

Smartphone Use and Loneliness Among Female University Students: The Impact of Having or Not Having a Boyfriend

Masahiro Toda

 <https://orcid.org/0009-0009-8254-9753>

Notre Dame Seishin University, Japan

Arisa Takagi

 <https://orcid.org/0009-0007-7951-3333>

Notre Dame Seishin University, Japan

ABSTRACT

Administering a set of self-reporting questionnaires to 169 people who identify as female university students, this study investigated associations between smartphone-dependence scores and scores for loneliness and trait anxiety. Loneliness and trait-anxiety scores correlated with scores for smartphone dependence only for respondents who did not have a boyfriend: No similar association was apparent for those who had a boyfriend. These findings suggest that having or not having a boyfriend is a factor both in smartphone dependence and in loneliness and trait anxiety.

KEYWORDS

Female University Students, Loneliness, Romantic Relationship, Smartphone Dependence, Trait Anxiety

INTRODUCTION

In many countries, smartphones have rapidly come into widespread use. In Japan, the uptake has been particularly prominent among people in their twenties (Ministry of Internal Affairs and Communications, 2019). The rapid dissemination of smartphones has given rise to a number of social issues, including objectionable use in public places and excessive use or even dependence. Viewing problematic smartphone use as a type of technostress, the authors developed a new scale for gauging the smartphone dependence of university students, the Wakayama Smartphone-Dependence Scale (WSDS), and confirmed its reliability and validity (Toda et al., 2015b).

Previous studies on university students suggest that smartphone dependence may be associated with health problems such as lower sleep quality (Alzhrani et al., 2023; Demirci et al., 2015; Ibrahim et al., 2018; Kao, 2023), higher perceived stress (Alzhrani et al., 2023; Verma et al., 2023), and depression (Demirci et al., 2015; Desouky & Abu-Zaid, 2020; Shi et al., 2023; Zhong et al., 2022), as well as behavioral problems such as lower attention during learning (Kao, 2023; Sumuer & Kaşıkçı, 2022), poorer academic performance (Amez & Baert, 2020; Ibrahim et al., 2018; Sunday et al., 2021; Verma et al., 2023), and various accidents (Kim et al., 2017; Rosenthal et al., 2022). It is, therefore, important to elucidate the mechanism of smartphone dependence and to develop strategies to reduce the harmful consequences of smartphone dependence. Incidentally, some previous studies have found a higher risk of smartphone dependence for those who identify as female than those who identify as

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male university students (Alzhrani et al., 2023; Demirci et al., 2015; Desouky & Abu-Zaid, 2020; Mansourian et al., 2014).

In a previous study using the WSDS, the authors have found, particularly for those who identify as female university students, that types of childhood maternal relationships may be associated with smartphone dependence (Toda et al., 2018). From these results, the authors surmised that loneliness might lead to smartphone dependence. Several previous studies have found a positive relationship between smartphone dependence and loneliness (Bian & Leung, 2015; Du et al., 2023; Kao, 2023; Malaeb et al., 2022; Noh & Shim, 2024; Sönmez et al., 2021; Verma et al., 2023; Yilmaz et al., 2022). Furthermore, a recent meta-analysis study indicated a moderate positive association (Ge et al., 2023). Meanwhile, a negative relationship (Nguyen et al., 2022) and no relationship (Aktürk et al., 2018) were also observed. In another study, it has been found that emotional loneliness, but not social loneliness, is positively associated with smartphone dependence (Alzhrani et al., 2023). This inconsistency may be due to the contribution of multiple factors of associations between smartphone dependence and loneliness.

In the present study of university students who identify as female, examining associations between smartphone dependence and loneliness, the authors focused on one variable: having or not having a boyfriend. During adolescence, romantic love is an important type of human relationship (Matsui, 1990). Others have already investigated that having or not having a significant other may contribute to loneliness (Ogata et al., 2006; Özdemir & Tuncay, 2008) and trait anxiety (Ozen et al., 2010). The authors conjectured that, in those who identify as female, associations between smartphone dependence and loneliness may be affected by having or not having a boyfriend.

METHOD

The authors distributed a set of questionnaires to 169 university students who identify as female and participated voluntarily. Statistical analysis could be performed for 167 respondents who properly completed each of the questionnaire items. Mean (\pm standard deviation) age was 19.5 ± 0.5 years. Before the study, the protocol received approval from the institutional review board, and informed consent was obtained for each participant.

Smartphone dependence was evaluated using the WSDS (Toda et al., 2015b), a 21-item self-rating assessment with each response scored on a four-point Likert scale. Likert scores for each item were then summed to provide an overall smartphone-dependence score. Higher scores indicate greater dependence. In addition, the authors also investigated daily duration of use of the following services on smartphones: social networking services (SNS), video-sharing sites, and online game sites.

The trait portion of the State-Trait Anxiety Inventory was used as an index of general levels of personal anxiety (Spielberger & Gorsuch, 1983). This 20-item self-report inventory elicits responses rated on a four-point Likert scale. High scores in this inventory are considered to indicate trait anxiety. Trait anxiety is a relatively stable personality trait and refers to an individual predisposition to experience peril or uncertainty in various daily situations (Spielberger & Gorsuch, 1983). Loneliness was evaluated using the University of California, Los Angeles Loneliness Scale (Version 3; Russell, 1996), a self-report inventory of 20 items scored on a four-point Likert scale. High-scoring respondents are considered to be experiencing loneliness. Each respondent was also asked to report the average number of minutes she slept each day and whether she had a steady boyfriend.

All results are expressed as mean values \pm standard deviation. Students' *t* tests were used to compare the data between groups based on whether they did have or did not have a boyfriend. Furthermore, standard multiple regression analysis was performed with WSDS score as the dependent variable. Independent variables were daily duration of use of services on smartphones, daily duration of sleep, and scores for trait anxiety and loneliness. Values were considered to be significantly different when $p < 0.05$.

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