

Dependency on Mobile Phone Devices and its Relations to Sleep Deprivation and Depressive Symptoms an Exploratory Study

Johnston Wong^{1*}, Cindy Lin², Kenny Lan³ and Jay Zhang⁴

¹Professor in Applied Psychology, BNU-HKBU United International College, Zhuhai, China

²Teaching Assistant, Department of Social Work, Wuyi University, Jiangmen, China

³Assistant Director, Student Affairs Office, BNU-HKBU United International College, Zhuhai, China

⁴Graduate Student, BNU-HKBU United International College, Zhuhai, China

***Corresponding Author:** Johnston Wong, Professor in Applied Psychology, BNU-HKBU United International College, Zhuhai, China.

Received: November 04, 2023; **Published:** December 08, 2023

Abstract

Using electronic products among college students, its frequency and time spent particularly during bedtime, has a serious impact on their sleep quality [1]. Sleep is an important basic physiological requirement of human beings, occupying one third of the length of human life. It is an active process of restoring human spirit and relieving fatigue. Moreover, it is also a basic index of evaluating human health [2]. Decline of sleep quality may eventually leads to psychological stress, poor concentration and affect academic performances. This study explored phone overuse, measured by the mobile phone dependence inventory (MPDI), and its effects particularly sleep quality employing the Pittsburgh sleep quality index (PSQI), among UIC students. Phone hereby includes all kind of electronic visual devices. Results show that phone overuse is only mildly related to sleep deprivation (Pearson $r = 0.121^*$), also to depression (Spearman's $r = 0.134^*$), psychotic personality (Pearson $r = 0.180^{**}$) and neurotic personality (Pearson $r = 0.173^{**}$). Results show that quite different from the literature that strong relations with poor physical health, sleep deprivation in this instance, and mental health, depression as measured, are not existing. There are significant but mild relations. Perhaps the functions of mobile devices are changing rapidly moving away from leisure to work. It is also used in teaching and learning. Positive elements of phone use may counteract its negative impact as web based social media may also be used to connect people and promote health.

Keywords: Mobile Phone; Sleep Deprivation; Symptoms; Exploratory Study

Introduction and Literature Review

Use of electronic devices and sleep deprivation

According to the study by Chu, Han, Ai [1], the frequency and duration of electronic products used, in college students' bedtime activities have a serious impact on their sleep quality. Using cell phones too frequently before sleeping may make people difficult to fall asleep, awoken frequently all night, or wake up too early. Furthermore, sleep deprivation has high correlation with the duration of cell phone usage. Sleep deprivation rate actually exceeded 30% among those continued to use the mobile phone after the lights were off at night, for more than 60 minutes.

Why does use of e-devices affect sleep? Melatonin, a hormone produced by the pineal gland at night, is involved in the regulation of the sleep/wake cycle. Since melatonin will be suppressed by light, expose to the blue Light exposure from various sources, including computers,

Citation: Johnston Wong, *et al.* "Dependency on Mobile Phone Devices and its Relations to Sleep Deprivation and Depressive Symptoms an Exploratory Study". *EC Psychology and Psychiatry* 12.11 (2023): 01-04.

cell phones, iPad and so on around bedtime, may also impact sleep [3]. In other words, the secretion of melatonin has an obvious circadian rhythm, secretion was inhibited during daytime and the secretion of melatonin is very active at night. Moreover, melatonin can improve sleep quality, shorten sleep time and time to fall asleep [4].

However, other researchers pointed out that the use of mobile phones is only mildly related to the quality of sleep, not the length of sleep [5]. Of course, other factors such as learning pressure, dormitory environment and stressful events also affect sleep quality, therefore overuse of phone should not be considered in isolation. Anyway it is worthwhile to find out whether dependency on mobile phone use has a serious impact on sleep quality among college students.

Use of phone, sleep deprivation and academic performance

Sleep deprivation will cause significant changes in mood, alertness and working ability [6]. Sleep deprivation will cause some negative consequences, such as attention-deficit, lack of concentration, poor memory, and people will feel more and more depressed, moody and anxiety. In other words, overuse of phone which leads to sleep deprivation will consequently leads to poor academic performances and high academic pressure [7].

Sleep deprivation may not be a direct cause of high academic pressure. A study by Huan M. X. [8], suggested that learning pressure of college students mainly comes from the ambient students who are better than themselves, have high expectations of themselves, the uncertainty of postgraduate exam or guarantee, parents' expectations and the passing rate of the exam. Among them, the high expectations of themselves and the uncertainty of postgraduate exam/guarantee are the two most prominent ones. Sleep deprivation unfortunately will not help to release academic pressure but indirectly make it worse.

Use of phone and social pressure

Research also showed that extravert use cell phones more frequently than introverted peers, especially college students, since many college students may sacrifice their academic status, emotional health, physical health and other aspects of life to make sure they won't miss their social life.

Methodology

This exploratory study employed convenient sampling and collect data by using an online questionnaire. Altogether 359 UIC students responded to the survey in February 2019. Four scales were included in the questionnaire including:

- Pittsburgh sleep quality index (PSQI),
- Mobile phone dependence inventory (MPDI),
- Eysenck personality questionnaire (EPQ), and
- Beck depression inventory (BDI).

Results

Mobile phone dependency

Scores with 30 points or higher more were classified as dependent on mobile phone. There were 160 students scored 30 points or higher, representing 44.6% of respondents.

Sleep deprivation

Scoring 8 points or higher in PSQI is considered having sleeping quality problems. In the UIC sample there were 49.7% of students fell into this category. It is certainly becoming a healthcare concern. The mean score of PSQI for UIC students was 7.6546 (SD= 3.83208). It can be compared to another research on College students in HeFei, PSQI: 5.613 ± 2.554 [1].

Depression

It is necessary to point out that depression as measured by BDI showed a bi-modal distribution. Close to half (47.6%) or 171 students scored 21 to 60 in BDI. Scoring above 20 is considered to have depressive symptoms according to the Beck’s scale.

Personality traits

Psychotic traits is skewed towards the high side (Mean = 19.4624, SD = 1.86653 and variance = 3.484) while neurotic towards the low side (Mean = 17.5571, SD = 2.49725 and variance = 6.236). The relationships of various factors in relation to phone overuse are described in the following table 1.

	Sleep Deprivation	Depression	Psychoticism	Neuroticism	Extraversion
Overuse of Mobile Phone Devices	Pearson r = 0.121*	Spearman’s r = 0.134*	Pearson r = 0.180**	Pearson r = 0.173**	Spearman’s r = 0.086

Table 1: Phone use and sleep deprivation, depression and personality traits.

Furthermore, to find out whether sleep deprivation has effected towards depression and personality traits, including psychoticism, neuroticism and extraversion, the following statistics are presented in the next table 2.

	Depression	Psychoticism	Neuroticism	Extraversion
Sleep Deprivation	Spearman’s r = 0.548**	Spearman’s r = 0.364**	Spearman’s r = 0.251**	Spearman’s r = -0.052*

Table 2: Sleep deprivation and phone use, depression and personality traits.

Drawing from the above results it showed that sleep deprivation indeed has a moderate relation to depression (Spearman’s r = 0.548**) and psychoticism (Spearman’s r = 0.364**).

Analysis

Data shows that sleep deprivation is related to depression, psychoticism and neuroticism, in that order of strength. However, dependency on mobile phone use is only mildly related to sleep deprivation (r = 0.124*). Actually, similar mild relationship was recorded in an US study [5] (r = 0.01, ns). Therefore, we can confirm that there is no ground to claim that over use of mobile phone can cause severe health problems, sleep deprivation in this regards, and mental health, referring to depression, among students. Extravert personality does not lead to over use of mobile phone at all.

Conclusion

Findings of this result in a way lessen our negative evaluations of mobile phone use which is very often called phone addiction. It is difficult to explain why the findings are inconsistent with previous literature. One reason may be the functions of mobile devices have

transformed recently, moving beyond recreational functions to work and social relationship functions. Therefore, the negative effects of overuse in mobile phone facilities have been mitigated. Another reason is perhaps college students are now becoming more health conscious as they spend more time in jogging and other form of exercises. Mobile phones devices today's even have health promotion functions as they monitor your walking and sleeping habits. Nevertheless, these explanations remain speculations awaiting for further research to prove.

Bibliography

1. Chu JP, *et al.* "Survey of sleeping condition and relationship between activities before sleep and sleeping quality of college students in Hefei City". *Chinese Journal of School Doctor* 32.8 (2018): 597-600.
2. Bixler E. "Sleep and society: an epidemiological perspective". *Journal of Sleep Medicine* 10.1 (2009): S3-S6.
3. Garfinkel N, *et al.* "Improvement of sleep quality by controlled- release melatonin in Benzodiazepine-treated elderly insomniacs". *Archives of Gerontology and Geriatrics* 24.2 (1997): 223-231.
4. Crowley SJ, *et al.* "Sleep, circadian rhythms, and delayed phase in adolescence". *Journal of Sleep Medicine* 8.6 (2007): 602-612.
5. Abbey GW, *et al.* "Mobile phone use and sleep quality and length in college students". *International Journal of Humanities and Social Science* 1.18 (2014): 51-58.
6. Liu YF, *et al.* "Research progress on sleep deprivation". *World Journal of Sleep Medicine* 5.3 (2018): 291-297.
7. Franklin CB, *et al.* "Relationship of sleep hygiene awareness, sleep hygiene practices, and sleep quality in university students". *Behavioral Medicine* 28.1 (2002): 33-38.
8. Huan MX. "Investigation and analysis of college students' learning stress and sleep quality". *Medical Information* 31.15 (2018).

Volume 12 Issue 11 December 2023

©All rights reserved by Johnston Wong, *et al.*