the lack of differentiation between smartphone checking and smartphone screen time. To simultaneously address the aforementioned shortcomings, the team was thus motivated to conduct this study.

Methodology (N = 181)

A total of 181 youths based in Singapore were surveyed. The participants first completed a baseline survey that collected data such as age, sex, monthly household income, and socioeconomic status. They then completed a daily diary study for seven days. Screen time and smartphone checking for seven days were objectively tracked using the inbuilt iOS Screen Time Application Programming Interface.

The incidence of daily cognitive failures was assessed by [the 13-item Cognitive Failures in Everyday Life Scale](#), where participants indicated whether they had experienced cognitive failures such as failing to remember the right word to use, leaving tasks unfinished due to distraction, or unintentionally allowing their mind to wander.

Participants also had to report each day whether they had experienced any of seven types of stressors – discrimination, work/education stressors, network stressors, arguments, avoided arguments, stressors at home, and others, as well as complete daily assessments of emotional states.

Key Findings and practical impact/implications for Society

The study revealed that smartphone checking, but not total smartphone screen time, predicted a greater occurrence of daily cognitive failures at the within-person level.

The team found that on days where individuals engaged in more smartphone checking, they were more likely to experience cognitive failures, as compared with days when they engaged in less smartphone checking. According to Asst Prof Andree Hartanto, “This suggests that excessive smartphone checking is a distracting behaviour that increases cognitive load and thus cognitive failures. This is something that we should be mindful especially when engaging in activities that require full attention such as driving and studying. Given the risk of cognitive failure, it important to turn off notification or put the phone on silent during these activities. Taking regular breaks from smartphone usage, avoiding multitasking, and setting intentions and goals for smartphone usage have been shown to be useful too.”

Surprisingly, the team also found that the incidence of daily cognitive failures was negatively related to smartphone screen time for social-related applications and tools-related applications. This suggests that some types of smartphone use may temporarily benefit one's cognitive functioning. “For example, tools-related applications, such as calculator and navigation maps, may help in helping individuals momentarily offload cognitive resources, thereby freeing up mental capacity to work on the task at hand,” adds Asst Prof Andree Hartanto. “Nevertheless, moderation is still the key. Moderate use of smartphone and other technological devices has been shown to be safe and normal. That is why it is still important for parents with children who use their phone excessively to set boundaries and schedules for their children’s smartphone usage.”

This finding demonstrates the importance of studying the specific functions of smartphone use and their differential cognitive consequences, as well as highlights the complex relations between smartphone use and cognition.

“Ultimately a smartphone is a tool, and just like any other tool, it requires us to be mindful and smart in its usage. This way, we can optimise its benefits and minimise its potential drawback” says Asst Prof Andree Hartanto.

About Singapore Management University (SMU)

A premier university in Asia, the Singapore Management University (SMU) is internationally recognised for its world-class research and distinguished teaching. Established in 2000, SMU's mission is to generate leading-edge research with global impact and to produce broad-based, creative, and entrepreneurial leaders for the knowledge-based economy. SMU's education is known for its highly interactive, collaborative, and project-based approach to learning.

Home to over 12,000 students across undergraduate, postgraduate professional and postgraduate research programmes, SMU comprises eight schools: School of Accountancy, Lee Kong Chian School of Business, School of Economics, School of Computing and Information Systems, Yong Pung How School of Law, School of Social Sciences, College of Integrative Studies and College of Graduate Research Studies. SMU offers a wide range of bachelors', masters', and PhD degree programmes in the disciplinary areas associated with its schools, as well as in multidisciplinary combinations of these areas.

SMU emphasises rigorous, high-impact, multi- and interdisciplinary research that addresses Asian issues of global relevance. SMU faculty members collaborate with leading international researchers and universities around the world, as well as with partners in the business community and public sector. SMU's city campus is a modern facility located in the heart of downtown Singapore, fostering strategic linkages with business, government, and the wider community. www.smu.edu.sg

For media queries, please contact:

Corinne Kang (Ms)

Assistant Director (Corporate Communications)

Singapore Management University

DID: (65) 6808 5238

Email: corinne kang@smu.edu.sg