



VALIDITY AND RELIABILITY TESTING OF THE MODIFIED INDONESIAN VERSION OF THE SMARTPHONE ADDICTION SCALE-SHORT VERSION

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ABSTRACT

Smartphone usage has increased rapidly worldwide, making the potential for smartphone addiction a focus of research. To identify potential smartphone addicts, several scales have been developed to assess smartphone addiction; among them, the Smartphone Addiction Scale-Short Version (SAS-SV) is frequently used. This study aimed to examine the reliability and validity of the Indonesian version of the SAS-SV. A cross-sectional research design with a population consisting of 100 of Pharmacy students at Farmasi Nasional Vocational High School in Surakarta. Data were analyzed using SPSS; validity was established by showing that the calculated *r*-value exceeded the *r*-table value, while reliability was assessed using Cronbach's alpha. The evaluation showed that the research instrument possesses robust validity and reliability. Internal consistency analysis yielded a Cronbach's alpha coefficient of 0.980, substantially exceeding the acceptable threshold of 0.60. Furthermore, construct validity was confirmed as the calculated *r*-values for all ten items ranged from 0.853 to 0.939, consistently surpassing the critical *r*-table value of 0.195 (*N* = 100).

Keywords: reliability; smartphone; validity

INTRODUCTION

A smartphone is a highly capable mobile phone that is easily portable. It offers a wide range of advanced features, including calling, text messaging, internet access, e-book reading, and document editing. Additionally, it provides capabilities for sharing photos and videos, entertainment—such as gaming and capturing images or video—social media access, navigation, and shopping, while also facilitating learning, task completion, outdoor activities, and business operations. (Sumitro et al, 2019). The benefits of smartphones include facilitating communication between individuals, such as making voice calls and sending messages—as well as accessing information and providing entertainment, such as watching videos or playing games. (Wildaya et al, 2023).

There are several positive impacts of using a smartphone, such as facilitating communication; smartphones make it easier to connect with people who are far away, whether through SMS, phone calls, or the various applications installed on the device. (Muhammad et al, 2022), broadening one's knowledge, making new friends, and the emergence of new learning methods. There are not only positive effects but also negative ones; for instance, looking at a mobile phone can damage the eyes, causing them to feel tired and sore. (Patadungan et al, 2021), Some adolescents may become introverted, viewing the smartphone as their entire world; this dependency impacts both the individual and those around them, leading to feelings of anxiety and restlessness whenever they are separated from the device. (Fitriana et al, 2020) A lack of closeness between children and parents can cause children to become introverted and hinder their concentration; furthermore, smartphone addiction can make them prone to boredom, anxiety, and anger when separated from their beloved devices. (Zulfa, 2022) Nomophobia manifests as symptoms of excessive fear or anxiety experienced by an individual when unable to access or use their mobile phone. (Riyanti et al, 2021), Changes in Body Mass Index (BMI)—whether a decrease or an increase—along with the development of a tendency toward smartphone addiction, represent behaviors that lead to persistent and excessive smartphone addiction. (Riyadi et al, 2023).

Despite the many benefits of using smartphones, a growing number of studies have found that many people use them excessively, to the point where it interferes with their daily activities. (Cheever et al., 2014; Clayton et al., 2015; Kim et al., 2015) The increasing use of smartphones and the multitude of features they offer have made smartphone addiction a focus of research.. (Kwon, Lee, et al., 2013) This study aims to examine the reliability and validity of the Indonesian version of the SAS-SV.

METHOD

This study a quantitative research approach with a cross-sectional design. The study population consisted of 100 students at Farmasi Nasional Vocational High School in Surakarta. Purposive sampling was used, with inclusion criteria requiring respondents to own a personal smartphone and be aged 15–19 years; exclusion criteria applied to those who did not provide informed consent, while dropout criteria applied to those who did not fully complete the questionnaire. Data were analyzed using SPSS; validity was tested by comparing calculated r -values against critical r -values (r -calculated $>$ r -table), and reliability was assessed using Cronbach's Alpha.

The Smartphone Addiction Scale-Short Version (SAS-SV) is a 10-item self-report scale rated on a 6-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = somewhat agree, 5 = agree, 6 = strongly agree) (Kwon, Kim, et al., 2013). Total scores range from 10 to 60, with higher scores indicating a greater level of smartphone addiction. The questionnaire comprises 10 questions addressing daily life disturbances, withdrawal, cyberspace-oriented relationships, overuse, and tolerance. Males are considered addicted if they score above 31 (sensitivity 0.867, specificity 0.893), and females if they score above 33 (sensitivity 0.875, specificity 0.886). The items were selected based on validity from the original 33-item Smartphone Addiction Scale (SAS). The correlation between the SAS-SV and the SAS is 0.96.. (Kwon, Kim, et al., 2013)

RESULT AND DISCUSSION

Data collection for item validity and scale reliability testing was conducted in November 2024, involving 100 students at Farmasi Nasional Vocational High School in Surakarta.

Table 1.

Respondent Distribution by Age and Gender

Variable	Frequency (n=100)	Percentage
Age		
15 yo	87	87
16 yo	13	13
Gender		
Male	5	5
Female	95	95

Table 1 illustrates the demographic profile of the study participants (N=100). The descriptive analysis indicates that the sample is predominantly composed of mid-adolescents aged 15 years old, accounting for 87% (n=87) of the total cohort, whereas the remaining 13% (n=13) consists of 16-year-old participants. In terms of gender distribution, a pronounced imbalance is observed; female respondents constitute the vast majority of the sample at 95% (n=95), while male respondents represent a negligible proportion at merely 5% (n=5).

To evaluate the internal validity of the smartphone addiction scale, a pearson product-moment correlation analysis was conducted for the 10-item instrument based on a sample of 100 participants (N = 100). With a critical value of r table=0.195 at a significance level of $\alpha=0.05$, the results indicated that all 10 items demonstrated exceptionally high construct validity. The correlation coefficients for all items ranged from 0.853 to 0.939, substantially exceeding the critical threshold. Item 6 ("thinking about smartphone when not using it") exhibited the highest corrected item-total correlation ($r=0.939$), while Item 3 ("Feeling pain in the wrist and back of the neck") presented the lowest yet highly acceptable correlation coefficient ($r = .853$). Consequently, no items were discarded, confirming that

the instrument possesses excellent construct validity and is highly appropriate for measuring smartphone addiction in this cohort.

Table 2.
Smartphone Addiction Scale – Short Version (SAS-SV)

No	Question	r
1	Tidak mengerjakan suatu kegiatan yang sudah di rencanakan karena kecanduan smarthphone	0,918
2	Sulit berkonsentrasi di kelas karena adanya kecanduan smathphone	0,925
3	Merasakan sakit pada pergelangan tangan dan belakang leher saat menggunakan smarthphone	0,853
4	Tidak bisa keluar rumah jika tidak membawa smartphone	0,935
5	Merasa resah saat tidak memegang smartphone	0,929
6	Memikirkan smartphone saat tidak sedang menggunakannya	0,939
7	Merasa sulit berhenti bermain smartphone setiap hari	0,930
8	Terus-menerus membuka smartphone agar tidak ketinggalan berita yang sedang trend atau hanya sekedar membaca whatsapp	0,912
9	Menggunakan smartphone lebih lama dari yang saya rencanakan	0,930
10	Orang-orang disekitar saya mengatakan bahwa saya menggunakan smartphone terlalu sering	0,927

Reability

The reliability analysis of the SAS-SV in this study yielded a Cronbach's alpha of .98, which is slightly higher than the original validation study ($\alpha = .91$) by Kwon et al. (2013). (Kwon, Lee, et al., 2013) This exceptionally high coefficient reflects the strong homogeneity of the construct when applied to the current sample. This phenomenon can be attributed to the demographic composition of the participants, which predominantly consisted of mid-adolescent females (95% female, 87% aged 15). Prior literature suggests that adolescent females often exhibit highly consistent and intense behavioral patterns regarding smartphone usage and social media engagement. Consequently, the high internal consistency indicates that the SAS-SV is a highly sensitive and reliable psychometric tool for detecting smartphone addiction trends among homogenous adolescent female cohorts."

There are over 3 billion people using smartphones around the world, and this number is expected to increase by hundreds of millions in the coming years. Smartphones have become essential in many areas of life and various jobs because they are useful for many tasks and easy to use. Some people now use smartphones instead of computers. For some people, it became the easiest way to have fun whenever and wherever they wanted. Their use has changed how people communicate and share information, and has caused worries about using them too much and becoming too dependent on them.(Król et al., 2020) Although smartphones have many benefits, recent studies showed that many people use their phones too much, which can disrupt their everyday lives. More people are using smartphones, and because they have so many features, researchers are now paying more attention to the possibility of smartphone addiction. (Kwon, Lee, et al., 2013).

Because people were getting more worried about using smartphones too much, a lot of research is being done to find out and understand when smartphone use becomes a problem. This research often involves creating and using questionnaires to measure how people behave when they use their phones. Harris *et al.* wrote a review article that looked at 78 already tested scales used to identify or describe problematic smartphone use or smartphone addiction, and they found three main categories of these scales. (Harris et al., 2020) The first and largest group included scales that were made and checked to find out if someone has bad smartphone use or to diagnose them with smartphone addiction,

overuse, dependency, or being too attached (such as SAS, SPAI, PUMP, and PMPUQ-R). (Kwon, Lee, et al., 2013; Lin et al., 2017; Merlo et al., 2013)

The term "smartphone addiction" was created to explain when someone uses their smartphone too much in a way that causes problems in their mental health and social life, similar to how people can become addicted to certain behaviors. (Kwon, Lee, et al., 2013) Many studies show that using smartphones too much is similar to having a behavioral addiction. Lin and others also suggested specific signs that could help identify someone who is addicted to their smartphone. The smartphone addiction diagnostic criteria included: (1) six symptom criteria, which involved losing control over phone use, feeling anxious when not using it, using the phone for longer than planned, and continuing to use it even when it caused problems, (2) four criteria related to how smartphone use affected daily life and functioning, and (3) exclusion criteria to rule out other possible causes. The study by Lin *et al.* found that the traits of smartphone addiction are very similar to those seen in substance-related or behavioral addictions. (Lin et al., 2016) Smartphones have special features, especially the ability to connect to the Internet and use different apps, which lead to common addictive habits. Additionally, Horvath and their team showed that there are unique structural and functional differences linked to behavioral addictions, specifically in people who met the measurement criteria for smartphone addiction. (Horvath et al., 2020)

CONCLUSION

Based on the validity test results, all questionnaire items were deemed valid, with calculated r-values exceeding the r-table values. The reliability test yielded a Cronbach's Alpha value of 0.980 (greater than 0.6), indicating high instrument reliability. Thus, the instrument used in this study is considered reliable for measuring the variables under investigation. The modified SAS-SV can be further tested on a broader population to ensure the generalizability of the results, including cross-cultural validity testing. The modified SAS-SV could also be tested across different age groups (e.g., university students or working professionals) to examine the generalizability of the finding.

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