

## VALIDITY AND RELIABILITY OF THE KYRGYZ VERSION OF THE SMARTPHONE ADDICTION SCALE

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**Abstract.** This study was conducted to adapt and assess the reliability and validity of the Kyrgyz version of smartphone addiction scale. The sample was composed of 207 university students who use smartphone in a public university in 2021-2022 academic years. Smartphone addiction scale was used as tool for collecting data. The factor structure of the scale was examined using factor analysis with varimax rotation method. Reliability analysis was conducted to check reliability of the instrument.

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**Keywords:** smartphone, addiction, validity, reliability.

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## 1 Introduction

We live in the century of rapid technological developments. Kyrgyzstan is a developing country, and due to the numerous issues the modern learning technologies cannot be applied as soon as in the developed countries. However, Kyrgyzstan is still very open to changes, and new challenges the current era gives. For example, the number of mobile users in Kyrgyzstan is really very high (There were 10.23 million mobile connections in Kyrgyzstan in January 2021). With a population of 6.58 million in January 2021 almost every second person in Kyrgyzstan has an internet connection (There were 3.32 million internet users in Kyrgyzstan in January 2021). Furthermore, there were 3.20 million social media users in Kyrgyzstan in January 2021. This means that almost every internet user is using social media. In addition, the average of population in Kyrgyzstan is 27 years, which means that the country has a lot of young people. With this number of young population and high internet and mobile phone usage it is not known who it is used by young people. So, this research work aims to assess the validity and reliability of the smartphone addiction scale in the young Kyrgyz sample.

## 2 Literature review

With the developments of technology it is hard to imagine a person who does not use a smartphone. Almost every person is using smartphones, especially after COVID-19 pandemic started. Students, workers and pupils in schools have to use smartphones for their educational purposes. However, there is some concern on the excessive use of smartphones.

Smartphone addiction described by Lin et al (2014) as a pathological use of the mobile device that severely disturbs users' daily life functioning. In a study conducted by Emanuel et al (2018)

with a sample of 404 undergraduate students it was investigated that people are addicted not to their smartphones but to the information, entertainment and connections those smartphones can provide. Another study was conducted by Haug et al (2015) with a convenience sample of 1519 young people in Switzerland on a smartphone addiction. Smartphone addiction was assessed using a short version of the Smartphone Addiction Scale for Adolescents (SAS-SV). Logistic regression was used for analysis. According to their results smartphone addiction was observed in 256 (16.95%) of students. Furthermore, it was observed that more young people of age 15-16 are more addicted to smartphones compared to the age19 or older.

There are a number of studies conducted in different countries of the world on smartphone addiction: in Taiwan (Chang et al., 2019; Chou & Chou, 2019; Pan et al, 2019); in China (Li & Lin, 2019; Li & Lin, 2018; Zhang & Wu, 2020; Liu et al, 2020; Liu et al, 2020); in Korea (Jo, 2018; Cha & Seo, 2018; Kim et al., 2017); in Japan (Tateno, 2019); in Bangladesh (Mahmud et al., 2020), in Iran (Lin et al., 2019); in Switzerland (Haug et al., 2015), in South Korea (Lee & Ogbolu, 2018), in Lebanon (Nahas et al., 2018), in Philippines (Buctot et al., 2020); in India (Jain et al., 2019; Ammati et al., 2018). Smartphone addiction among students of medical university in South India: A cross-sectional study. *Annals of International Medical and Dental Research*, 4(2), 1-4, in Turkey (Durak, 2019). However, there no similar study is conducted in the Kyrgyz Republic. This study can add a value to the literature, and can be used as a smartphone addition scale in future studies.

### 3 Methodology

#### *Participants*

The overall sample will consist of the 200 randomly selected students studying in the different universities in the Kyrgyz Republic.

#### *Materials*

The data were collected from participants on the basis of online questionnaires distributed through Google forms in 2021-2022 academic years.

#### *Questionnaire*

As a questionnaire the Smartphone Addiction Scale - SAS were used. The scale consists of 26 items that measure 4 dimensions: functional impairment (8 items), withdrawal (6 items), compulsive behavior (9 items), and tolerance (3 items). Participants were asked to answer a 4-point Likert scale, with each item ranging from 1 (strongly disagree) to 4 (strongly agree). The questionnaire was translated to Kyrgyz language.

### 4 Results

#### *Validity analysis*

Factor analysis showed seven-factor structure and factor loadings of items ranged from 0.369-0.790. Seven subscales account for 59.6% of the total variance. Factor 1 was composed of 5 items (Item 10, 4, 2, 16, and 11). Factor 2 was composed of 6 items (Item 17, 18, 15, 6, 7, 3). Factor 3 were composed of 4 items (Item 21, 22, 19). Factor 4 was composed of 4 items (Items 25, 12, 24, 13). Factor 5 was composed of 2 items (Item 13, 9). Factor 6 was composed of items (Item 8, 23, 26, 14). Finally, Factor 7 was composed of 2 items (Item 1, 5).

### Principal components analysis and internal consistency of the Kyrgyz version of the Smartphone Addiction scale

Item	Component						
	1	2	3	4	5	6	7
Item 10	.713						
Item 4	.697						
Item 2	.608						
Item 16	.575						
Item 11	.369						
Item 17		.713					
Item 18		.612					
Item 15		.592					
Item 6		.520					
Item 7		.503					
Item 3		.487					
Item 21			.790				
Item 21			.618				
Item 22			.545				
Item 19			.495				
Item 20				.715			
Item 25				.706			
Item 12				.612			
Item 24				.401			
Item 13					.659		
Item 9					.654		
Item 8						.771	
Item 23						.710	
Item 26						.537	
Item 14						.448	
Item 1							.711
Item 5							.494

**Table 1:** Demographic information of students

Variables	Items	Frequency (n)	Percentage (%)
Gender	Male	65	31.6
	Female	141	68.4
Age	16-21	104	50.2
	22-28	103	49.8

As it is shown in Table 1 there were 31.6% (65) males and 68.4% (141) females participants with 50.2% (104) of them in age group 16-21, and 49.8% (103) in the age group 22-28.

#### *Reliability analysis*

In the internal consistency analysis conducted, the Cronbach's alpha internal consistency coefficient was calculated to be 0.92.

**Table 2:** Item and reliability analysis of the Kyrgyz SAS-LV

Items	M	SD	Corrected item-total correlation	Cronbach's alpha if item deleted
SAS_1	2.601	.7707	.436	.918
SAS_2	2.287	.7825	.473	.918
SAS_3	2.612	.7762	.524	.917
SAS_4	2.511	.8305	.540	.916
SAS_5	2.261	.7099	.442	.918
SAS_6	2.351	.7629	.521	.917
SAS_7	2.399	.7279	.590	.916
SAS_8	2.707	.8431	.412	.919
SAS_9	2.388	.8099	.488	.917
SAS_10	2.207	.7199	.588	.916
SAS_11	2.303	.7660	.592	.916
SAS_12	2.117	.7292	.513	.917
SAS_13	2.606	.7973	.445	.918
SAS_14	2.691	.7743	.522	.917
SAS_15	2.415	.7931	.537	.917
SAS_16	2.559	.7398	.662	.915
SAS_17	2.218	.7388	.482	.917
SAS_18	2.362	.7291	.611	.915
SAS_19	2.410	.7510	.658	.915
SAS_20	2.250	.7502	.426	.918
SAS_21	2.383	.7544	.600	.915
SAS_22	2.298	.7853	.475	.918
SAS_23	2.473	.7123	.536	.917
SAS_24	2.463	.7412	.550	.916
SAS_25	2.021	.6115	.450	.918
SAS_26	2.590	.8059	.601	.915

## 5 Discussion and conclusions

Internal consistency, factor structure and correlation with other scales indicate that this scale is valid and reliable assessment instrument in the Kyrgyz republic. Factor analysis results showed that there was a seven factor structure has been identified in this study. It was found that this structure accounted for the 59.6% of the total variance.

A Cronbach's alpha coefficient higher than 0.70 is considered good for the scale to be used in the further studies. The Cronbach's alpha internal consistency coefficient was found as .92 in this scale. This implies that Kyrgyz version of the scale has a very high level of internal consistency.

The validity and reliability study of this scale was conducted with the sample of 207 university students from public university in the Kyrgyz Republic.

The present study is important for being the first study examining validity and reliability of the SAS in a Kyrgyz sample. This study could be used as valid and reliable instrument in the assessment of the smartphone addiction.

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