Original Article

Problematic Mobile Phone Use and Big-Five Personality Domains

Motoharu Takao

Department of Human and Information Science, Tokai University, Tokyo, Japan

ABSTRACT

Background: Although a mobile phone is useful and attractive as a tool for communication and interpersonal interaction, there exists the risk of its problematic or addictive use. **Objectives:** This study aims to investigate the correlation between the big-five personality domains and problematic mobile phone use. **Materials and Methods:** The Mobile Phone Problem Usage Scale and the NEO Five-Factor Inventory (NEO-FFI) were employed in this study. Survey data were gathered from 504 university students for multiple regression analysis. **Results:** Problematic mobile phone use is a function of gender, extraversion, neuroticism, openness-to-experience; however, it is not a function of agreeableness or conscientiousness. **Conclusions:** The measurement of these predictors would enable the screening of and intervening in the potentially problematic behaviors of mobile phone users.

Keywords: Addictive behavior, big five personality domains, cellular phone, communication, education personality, intervention, mobile phone, predictor

Introduction

Although a mobile phone is useful and attractive as a tool for communication and interpersonal interaction, there exists the risk of its problematic or addictive use. Distracted driving in developed and developing countries cause many car accidents. The considerable debt incurred by the excessive use of mobile phones and harassment of others through bullying or obscene calls are also other problems that have been brought on by the use of mobile phones. An epidemiological study suggested that mobile phone users who use their phones excessively are more prone to complaining regarding health-related symptoms, such as headaches, fatigue, impaired concentration, sleeplessness, and hearing problems.

Addiction to mobile phone poses a serious problem for an individual's social life and work. Although reliable diagnostic markers are currently unknown, similarities have been reported between problematic mobile phone use and other types of addictive behaviors, such as smoking, drug and alcohol abuse, Internet dependency, and compulsive gambling.[1,2] A multiple regression model study demonstrated that people who are addicted to mobile phones exhibit tendencies toward the following personality features: Low self-esteem, extraversion, high approval motivation, and high self-monitoring.[1,3]

The big-five personality model is well-validated and widely accepted by researchers and clinicians. This personality model encompasses the following five robust personality domains: (1) extraversion; (2) neuroticism; (3) openness-to-experience; (4) agreeableness; and (5) conscientiousness. However, thus far, problematic mobile phone use has not been investigated with reference to this model.

In this study, we depicted the five personality domains with respect to problematic mobile phone use. Various types of behavioral addictions are reported to have close

relationships with these domains.[4,5] It is conceivable that problematic mobile phone users exhibit personality characteristics in these domains, because extraverts and disagreeable people spend more time calling others.[6]

In order to investigate the correlation between these predictors and problematic mobile phone use, a multiple regression analysis was performed in this study. The measurement of these predictors would enable the screening of and intervening in the potentially problematic behaviors of mobile phones users.

Materials and Methods

A total of 610 questionnaires were distributed to college students of several university campuses in Japan. Of these, 504 were usable questionnaires (396 males and 108 females). Ages ranged from 18 to 25 years (mean: 20.07; standard deviation: 1.35). All of the participants own and use a mobile phone regularly. Informed consent was obtained from all the participants after the purpose and procedures were explained. All of the questionnaire studies were performed following Declaration of Helsinki and institutional ethical guidelines. The Japanese translations of the Mobile Phone Problem Usage Scale[1] and the NEO-EFI[7] were employed in this study.

Results

A test of internal reliability (Cronbach's alpha) was calculated on the basis of the Japanese translation of the Mobile Phone Problem Usage Scale to determine the level of internal consistency among items. A Cronbach's alpha was 0.90, showing the high level of internal consistency and suggesting that items are homogenous.

The totals, means, and standard deviations of age, gender, and five personality domains were calculated along with the minimum, maximum, and skew for each of the independent variables [Table 1]. As neuroticism and openness-to-experience were negatively skewed, this scale was inverted by subtracting them from a maximum value before transformations were applied. Square root transformations were used on the neuroticism and openness-to-experience variables. Due to the transformation, the neuroticism and openness-to-experience variables were inverted, and these variables were named "low neuroticism" and "low openness-to-experience" to assist in interpretability.

A multiple regression analysis revealed that gender and five personality domains could significantly predict 13.5% of the scores on the Mobile Phone Problem Usage Scale [$F_{(6,497)} = 13.00$, $P < 0.001$]. Females, high extraverts, high neurotics, and low open-minded are liable to score higher on the scale [Table 2].

Table 1: Means and standard deviations, minimum, maximum, and skew of the independent variables

	n	Mean	SD	Min.	Max.	Skew
Gender	504	—	0.41	1	2	0.008
Mobile Phone Problem Usage Scale	504	103.7	38.88	32	252	0.4
Extraversion	504	29.38	7.02	10	60	0.47
Neuroticism	504	31.98	7.16	6	51	−0.03
Openness-to-experience	504	34.81	5.41	21	53	−0.14
Conscientiousness	504	28.73	6.39	8	73	4.5
Agreeableness	504	34.53	5.43	19	48	0.94

Table 2: Standardized regression coefficient (β), *t*-value of (β), and significance values for predictors of scores of the Mobile Phone Problem Usage Scale

	β	t	p
Gender	0.12	2.75	0.006
Extraversion	0.24	5.35	0.001
Low Neuroticism	−0.23	−5.14	0.001
Low Openness-to-experience	0.18	4.27	0.001
Conscientiousness	0.03	0.69	0.493
Agreeableness	−0.07	−1.49	0.137

Discussion

The present study aims to determine the correlation between problematic mobile phone use and the big-five personality domains. Problematic mobile phone use is a function of gender, extraversion, neurosis, openness-to-experience; however, it is not a function of agreeableness or conscientiousness.

Bianchi and Phillips[1] had reported that high extraversion is correlated with problematic mobile phone use although the questionnaire that was used by them to assess extraversion differed from ours (Eysenk Personality Questionnaire: EPQ vs. NEO-EFI).[8-10] I have validated their finding in this paper. It is not surprising that problematic mobile phone users are likely to be extraverts, because they are social, talkative, and gregarious in nature. These traits are common characteristics among problematic mobile phone users.[1,3]

In the current study, problematic mobile phone users are also disinclined toward high neuroticism. This is plausible because neuroticism is associated with both low self-esteem and high approval motivation. However, Bianchi and Phillips[1] reported no correlation between neuroticism and the scores on the Mobile Phone Problem Usage Scale, which was used in this study. The possible cause for the difference in results may be the questionnaires that were adopted by the two groups in the study (EPQ vs. NEO-EFI). Although the EPQ is based on a psychobiological theory of personality, the NEO-EFI depends on a psycholexical theory. Although the components of EPQ are sociability and impulsivity, those of NEO-EFI are dynamism and dominance.

This study demonstrated that openness-to-experience has a negative correlation with problematic mobile phone use. It is probable that problematic mobile phone users have a low openness-to-experience trait, because the research groups suggested close associations among low self-esteem, high self-monitoring, and low openness-to-experience.[11,12] All of these personality traits have been observed in problematic mobile phone users.

Low openness-to-experience seems to be a distinguishing personality trait in predicting problematic mobile phone use. Problematic mobile phone use is a kind of over attachment to the object. Problematic mobile phone users are strongly reluctant to leave their own phones to avoid negative emotions such as depression, isolation, and feeling lost. In fact, a research group found reliable associations between conservatism, uncertainty avoidance, and low openness-to-experience.[13]

The problematic mobile phone use can be intervened in the educational fields. In this study, using the conventional personality inventory, three personality domains were found to predict problematic mobile phone use. If young students with these characteristics and previously reported traits are screened, they could know their predisposition to problematic mobile phone use and be taught appropriate mobile phone use.

Acknowledgement

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