

Do Extroverted and Lonely Junior High Students Prefer Interacting through Social Media? Analysis of Social Media Time Using Diaries

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The Asian Conference on Psychology & the Behavioral Sciences 2020
Official Conference Proceedings

Abstract

Concerns for young people's mental health have been raised regarding their excessive use of social media on smartphones. This study examined the relationship between extroversion and loneliness and the time spent using social media on smartphones. To accurately measure usage time, a diary-style questionnaire was conducted; responses were obtained from 701 junior high school students across Japan. Multiple regression analyses controlling for gender and free time at home showed that extraversion, loneliness, and interaction terms were all significant. Analysis of the interaction term showed that loneliness was not related to social networking time in the low extroversion case (27.7 minutes of social networking time in the low loneliness case and 28.4 minutes in the high loneliness case). In the high extroversion case, there was an association between loneliness and social networking time (34.9 minutes in the low loneliness case and 49.2 minutes in the high loneliness case), and significantly longer social media time was found for the high extroversion and loneliness case. These results show that young people who enjoy socializing but are actually lonely may prefer to interact through social media.

Keywords: Extroversion, Loneliness, Social Media Time

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Introduction

Social media use, especially by young people, is growing all over the world, and concerns have been raised about how this use affects their well-being. In a large US cohort study (Riehm et al., 2019), it was reported that young people with more than 3 hours of social media use per day had a particularly significant increase in mental health problems. According to a survey in Japan by the Ministry of Internal Affairs and Communications (2019), the average time spent on social media on weekdays was 121 minutes for teenagers and 81 minutes for those in their 20s, with teenagers spending significantly more time on social media. The link between Internet use and psychological health, such as depression and loneliness, has been discussed in the Internet Paradox studies by Kraut et al. (1998). In a recent study, a meta-analysis of Facebook use and loneliness found a causal relationship between Facebook use and loneliness, with people who are lonely using Facebook to try to avoid feelings of loneliness (Song et al., 2014).

Using the perspective of the uses and gratifications theory and the social compensation hypothesis, lonely people are motivated to use social media for longer periods of time, so it seems that the higher the loneliness, the longer they use social media. Applying the rich get richer hypothesis (Kraut et al., 2002) to social networking services, it is hypothesized that the more extroverted people are, the more deep interactions they have with social networking services and the more successful they are at reducing loneliness. On the other hand, introverts fail to reduce their loneliness by using social networking services, and they try to use social networking services for a longer time because they maintain a high sense of loneliness. However, according to a meta-analysis by Song et al. (2014), social network use may not contribute to the reduction of loneliness, so it is assumed that a high level of loneliness may be maintained whether a social network user is extroverted or introverted. This study examined the relationship between extroversion and loneliness and the time spent using social media on smartphones.

Method

A survey was conducted online in November 2019 among 701 Japanese junior high school students between the ages of 15 and 18 with parental consent and 800 working adults between the ages of 23 and 25 from an online panel. To measure the media time more accurately, the diary method with a smartphone was used. Respondents chose certain actions every 30 minutes at the end of the day. The average time spent using social media with a smartphone after returning home (5 p.m.–2 a.m.) on two weekdays was used for analysis. The analysis was performed using SPSS Statistics Version 22 and SPSS Amos Version 22. The significance level was set at $p < .05$.

Instruments

Extroversion. Three items from the extroversion factor of the Five Factor Personality Questionnaire (FFPQ; Kenkyukai, 2002) were used: “I hate to stay still,” “I like making a lot of noise in great numbers,” “I am glad when I attract attention from a person.” Respondents rated items using a 4-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree). The Cronbach’s alpha coefficient, mean,

and standard deviation were 0.64 and 4.80 ± 2.00 for junior high school students and 0.64 and 4.30 ± 2.04 for working adults, respectively.

Loneliness. Three items from the Japanese version of the Revised UCLA Loneliness Scale (Russell, Peplau, & Cutrona, 1980) were used: “No one really knows me well,” “People are around me but not with me,” “There is no one I can turn to.” Respondents rated items using a 4-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree). The Cronbach’s alpha coefficient, mean and standard deviation were 0.83 and 2.46 ± 1.89 for junior high school students and 0.81 and 3.02 ± 2.13 for working adults, respectively.

Social media time. This measured time spent using social media with a smartphone between 5 p.m. and 2 a.m. (unit: minutes). The mean and standard deviation were 34.49 ± 41.79 (junior high school students) and 50.26 ± 47.91 (working adults), respectively.

Home free time. This measured free time at home from 5 p.m. to 2 a.m. (unit: minutes). The mean and standard deviation were 305.48 ± 37.32 (junior high school students) and 274.11 ± 95.71 (working adults), respectively.

Gender. Among junior high school students, 50.8% were male, and 49.2% were female. Among working adults, 37.9% were male, and 62.1% were female. Dummy variables were created with 1 for male and 2 for female.

Conclusion

The t-test results showed that there was a significant difference ($t = 4.64$, $df = 684.40$, $p < .001$) in the time spent on social media by gender for junior high students, with men spending 27.38 minutes and women spending 41.83 minutes on social media. There was also a significant difference ($t = 6.98$, $df = 749.32$, $p < .001$) between the two groups of working adults, with men using smartphones for 36.35 minutes and women for 58.75 minutes.

The results of the correlation analysis between each variable are shown in Table 1. Only in junior high school students were extroversion and loneliness significantly associated with social networking time.

Table 1. *Correlation Analysis*

	Junior high school student	Working adults (23–25 years old)
Extroversion	.14 ^{***}	.06
Loneliness	.10 [*]	-.04
Home free time	.30 ^{***}	.30 ^{***}

Pearson correlation. * $p < .05$, *** $p < .001$

The results of the multiple regression analysis with social media time among junior high school students as the objective variable are shown in Table 2.

Table 2. *Multiple Regression Analysis (junior high school students)*
 junior high school students' social media time

	β		95%CI	VIF
Extroversion	.167 **		0.10 0.24	1.02
Loneliness	.090 *		0.02 0.16	1.03
Extroversion * loneliness	.089 *		0.02 0.16	1.01
Gender(men:1,women:2)	.163 **		0.09 0.23	1.00
Home free time	.287 **		0.22 0.36	1.01
R^2 (adjust R^2)	.156 **	(.150)		

* $p < .05$, ** $p < .01$

Extraversion, loneliness, and the interaction term were all significant. Figure 1 shows the result of the analysis of the interaction.

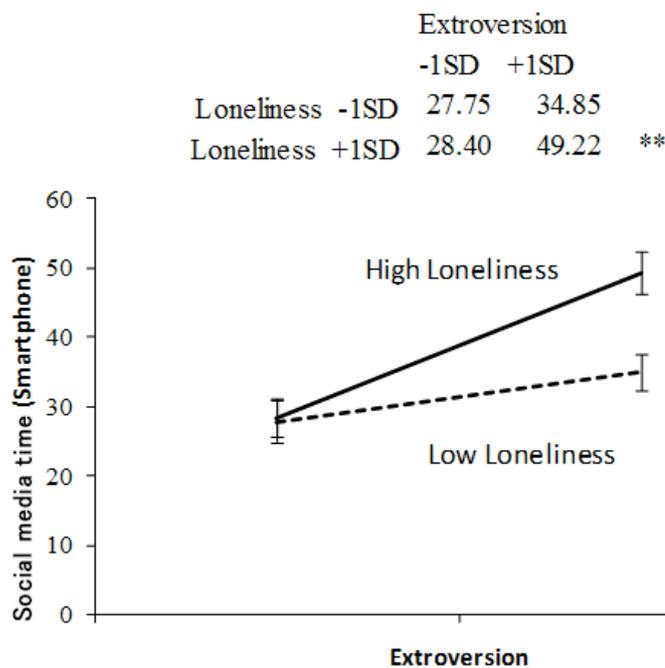


Figure 1: Analysis of the interaction (junior high school students)

When extroversion was low, it was unrelated to loneliness and social media use time, while when extroversion was high, it was related to loneliness and social media use time. The a high level of loneliness corresponded to 49 minutes of social media use time, which is a significantly large value. Namely, a participant who had high levels of extroversion and loneliness used social media nearly twice as much in comparison with a participant with low levels of extroversion and loneliness.

The results of the multiple regression analysis with social media time among working adults as the objective variable are shown in Table 3. Extraversion and the interaction term were significant.

Table 3. *Multiple Regression Analysis (working adults)*
working adults' social media time

	β		95%CI	VIF
Extroversion	.099	**	0.03 0.17	1.05
Loneliness	-.026	n.s.	-0.09 0.04	1.04
Extroversion * loneliness	.074	*	0.01 0.14	1.01
Gender (men:1, women:2)	.204	**	0.14 0.27	1.04
Home free time	.285	**	0.22 0.35	1.02
R^2 (adjust R^2)	.156	**	(.150)	

* $p < .05$, ** $p < .01$

Figure 2 shows the results of the analysis of the interaction. Social media time was significantly shorter for high levels of introversion and loneliness.

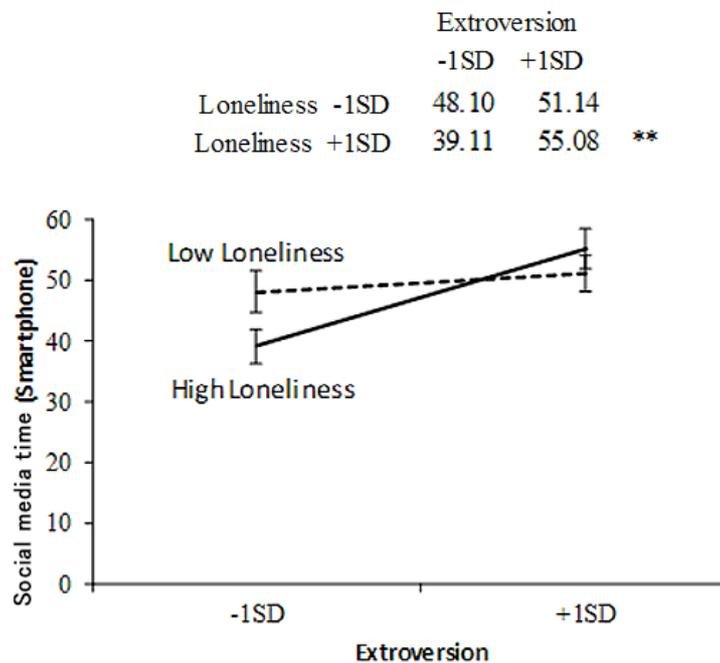


Figure 2: Analysis of the interaction (working adults)

Thus, the results indicate that neither working adults nor junior high school students who are introverted and lonely use social media for long periods of time, while junior high school students who are extroverted and lonely use social media for long periods of time. In the junior high school environment, where friendships are important, it was shown that despite being outgoing, not being able to make friends as one would like may lead to prolonged use of social networking services using smartphones, which are readily available.

Acknowledgements

This online survey was conducted by Dentsu Media Innovation Research Department, Yoshiaki Hashimoto (the University of Tokyo) and Shiroh Ohno (the University of Tokyo). The analyses are the sole responsibility of the author.

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