

## Cultural Adaptation Of The Adapted Mobile Phone Use Habits (AMPUH) And The Adapted Cell Phone Addiction Test (ACPAT) In Turkish Students And Adults

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### ABSTRACT

With the speedy development of technology, mobile phone addiction is rapidly spreading due to changes in people's needs and interests. Although mobile phone addiction is still not listed as a category in the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5; APA, 2013), it is increasingly mentioned in several studies. Basic indicators identified for psychological dependencies such as persistent failed attempts, preoccupation, loss of sense, tolerance, and withdrawal symptoms are also mentioned as psychological symptoms of mobile phone addiction. The Adapted Mobile Phone Use Habits (AMPUH) and The Adapted Cell Phone Addiction Test (ACPAT) are two inventories for assessing the psychopathological behavior associated with mobile phone use. The present study aims to test the psychometric properties of the AMPUH and the ACPAT in Turkish culture. For this purpose, in addition to the AMPUH and ACPAT scales, Rosenberg Self-Esteem Scale (RSES), and Center for Epidemiological Studies Depression (CES-D) are applied to university students (N = 261) and adults (N = 298) in two separate studies. The reliability and validity analyses showed that both scales are reliable and valid in Turkish culture. The findings and limitations of the study are discussed in light of the relevant literature and recommendations are made for future research.

**Keywords:** Mobile Phone Use, the Adapted Mobile Phone Use Habits (Ampuh), the Adapted Cell Phone Addiction Test (Acpat), Psychometric, Mobile Phone Addiction

## INTRODUCTION

The mobile phone is extensively used device around the World since it has several advantages. Some of them are having internet access, social media interactions, searching information, writing text messages, doing tasks, listening to music, taking or looking photos or videos, playing games, reading books or journals, using navigation, and sharing multimedia files (i.e., videos, photos). Due to those advantages, a higher number of individuals are using a mobile phone (Liu et al., 2018). On the other hand, it has increasingly mentioned as leading to several disadvantages. One disadvantage is the mobile phone addiction. Researchers have shown efforts to diagnose mobile phone addiction at the Diagnostic and Statistical Manual of Mental Disorders (DSM-V, 2013). They have mentioned that mobile phone addiction shares diagnostic features of addiction and impulse control disorders (Griffiths, 2000). Moreover, they called mobile phone addiction as a non-chemical addiction (Smetaniuk, 2014).

When defining the diagnostic frame of phone addiction, it includes higher amount of time of using a mobile phone, having efforts to not to use a mobile phone, eagerness to use a mobile phone, showing reactions in case unable to use mobile phone and experiencing negative consequences due to mobile phone use (i.e., family or work problems) (Smetaniuk, 2014). A higher number of individuals varying between 10 to 46% have been reported to have mobile phone addiction (Lian, You, Huang, & Yang, 2016).

There are several adverse consequences of mobile phone addiction. Difficulties in self-control (Liu et al., 2018; Smetaniuk, 2014), self-esteem (Baumeister, Campbell, Krueger & Vohs, 2003; Senol-Durak & Durak, 2011), negative emotional state, depression (Sue, Sue & Sue, 2010), social interactions (Sue et al., 2010; Wang et al., 2017), neuroticism (Alt, & Boniel-Nissim, 2018; Durak & Senol-Durak, 2014), conscientiousness (Błachnio, Przepiorka, Senol-Durak, Durak, & Sherstyuk, 2017; Durak & Senol-Durak, 2014) and perceived stress (Liu et al., 2018) have been identified as related to technological addictions, particularly phone addiction. Among those variables, self-control had a mediator role in the relationship between perceived stress and phone addiction (Liu et al., 2018).

572

Researchers have identified the phenomenology of addiction to technology by describing dependency, impulse control, and pathological gambling diagnostic criteria (Young, 2004). For instance, Young (2004) developed a scale for internet addiction. Similarly, Davis (2002) developed a scale to assess problematic internet use. More specific to social media use, Fear of Missing Out Scale was developed (Alt, 2016). Considering a higher tendency to use a mobile phone around the world, researchers also have efforts to develop questionnaires for mobile phone dependency. Mobile phone addiction is accepted as a part of other non-chemical addictions such as technological addiction, TV addiction, internet addiction, social networking sites addiction, and online game addiction. Similar symptoms defined in phone addiction have mentioned in those addictions aforementioned above. Based on pathological gambling criteria for DSM, Adapted Mobile Phone Use Habits (AMPUH) was developed to examine phone use habits (Smetaniuk, 2014). Also, The Adapted Cell Phone Addiction Test (ACPAT) was developed by changing Young's (2004) internet addiction test items to phone addiction (Smetaniuk, 2014). This study is aimed to examine the psychometric properties of the Turkish version of AMPUH and ACPAT by using two samples; university students and employees.

## Method

### Participants

In the present study, university students (N = 261) and employees (N = 298) participated. In university students, the majority of them were women (N = 214, 82%) while others were men (N = 47, 18%). Mean years of age were 23.14 (SD = 4.58, Range 18-56). Based on the marital status of university students, the majority of them were single (N = 157, 60%) and had a romantic relationship (N = 77, 29.30%). Mean years of mobile phone usage time was 10.76 (SD = 4.13, range 1-25 years). Mean years of smartphone usage time was 6.98 (SD = 2.46, range 1-13 years).

In employee adults, the majority of them were women (N = 238, 80%) while others were men (N = 60, 20%). Mean years of age were 35.22 (SD = 8.09, Range 22-66). Based on the marital status of

employees, the majority of them were married (N = 154, 52%) and single (N = 93, 31%). Mean years of mobile phone usage time were 17.15 (SD = 4.22, range 4-25 years). Mean years of smartphone usage time was 8.80 (SD = 2.72, range 1-14 years).

### Measures

**The Adapted Mobile Phone Use Habits (AMPUH)** scale was developed by Smetaniuk (2014) to explore phone habits by using DSM-IV's pathological gambling symptoms (2000). The scale included 10-bivariate (yes or no response) items. Researchers defined that five or more scores can be identified as problematic mobile phone use.

**The Adapted Cell Phone Addiction Test (ACPAT)** was developed by Smetaniuk (2014) to explore mobile phone addiction with 20 items rated on a 5-point Likert scale. The internal consistency of the scale was satisfactory (.93).

**Rosenberg Self-Esteem Scale (RSES)** is used to evaluate self-esteem by ten items rated on 4-point Likert Scale (Rosenberg, 1965). The scale has high internal consistency, and the Turkish version of the scale was found high internal consistency (Cuhadaroglu, 1986).

**Center for Epidemiological Studies Depression (CES-D)** is developed to evaluate depression by 20 items rated on a 4-point Likert scale. Depression is identified in case scores are higher than 16. Turkish version of the scale was revealed satisfactory internal consistency (Lehman et al., 2011).

### Procedure

After taking permission from the developer of the scale (Smetaniuk, 2014) and approval from the Ethical Committee of Human Studies, the scales were translated into Turkish by two independent native English-speaking translators who are fluent in Turkish. Then, Turkish-speaking psychologists fluent in English evaluated the accuracy of translations. After the final version of the scales was agreed, the scales of the study and informed consent were entered into an online- survey program. The link of the survey was distributed by web sites of the researchers. The completion of scales took 10-15 minutes.

## Results

### AMPUH and ACPAT Results

Based on the analysis of Smetaniuk's original study in which the AMPUH scale was developed, the frequency and percentage of the participants who scored 5 or more in total on the AMPUH scale, which is the criterion for problematic mobile phone use, were investigated. Problematic mobile phone use was seen among 107 university students (41% of students scoring between 5 to 10) and 87 adults (29.2% adults scoring between 5 to 10) (Table-1). Therefore, those people had satisfactory scores to be identified as having phone addiction. There is a significant relationship between sample type (university students and employees) and problematic mobile phone usage (AMPUH score),  $\chi^2(1, N = 559) = 8.55, p = .003$ , Cramer's  $V = .25$ . The university students had presented higher problematic mobile phone usage than expected while employees had presented lower problematic mobile phone usage than expected.

Besides, based on the analysis in Smetaniuk's original study, the percentage of "yes" response in each item of the AMPUH was investigated. In the university students, the percentage of the participants who answered "yes" for salience (84.3%), mood modification (76.2%), escapism/dysphoric relief (71.6%), and tolerance (60.9%) were quite high in respect to the other items of AMPUH; withdrawal (42.1%), relapse (38.7%), cognitive distortion (18.8%), desperation (11.1%), conflict/loss (2.7%), and resort to antisocial behavior (0.4%).

On the other hand, in employees, the percentage of the participants who answered "yes" for those four items were also high, for salience (79.9%), mood modification (71.1%), escapism/dysphoric relief (58.4%), and tolerance (54.4%) in respect to the other items of AMPUH; withdrawal (31.9%), relapse (24.8%), cognitive distortion (10.4%), desperation (5.0 %), conflict/loss (2.0%), and resort to antisocial behavior (0%) (Table-2).

Table-1. AMPUH Scores for students and adults

Scored Item	STUDENTS (N = 261)		EMPLOYEES (N = 298)	
	Frequency	%	Frequency	%
0	5	1,92%	22	7,38%
1	18	6,90%	20	6,71%
2	23	8,81%	52	17,45%
3	44	16,86%	70	23,49%
4	64	24,52%	47	15,77%
<b>5</b>	<b>52</b>	<b>19,92%</b>	<b>53</b>	<b>17,79%</b>
<b>6</b>	<b>38</b>	<b>14,56%</b>	<b>20</b>	<b>6,71%</b>
<b>7</b>	<b>14</b>	<b>5,36%</b>	<b>12</b>	<b>4,03%</b>
<b>8</b>	<b>3</b>	<b>1,15%</b>	<b>2</b>	<b>0,67%</b>
<b>9</b>	<b>0</b>	<b>0,00%</b>	<b>0</b>	<b>0,00%</b>
<b>10</b>	<b>0</b>	<b>0,00%</b>	<b>0</b>	<b>0,00%</b>
<b>≥ 5</b>	<b>107</b>	<b>41,00%</b>	<b>87</b>	<b>29,19%</b>

Note: Five out of ten points indicate problematic use of the mobile phone.

Table-2. Items of AMPUH and “yes” response percentages in students and employees

AMPUH Items	STUDENTS (N = 261)			EMPLOYEES (N = 298)		
	Yes	No	Yes %	Yes	No	Yes %
Salienc_1	220	41	<b>84.3%</b>	238	60	<b>79.9%</b>
MoodModification_2	199	62	<b>76.2%</b>	212	86	<b>71.1%</b>
Relapse_3	101	160	38.7%	74	224	24.8%
Withdrawal_4	110	151	42.1%	95	203	31.9%
Escapism/Dysphoric Relief_5	187	74	<b>71.6%</b>	174	124	<b>58.4%</b>
Tolerance_6	159	102	<b>60.9%</b>	162	136	<b>54.4%</b>
CognitiveDistortion_7	49	212	18.8%	31	267	10.4%
Resort to Antisocial Behavior_8	1	260	0.4%	0	298	0.0%
Conflict/Loss_9	7	254	2.7%	6	292	2.0%
Desperation_10	29	232	11.1%	15	283	5.0%

Note: Items with a "yes" response of 50% or more are bold.

Based on Smetaniuk's original study about homogeneity of “yes or no response” in respect to gender or sample type, null hypotheses were tested. The chi-square test of homogeneity was conducted to test the null hypothesis that women and men have the same problematic mobile phone usage based on

yes / no responses on the AMPUH scale ( $H_0$ : The proportions are the same for women and men). According to the results of the chi-square analysis, null hypothesis was accepted,  $\chi^2(1, N = 559) = 1.76, p = .158$ . The null hypothesis was accepted for the items of the AMPUH scale, except for the tolerance, conflict / loss and desaperational scales; salience,  $\chi^2(1, N = 559) = .43, p = .515$ ; mood modification,  $\chi^2(1, N = 559) = 1.30, p = .255$ ; relapse,  $\chi^2(1, N = 559) = .34, p = .562$ ; withdrawal,  $\chi^2(1, N = 559) = .15, p = .695$ ; escapism/dysphoric relief,  $\chi^2(1, N = 559) = .06, p = .805$ ; tolerance,  $\chi^2(1, N = 559) = 4.32, p = .038$ ; cognitive distortion,  $\chi^2(1, N = 559) = .68, p = .409$ ; antisocial behavior,  $\chi^2(1, N = 559) = .24, p = .626$ ; conflict/loss,  $\chi^2(1, N = 559) = 6.28, p = .012$ ; and desperation,  $\chi^2(1, N = 559) = 6.90, p = .009$ . The men responded more “yes” to the item of tolerance, conflict/loss, and desperation than the expected yes response, while women responded more “no” to the same items than the expected no response.

On the other hand, the university student and adult samples did not show homogeneity in terms of yes / no responses on the AMPUH scale. Therefore, the null hypothesis was rejected with small effect size (Arnoldo, 2015),  $\chi^2(1, N = 559) = 8.55, p = .003$ , Cramer's V = .12. Homogeneity was observed in some items of the AMPUH scale but not in other items of the AMPUH scale; salience,  $\chi^2(1, N = 559) = 1.84, p = .175$ ; mood modification,  $\chi^2(1, N = 559) = 1.86, p = .172$ ; relapse,  $\chi^2(1, N = 559) = 12.44, p = .001$ ; withdrawal,  $\chi^2(1, N = 559) = 6.32, p = .012$ ; escapism/dysphoric relief,  $\chi^2(1, N = 559) = 10.69, p = .001$ ; tolerance,  $\chi^2(1, N = 559) = 2.45, p = .118$ ; cognitive distortion,  $\chi^2(1, N = 559) = 7.95, p = .005$ ; antisocial behavior,  $\chi^2(1, N = 559) = 1.14, p = .285$ ; conflict/loss,  $\chi^2(1, N = 559) = .28, p = .601$ ; and desperation,  $\chi^2(1, N = 559) = 7.09, p = .008$ . The university students responded more “yes” to the item of relapse, withdrawal, escapism/dysphoric relief, cognitive distortion, and desperation than the expected “yes” response, while employees responded more “no” to the same items than the expected “no” response.

On the ACPAT scale, the responses of the participants were re-coded to give zero points to “rarely” (1) and “occasionally” (2) responses, one point to “frequently” (3), “often, (4), and “always” (5) responses. Thus, the frequencies and percentages of the participants who scored three or more on the ACPAT items were calculated (see Table-3). In the university students, item-7 (“*Checking incoming messages first before other things*”; 60.9%), item-1 (“*Staying on phone longer than intended*”; 50.6%), item-10 (“*Using the phone to block out other disturbing thoughts*”; 32.6%), item-14 (“*Losing sleep*”; 31.4%), and item-12 (“*Fearing life without cell is boring/joyless*”; 30.3%) were scored three or more on Likert scale in respect to the other items of ACPAT.

In the sample of employees, item-7 (“*Checking incoming messages first before other things*”; 41.6%) and item-1 (“*Staying on the phone longer than intended*”; 34.9%) were scored three or more on the in respect to the other items of ACPAT.

Regarding the reliability of the ACPAT, the internal consistency coefficients of the scale were .92 for the university students and .93 for the employees. Additionally, the corrected item-total correlations were in a satisfactory range for both samples; .33 (item-4 “*Forming new relationships with callers*”) to .71 (item-20. “*Feeling depressed, moody or nervous when not using*”) for university students and .39 (item-4) to .72 (item-20) for the employees.

### **Concurrent Validity**

As evidence of concurrent validity, the AMPUH was significantly correlated with related variables (see Table-4); positively correlated with the ACPAT ( $r = .64, p < .001$ ) and CESD ( $r = .36, p < .001$ ), and negatively correlated with the RSES ( $r = -.19, p < .01$ ) and age ( $r = -.13, p < .05$ ) for the university students. Likewise, the AMPUH was positively correlated with the ACPAT ( $r = .68, p < .001$ ) and CESD ( $r = .40, p < .001$ ), and negatively correlated with the RSES ( $r = -.33, p < .001$ ) and age ( $r = -.35, p < .001$ ) for the employees.

As evidence of concurrent validity, the ACPAT was significantly correlated with related variables (see Table-4); positively correlated with CESD ( $r = .53, p < .001$ ), and negatively correlated with the RSES ( $r = -.33, p < .001$ ) and age ( $r = -.22, p < .001$ ) for the university students. Likewise, the ACPAT was positively correlated with CESD ( $r = .49, p < .001$ ), and negatively correlated with the RSES ( $r = -.36, p < .001$ ) and age ( $r = -.29, p < .001$ ) for the employees.

Table-3. The frequencies and percentages of the participants who scored three or more (frequently, often, and always) on the ACPAT items in the students and the employees

	STUDENTS (N = 261)		EMPLOYEES (N = 298)	
	Frequency	%	Frequency	%
1. Staying on phone longer than intended	132	<b>50,57%</b>	104	<b>34,90%</b>
2. Neglecting chores	72	27,59%	31	10,40%
3. Preferring phone use to intimacy with partner	26	9,96%	25	8,39%
4. Forming new relationships with callers	42	16,09%	14	4,70%
5. Others complaining about your phone use	38	14,56%	35	11,74%
6. Grades/Schoolwork suffers	57	21,84%	22	7,38%
7. Checking incoming messages first before other things	159	<b>60,92%</b>	124	<b>41,61%</b>
8. Job performance/productivity suffers	54	20,69%	24	8,05%
9. Become defensive/secretive about phone use	42	16,09%	30	10,07%
10. Using the phone to block out other disturbing thoughts	85	<b>32,57%</b>	62	20,81%
11. Anticipating when you can use a cell phone	39	14,94%	24	8,05%
12. Fearing life without cell is boring/joyless	79	<b>30,27%</b>	39	13,09%
13. Act annoyed when someone bothers you	23	8,81%	11	3,69%
14. Losing sleep	82	<b>31,42%</b>	36	12,08%
15. Preoccupied with being connected when the cell is off	29	11,11%	13	4,36%
16. Saying, "Just a few more minutes" when using cell	34	13,03%	16	5,37%
17. Cutting down on cell phone use	46	17,62%	30	10,07%
18. Inventing excuses to others why you're on cell too long	26	9,96%	18	6,04%
19. Choosing cell use over spending time with others	27	10,34%	18	6,04%
20. Feeling depressed, moody or nervous when not using	34	13,03%	20	6,71%

Note: Items with a percentage of 30% or more are bold.

### Discussion

The psychometric properties of the AMPUH and the ACPAT were examined in the present study by using two samples; university students and employees. The results revealed that 41% of students and 29.2% of employees had phone addiction based on Semataniuk's (2014) criteria for AMPUH. These percentages, which indicate mobile phone addiction, are relatively higher than those for students and adults in Semataniuk's original study. Also, percentages to "yes" response were high for salience, mood modification, escapism/dysphoric relief, and tolerance when compared to the other item groups in both samples.

Moreover, when homogeneity of "yes or no response" was tested in respect to gender or sample type, likewise in Semataniuk's (2014) study, women and men have the same problematic mobile phone usage based on yes/no responses on the AMPUH total scale. However, based on items, men responded more "yes" to the item of tolerance, conflict/loss, and desperation than the expected yes response, while females responded more "no" to the same items than the expected no response. Therefore, it can be considered that problematic mobile phone use can be observed more on tolerance, conflict/loss, and desperation among men. On the contrary, yes/no responses on the AMPUH scale for the total score were not significantly differed for university students and employees. In respect to items, the university students responded more "yes" to the item of relapse, withdrawal, escapism/dysphoric relief, cognitive distortion, and desperation than the expected "yes" response, while employees responded more "no" to the same items than the expected "no" response. Therefore, problematic mobile phone use can be seen for relapse, withdrawal, escapism/dysphoric relief, cognitive distortion, and desperation in the sample of university students.

Table-4. Descriptive statistics of the variables and the correlations and among the variables

	AMPUH	ACPAT	RSES	CESD	Age	
AMPUH		.64***	-.19**	.36***	-.13*	
ACPAT	.68***		-.33***	.53***	-.22***	
RSES	-.33***	-.36***		-.48***	.04	
CESD	.40***	.49***	-.59***		-.19**	
Age	-.35***	-.29***	.23***	-.22***		
Income	.08	.01	-.05	.01	-.14*	
University Students	Mean	4.07	36.58	3.22	11.95	23.14
	SD	1.70	12.80	6.09	6.12	4.58
	Minimum	0	20	14	1	18
	Maximum	8	89	40	30	56
Employees	Mean	3.38	29.86	33.55	9.05	35.22
	SD	1.81	1.20	4.97	6.22	8.09
	Minimum	0	20	14	0	22
	Maximum	8	74	40	30	66

When the responses to the ACPAT scale are considered on both samples, item-7 (*Checking incoming messages first before other things*) and item-1 (*Staying on phone longer than intended*) were highly scored items that reacted as “frequently” (3), “often, (4), or “always” (5). Regarding internal consistency of ACPAT, the scale had high internal consistency both in the sample of university students and employees. Additionally, the corrected item-total correlations were in a satisfactory range for both samples. Similar results were found by the developers the scale (Smetaniuk, 2014).

Regarding concurrent validity, the AMPUH was significantly positively correlated with the ACPAT and CESD while it was negatively correlated with the RSES and age for the university students and the employees. As evidence of concurrent validity, the ACPAT was significantly positively correlated with CESD, and negatively correlated with the RSES and age for the university students and the employees. A similar relationship was seen between phone addiction and self-esteem (Baumeister et al., 2003; Senol-Durak & Durak, 2011). Further studies exploring psychometric properties of the ACPAT and AMPUH are recommended.

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