

## Test Development for Cellular Phone Addiction among College Students

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### ABSTRACT

This study aimed to develop a test to determine the level of cellular addiction among college students. The items included in this instrument were obtained from the internet source and were verified by the students. The data were analyzed through reliability analysis and factor analyses. The process in developing the test for cellular phone addiction questionnaire was described, and the final version of the instrument was presented. Findings revealed three factors namely: habitually/routinely activity, preoccupation, and negative consequences. It also proposed method on how to interpret the level of cellular addiction of the students based on the computed mean scores that correspond to their responses using the questionnaire. The three factors were also identified as correlated factors. This instrument can be used for further studies and baseline studies to develop interventions to solve problems on cellular phone addiction.

**Key words:** Addiction; cellular phone; questionnaire; habitually; preoccupation; negative consequences

### INTRODUCTION

As defined in a business dictionary, cellular phones or mobile phones are portable telephone device that does not require the use of landlines. Cellular phones utilize frequencies transmitted by cellular towers to connect the calls between two devices. The first cellular phone operated on an analog service and was developed by Motorola, Inc. Cellular phones have grown to be the most widely used portable device in the world. Cellular phones may also be referred to as wireless or mobile phones.

In recent years, cellular phones become increasingly popular. While people of various ages find cellular phones convenient and useful, younger generations tend to appreciate them more and be more dependent [1]. College students most widely used cellular phones, not only because they owned one or more phones but because it has greater importance in college students than in other year level or grade (namely preparatory, elementary and secondary) and even than older age. The attractive characteristics and specifications encourage college students to own and use a cellular phone because of its several functions [2]. Some of the functions of cellular phones, other than as a means of communication are: it serves as an educational tool to access academic information [3], for fun and entertainment with its music, camera or video, cellular surfing: it can also be used for emergency purposes and others. In contrary to that, abusive and excessive use of cellular phones can also be problematic and harmful to this group. Several studies revealed the disadvantages caused by using

cellular phones. A study also claims that the greater the overuse of cellular phones, the greater the risk for severe psychopathologies in adolescents. The research in Korea showed that very high users of phones are significantly more problematic behaviors than low users. These problems on using cellular phones are also associated with depression, more exposure to the obscene material, and even suicide among adolescents [4].

Past researches documented the problematic facet of extreme usage of the cellular phone in young people [5; 6; 7; 8]. Other researches claimed that cellular phone addiction is based on internet addiction [9; 10; 11; 12] which specifies that behavioral addiction like those people addicted to the internet is also the people who became addicted to gambling, drugs, and alcohol according to Young in 1996 [10]. As the specifications and uses of the smart phone were added, young people are becoming fascinated to this device not only as a means of communication but also as a means for other functions.

The cellular phone is the most popular technological gadgets these days. It is used by people of all ages. It was introduced by Senator Manuel "Lito" M. Lapid during the fifteenth congress of the Republic of the Philippines in its first regular session (S. No. 2512), that Philippines has been called the "TEXT" capital of the world due to the large volume of Short Messaging System (SMS) traffic exchange in the country. The estimated number of cellular phone users in the

Philippines reached over 23 million and is still increasing at a rapid rate [13].

According to a survey done by the digital and media habits of consumers, nearly a third of urban Filipinos cannot live if no cellular phones. Similarly, as reported by Ipsos Media Atlas Philippines Nationwide Urban 2011-2012 survey, 30 percent of the Philippine urban population nationwide claimed that cellular phones are necessities in life. While 21 percent claimed to use their cellular phones more often [14].

On the other hand, there were existing instrument validated such as Mobile Phone Problem Use Scale (MPPUS) [15], Problematic Mobile Phone Use Questionnaire [16], Text-Message Dependence Scale (TMDS) [17], Mobile Phone Dependence Questionnaire (MPDQ) [18], Mobile Phone Involvement Questionnaire [19], Problem Cellular Phone Use Questionnaire [20] and Manolis/Roberts Cell-phone Addiction Scale (MRCPAS) [21]. Hence, researchers used their own collective items and this increases problems in replication. With this, the need to come up with a revised and validated instrument is seen essential though the commonly used among the existing instruments is Bianchi and Phillips' Mobile Phone Problem Use Scale (MPPUS). This was used for instance in determining the effect of mobile addiction on other social life [22]. Moreover, the Problematic Mobile Phone Use Questionnaire (PMPUQ), an instrument used in evaluating mobile phone addiction level and sleep quality in university students [23] was the only validated multidimensional scale reported [24; 2]. Lastly, the available instruments focused on the assessment of the problematic use of SMS and not on psychometrically sound instruments. Hence, it was deemed important to develop a questionnaire that will measure cellular phone addiction globally, as well as the different aspects of problematic use. Yet, the existing tools recently developed needed to prove their validity [24]. In addition, the existing instruments were constructed and validated in foreign countries and not in Philippine setting. This study aimed to construct a test to determine the level of cellular addiction among college students and to find a significant relationship between the possible factors of the constructed questionnaire.

*Statement of Null Hypothesis*

- There is no significant correlation between and among the three factors obtained from factor analysis.

**MATERIALS AND METHODS**

*Participants*

The respondents of the study were 199 randomly selected college students enrolled in Saint Mary's University.

*Data Instrument*

Test of Cellular-phone addiction. The original questionnaire consisted of 45-item. After the pilot testing, the 45-item questionnaire was reduced to 27 items. The tool was a Likert scale type of questionnaire that ranges from 0 (strongly disagree) to 4 (strongly agree).

*Procedure*

The statements in the questionnaire were collected from the internet sources [25; 26; 27; 28; 29; 30]. The statements were validated and verified by the college students. The questionnaires were administered to the students in their classrooms. They were instructed on how to answer the item honestly and guaranteed the confidentiality of their answers.

*Statistical Analyses*

The data were analyzed using the IBM SPSS 21 software. Exploratory factor analysis and reliability tests were used to analyze the data gathered. The principal-components analysis was used to extract the factors Oblimin. Varimax with Kaiser Normalization and Scree test were also applied. To identify the factors retained, Monte Carlo PCA parallel analysis was generated. Kendal's tau was also computed since the distributions were not all normal as shown in Table 1.

*Test of Normality*

Kolmogorov-Smirnov Statistic was used to check the normality.

Table 1. Kolmogorov- Smirnov Test Result

	Kolmogorov-Smirnov		
	Statistic	Df	Sig.
factor1	.062	199	.064
factor2	.055	199	.200*
factor3	.092	199	.000

Table 1 shows that factor 3 was skewed and factor 1 and 3 were normal.

### RESULTS AND DISCUSSIONS

The structure of the questionnaire was analyzed through Factor analysis. Factors were extracted through principal component analysis, and rotation was performed using oblimin and varimax normalization. The rotation technique was appropriate because the factors were assumed to be correlated with one another. The null hypothesis that the variables were not correlated in the population of the sample was rejected because the Bartlett sphericity contrast resulted to  $\chi^2 = 3340.714$  ;  $p < .001$ . Hence, this allows consideration on the correlation matrix suitable for factorization. Moreover, the Kaiser–Meyer–Olkin indicated that the correlation matrix was adequate for the analysis,  $KMO = .865$ ,  $KMO \geq 0.6$ . There were 11 factors extracted using the Eigen values greater than 1. However, through the Scree plot, there were only 3 possible factors considered. The number of factors that were retained in the principal component was identified through the Monte Carlo PCA parallel analysis. The method provides a superior alternative to other techniques that are commonly used for the same purpose, such as the Scree test or the Kaiser’s eigenvalue-greater-than-one rule.

Table 2. Comparison of Initial Eigen Values from SPSS and Random Eigen Value from Monte Carlo PCA Parallel Analysis in Initial Questionnaire.

Factor	Initial Eigen Values	Comparison	Random Eigen Values
1	11.297	>	2.0670
2	3.100	>	1.9370
3	2.671	>	1.8511
4	1.757	<	1.7740
5	1.541	<	1.6992
6	1.450	<	1.6422
7	1.373	<	1.5824
8	1.212	<	1.5255
9	1.097	<	1.4746
10	1.066	<	1.4282
11	1.033	<	1.3796

There were only three factors considered since the initial Eigen values were greater than random Eigen values.

The 45 items were reduced to 27 items. Since the correlation values were close to each other, the items with the same idea were combined as shown in Table 3.

Table 3. Test for Cellular Addiction (For Scaling)

Statement	Component			Action	Remarks
	1	2	3		
14. I need to use my cellular phone more and more often.	.707	-.246	.093	RET	Revise to cover idea of parallel items
35. I feel the need to talk on the phone almost all the time.	.660	.259	.013	DEL	Same idea with item 14
15. I cannot stop using my cellular phone.	.648	-.130	.171	DEL	Merge with item 14
18. I cannot stand spending a week without a cellular phone.	.628	-.175	-.189	RET	
34. I always feel anxious about my cell phone, especially when I am unable to use it (meeting, plane, class, church).	.628	-.030	-.265	RET	
20. I will use my cellular phone to send a message or make a call right now.	.601	.228	.085	DEL	Same as item 11
4. I spend more time on using my cellular phone in sending messages or in its application.	.599	-.319	.269	DEL	Same as item 14
16. I increase the number of SMSs I send since I got my cellular phone.	.584	-.283	.184	RET	Revise
11. I feel the need to call someone, send an SMS, or use applications and frequently think about the calls and messages I may receive when I haven't used my cellular phone for a while.	.556	-.218	.258	DEL	Same as 14
31. I feel ill of the idea of having to leave my phone in the store for repairs.	.549	.095	-.407	DEL	Same as item 18
40. I am unable to resist special offers on the latest cell phone models.	.547	.193	-.112	RET	
7. I spend more money on my cellular phone (calls, messages...) than I expected.	.546	.002	.485	RET	
17. I do see who has called me on my cellular phone or if someone has sent me an SMS as soon as I get up in the morning.	.543	-.288	-.204	DEL	Same as item 41
43. I use my cell phone for internet-related things while I am at Computer	.542	.224	-.183	DEL	Same as item 14
19. I use the cellular phone when I'm lonely.	.538	-.250	.060	RET	Revise

Statement	Component			Action	Remarks
	1	2	3		
41. The first thing upon waking is check phone for messages	.536	-.300	-.323	RET	
9. I use my cellular phone even in inappropriate place or situation. (eating, while other people talk to me, inside the bathroom, etc.).	.527	-.101	.274	RET	
21. I have 30 different application installed on my cellular phone and I use them all.	.526	.500	-.053	RET	
37. I experience high levels of anxiety, stress, or insecurity whenever I am without my cell phone.	.517	-.097	-.307	DEL	Same with item 34
13. I feel very bad when my cellular phone was broken and needed to be fixed for a long period of time.	.516	-.147	-.222	DEL	Same as item 18 and item 31
39. I sometimes believe my phone is ringing, but when I answer it or listen longer I find it wasn't ringing at all (known as 'phantom ringing').	.508	-.177	-.047	RET	
30. I try not to do this at concerts, but I cannot insist to do it.	.501	.162	-.202	DEL	Same as item 14
24. I charge my cellular phone every day.	.498	.187	.027	RET	Revise
26. I justify being on my phone all the time because I "might miss an important text or email."	.496	.091	-.189	RET	
33. I always have my cell phone with me.	.496	-.319	-.253	RET	Revise
6. I sleep late at night because of using my cellular phone.	.487	-.172	.414	RET	
5. I send more than five messages in a day.	.483	-.404	.246	DEL	Same as item 16
36. I take cell phone breaks even during classroom discussion.	.476	-.078	-.019	DEL	Same as item 9
32. I find something weirdly comforting in that familiar motion of sliding my finger across the glass.	.460	.102	-.159	RET	
44. I can type or perform phone functions without looking	.449	-.228	-.320	RET	
42. I charge my phone in public places	.431	.256	-.155	DEL	Merge with 24
12. I increase the number of calls I make since I got my cellular phone.	.429	-.023	.174	DEL	Merge with 16
27. I insist that I can do two things at once — text AND walk, text AND listen! — but in reality, I cannot.	.426	.039	-.227	RET	
22. I have alarms telling me when to do everything in your life.	.419	.285	-.038	RET	
8. I use my cellular phone when I'm bored.	.406	-.192	.321	DEL	Merged with item 19
45. I am always rocking a Bluetooth headset.	.400	.279	-.128	RET	
3. I argue with my family members about the cost of my cellular phone.	.370	.042	.354	RET	
1. I am teased or warned because of using my cellular phone too much.	.347	.125	.346	RET	
29. I only turn off my phone on an airplane.	.308	.259	-.280	DEL	Not appropriate to all
28. I wait 30 minutes to like status and updates on facebook, Instagram or other social networking sites because I don't want to seem lame even I notice it right away.	.390	.543	-.005	RET	
23. I have cut back on necessities to afford my monthly cell phone bill.	.430	.539	.098	RET	
25. I can only talk on the phone when I meet people with the same phone.	.497	.498	.045	RET	
38. I sleep with my cell phone under my pillow or on a night stand right next to the bed.	.354	-.492	-.299	DEL	Same as item 33
10. I am criticized because of the cost of my cellular phone.	.425	.199	.508	RET	
2. I set a limitation on using the cellular phone but I fail to stick to it.	.247	.137	.363	RET	

RET – statement is retained

DEL- statement is deleted

Table 4 shows the final questionnaire.

**Table 4. Test for Cellular Addiction (Individual Form Summary)**

Statement	Component			New Item No.
	1	2	3	
1. I am teased or warned because of using my cellular phone too much.	.347	.125	.346	1
2. I set a limitation on using the cellular phone but I fail to stick to it.	.247	.137	.363	2
3. I argue with my family members about the cost of my cellular phone.	.370	.042	.354	3
6. I sleep late at night because of using my cellular phone.	.487	-.172	.414	4
7. I spend more money on my cellular phone (calls, messages...) than I expected.	.546	.002	.485	5
9. I use my cellular phone even in inappropriate place or situation. (eating, while other people talk to me, inside the bathroom, etc.).	.527	-.101	.274	6
10. I am criticized because of the cost of my cellular phone.	.425	.199	.508	7
14. I need to use my cellular phone more and more often.(send SMS, call, and other applications)	.707	-.246	.093	8

Statement	Component			New Item No.
	1	2	3	
16. I increase the number of messages I sending messages and calling since I got my cellular phone.	.584	-.283	.184	9
18. I cannot stand spending a week without a cellular phone.	.628	-.175	-.189	10
19. I use the cellular phone when I'm lonely or I'm bored.	.538	-.250	.060	11
21. I have 30 different application installed on my cellular phone and I use them all.	.526	.500	-.053	12
22. I have alarms telling me when to do everything in your life.	.419	.285	-.038	13
23. I have cut back on necessities to afford my monthly cell phone bill.	.430	.539	.098	14
24. I charge my cellular phone every day even in public place.	.498	.187	.027	15
25. I can only talk about the phone when I meet people with the same phone.	.497	.498	.045	16
26. I justify being on my phone all the time because I "might miss an important text or email."	.496	.091	-.189	17
27. I insist that I can do two things at once — text AND walk, text AND listen! — but in reality, I cannot.	.426	.039	-.227	18
28. I wait 30 minutes to like status and updates on facebook, Instagram or other social networking sites because I don't want to seem lame even I notice it right away.	.390	.543	-.005	19
32. I find something weirdly comforting in that familiar motion of sliding my finger across the glass.	.460	.102	-.159	20
33. I always have my cell phone with me even when I'm sleeping.	.496	-.319	-.253	21
34. I always feel anxious about my cell phone, especially when I am unable to use it (meeting, plane, class, church).	.628	-.030	-.265	22
39. I sometimes believe my phone is ringing, but when I answer it or listen longer I find it wasn't ringing at all (known as 'phantom ringing').	.508	-.177	-.047	23
40. I am unable to resist special offers on the latest cell phone models.	.547	.193	-.112	24
41. The first thing upon waking is check phone for messages	.536	-.300	-.323	25
44. I can type or perform phone functions without looking	.449	-.228	-.320	26
45. I am always rocking a Bluetooth headset.	.400	.279	-.128	27

Table 5. Comparison of Initial Eigen Values from SPSS and Random Eigen Value from Monte Carlo PCA Parallel Analysis in Final Questionnaire.

Factor	Initial Eigen Values	Comparison	Random Eigen Values
1	6.900	>	1.7593
2	2.279	>	1.6380
3	1.929	>	1.5520
4	1.396	<	1.4739
5	1.169	<	1.4014
6	1.045	<	1.3422

The initial Eigen values greater than the random Eigen values were the only retained factors. Out of 6 factors extracted from the analysis, only three factors were retained. The Bartlett sphericity contrast ( $\chi^2 = 1629.01$  ;  $P < .001$ ) and the Kaiser-Meyer-Olkin measure of sample adequacy ( $KMO = .857$ ,  $KMO \geq 0.6$ ) allowed rejection of the null hypothesis that the variables used in the analysis were not correlated in the population of the sample and the correlation matrix was adequate for the analysis. Three factors were extracted from the factor analysis. The first factor explained 25.56% of

the variance and was composed of composed of items 25,21,26,8,22,10,11,23,9 and 20 of the final questionnaire.

Based on the content of these items, the first factor was called habitually/routinely activity which refers to activity done frequently and predictably.

The second factor explained 8.44 % of the variance. It was composed of ten items (12, 14, 19, 16,15,13,17, 27, 18 and 24) that refer to constant thought about the cellular phone. The second factor was labeled preoccupation. Finally, the third factor explained 7.15% of the variance and was composed of items 7, 5, 3,2,4,1 and 6, which refer to problems encountered because of using the cellular phone. This factor was labeled negative consequences. Cronbach's Alpha values for the aforesaid factors were: habitually/routinely activity = 0.83 (10 items); preoccupation = 0.80 (10 items); and negative consequences = 0.75 (7 items). These internal consistency reliability estimates were all in the range of "acceptable" to "very good" according to the guidelines provided by DeVellis (1991) Table 1 shows the rotated factor matrix. Items with saturation levels lower than 0.30 were excluded from the factors.

Table 6. Rotated Factor Matrix

Statement	Component		
	1	2	3
25. The first thing upon waking is check phone for messages	<b>.704</b>		
21. I always have my cell phone with me even when I'm sleeping.	<b>.664</b>		
26. I can type or perform phone functions without looking	<b>.650</b>		
8. I need to use my cellular phone more and more often.(send SMS, call, and other applications)	<b>.628</b>		.335
22. I always feel anxious about my cell phone, especially when I am unable to use it (meeting, plane, class, church).	<b>.611</b>	.352	
10. I don't think I could stand spending a week without a cellular phone.	<b>.606</b>		
11. I use the cellular phone when I'm lonely or I'm bored.	<b>.532</b>		
23. I sometimes believe my phone is ringing, but when I answer it or listen longer I find it wasn't ringing at all (known as 'phantom ringing').	<b>.531</b>		
9. I increase the number of messages I sending messages and calling since I got my cellular phone.	<b>.505</b>		.369
20. I find something weirdly comforting in that familiar motion of sliding my finger across the glass.	<b>.333</b>	.320	
12. I have 30 different application installed on my cellular phone and I use them all.		<b>.731</b>	
14. I've cut back on necessities to afford my monthly cell phone bill.		<b>.706</b>	
19. I wait 30 minutes to like status and updates on facebook, Instagram or other social networking sites because I don't want to seem lame even I notice it right away		<b>.698</b>	
16. I can only talk about the phone when I meet people with the same phone.		<b>.654</b>	
15. I charge my cellular phone every day even in public place.		<b>.525</b>	
13. I have alarms telling me when to do everything in your life.		<b>.501</b>	
17. I justify being on my phone all the time because I "might miss an important text or email."	.349	<b>.477</b>	
27. I am always rocking a Bluetooth headset.		<b>.454</b>	
18. I insist that I can do two things at once — text AND walk, text AND listen! — but in reality, I cannot.	.319	<b>.425</b>	
24. I am unable to resist special offers on the latest cell phone models.	.363	<b>.405</b>	
7. I am criticized because of the cost of my cellular phone.			<b>.724</b>
5. I spend more money on my cellular phone (calls, messages...) than I expected.			<b>.703</b>
3. I argue with my family members about the cost of my cellular phone.			<b>.660</b>
2. I set a limitation on using the cellular phone but I fail to stick to it.			<b>.530</b>
4. I sleep late at night because of using my cellular phone.	.311		<b>.518</b>
1. I am teased or warned because of using my cellular phone too much.			<b>.490</b>
6. I use my cellular phone even in inappropriate place or situation. (eating, while other people talk to me, inside the bathroom, etc.).	.365		<b>.460</b>

Extraction Method: Principal Component Analysis.  
Rotation Method: Varimax with Kaiser Normalization.  
a. Rotation converged in 6 iterations.

The structural matrix, or factor structure, were extracted, which reflects the correlation of each item with the oblique factor. This includes both the direct effects of the factor on the item (as in the oblique pattern) and the indirect effects of other factors through their correlations with a given factor (see Table 6). Both the factor structure and the structural matrix (see Tables 6 and 7) show that

item 20 had saturations in both the first and second factors and was correlated with both factors. However, because the item was more related to factor 1 or the habitual factor, item 20 were included in the first factor. It is worth mentioning that the same results were obtained with the Kaiser oblmin rotation method and Kaiser varimax.

Table 7. Structure Matrix

Statement	Component		
	1	2	3
25. The first thing upon waking is check phone for messages	<b>.706</b>	.230	.059
8. I need to use my cellular phone more and more often.(send SMS, call, and other applications)	<b>.679</b>	.339	.414
21. I always have my cell phone with me even when I'm sleeping.	<b>.664</b>	.210	.049
22. I always feel anxious about my cell phone, especially when I am unable to use it (meeting, plane, class, church).	<b>.656</b>	.462	.140
26. I can type or perform phone functions without looking	<b>.645</b>	.176	.041
10. I don't think I could stand spending a week without a cellular phone.	<b>.640</b>	.315	.250
11. I use the cellular phone when I'm lonely or I'm bored.	<b>.561</b>	.224	.300
23. I sometimes believe my phone is ringing, but when I answer it or listen longer I find it wasn't ringing at all (known as 'phantom ringing').	<b>.559</b>	.214	.290
9. I increase the number of messages I sending messages and calling since I got my cellular phone.	<b>.545</b>	.214	.422
12. I have 30 different application installed on my cellular phone and I use them all.	.225	<b>.754</b>	.262
14. I've cut back on necessities to afford my monthly cell phone bill.	.076	<b>.712</b>	.320

Statement	Component		
	1	2	3
16. I can only talk on the phone when I meet people with the same phone.	.172	<b>.685</b>	.349
19. I wait 30 minutes to like status and updates in facebook, Instagram or other social networking sites because I don't want to seem lame even I notice it right away	.069	<b>.683</b>	.168
15. I charge my cellular phone every day even in public place.	.341	<b>.573</b>	.187
13. I have alarms telling me when to do everything in your life.	.236	<b>.537</b>	.225
17. I justify being on my phone all the time because I "might miss an important text or email."	.410	<b>.525</b>	.068
24. I am unable to resist special offers on the latest cell phone models.	.439	<b>.495</b>	.308
I am always rocking a Bluetooth headset.	.272	<b>.488</b>	.138
18. I insist that I can do two things at once — text AND walk, text AND listen! — but in reality, I cannot.	.368	<b>.461</b>	.014
20. I find something weirdly comforting in that familiar motion of sliding my finger across the glass.	.386	.391	.186
7. I am criticized because of the cost of my cellular phone.	.105	.329	<b>.743</b>
5. I spend more money on my cellular phone (calls, messages...) than I expected.	.357	.293	<b>.738</b>
3. I argue with my family members about the cost of my cellular phone.	.196	.141	<b>.666</b>
4. I sleep late at night because of using my cellular phone.	.371	.210	<b>.552</b>
2. I set a limitation on using the cellular phone but I fail to stick to it.	-.021	.175	<b>.528</b>
6. I use my cellular phone even in inappropriate place or situation. (eating, while other people talk to me, inside the bathroom, etc.).	.432	.308	<b>.512</b>
1. I am teased or warned because of using my cellular phone too much.	.132	.243	<b>.510</b>

Extraction Method: Principal Component Analysis.  
Rotation Method: Oblimin with Kaiser Normalization.

### Interpreting the level of cellular phone addiction

The mean of the responses in each factor will be obtained and interpretation will be based on Table 7.

Table 7. Scale for interpretation of the level of cellular phone addiction

Mean	Level of Cellular Phone Addiction	Qualitative Description
0.00-1.49	Not cellular phone dependent	The student can live without cellular phone
1.49-2.49	Not cellular phone addicted	The student uses his/her cellular phone properly based on its function.
2.49-3.49	Moderately cellular phone addicted	The student is dependent on his/her cellular phone. The use of cellphone becomes his/her necessity.
3.50-4.00	Highly cellular phone addicted	The student is very dependent on his/her cellular phone. He or she uses the cellular phone abusively.

The possible impact on the addictive user of the cellular phone can also be determined through the highest factor. The overall level of cellular phone addiction can also be computed through getting the mean on all items regardless of the factor and can be interpreted using the scale in Table 7.

Table 8 shows the correlations among the three factors extracted from the questionnaire.

Table 8. Correlations among factors

		Factor 1 habitually/ routinely activity	Factor 2 preoccupation	Factor 3 negative consequences
	habitually/routinely activity	Correlation Coefficient Sig. (2-tailed) N	1.000 <b>.390**</b> . 199	<b>.322**</b> . . 199
	preoccupation	Correlation Coefficient Sig. (2-tailed) N	<b>.390**</b> . . 199	1.000 . . 199
		Correlation Coefficient Sig. (2-tailed)	<b>.322**</b> . . 199	<b>.309**</b> . . 199
negative consequences		Correlation Coefficient Sig. (2-tailed)	<b>.309**</b> . . 199	1.000 . . 199

\*\* Correlation is significant at the 0.01 level (2-tailed).

Table 8 reveals that the three factors are significantly correlated directly to each other.

## CONCLUSIONS

The findings showed that cellular phone addiction has three factors namely: habitually/routinely, preoccupation and negative consequences. Habitually/routinely activity refers to activity done frequently and predictably. Preoccupation refers to the constant thought about the cellular phone and negative consequences refer to problems encountered because of using the cellular phone. Level of cellular phone addiction can be measured through the computed mean of the responses per factor and in overall. The level of addiction can be described as a not cellular phone dependent, not cellular phone addicted, moderately cellular phone addicted and highly cellular phone addicted. Moreover, the three factors identified were correlated to each other.

It is essential to continue to study the conditions that promote this dependence, to develop cure and prevention programs, and to make an existing assessment and diagnostic tools that are the effective intervention. This instrument can be useful for researchers and therapists working with cellular-phone addiction.

## RECOMMENDATIONS

To use the proposed final instrument for further study, level of addiction can also be explored in terms of relationships or differences to the demographic variables of the students such as age, sex, relationship status and mental health conditions (for example depression). With the increase of the cellular phone functions such as games, the internet, and other cellular applications, these can also be considered as variables that cause cellular phone addiction. Use of this instrument can also serve as a baseline study to come up with interventions to solve problems on the use of cellular phones or cellular phone addiction.

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**APPENDIX**

**Test of Cellular-phone Addiction**

Indicate to what degree you agree or disagree with the statements presented below.

0 – Strongly Disagree    1 - Disagree    2 – Neutral    3 - Agree    4 - Strongly Agree

<b>Statement</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>
1. I am teased or warned because of using my cellular phone too much.					
2. I set a limitation on using the cellular phone but I fail to stick to it.					
3. I argue with my family members about the cost of my cellular phone.					
4. I sleep late at night because of using my cellular phone.					
5. I spend more money on my cellular phone (calls, messages...) than I expected.					
6. I use my cellular phone even in inappropriate place or situation. (eating, while other people talk to me, inside the bathroom, etc.).					
7. I am criticized because of the cost of my cellular phone.					
8. I need to use my cellular phone more and more often.(send SMS, call, and other applications)					
9. I increase the number of messages I sending messages and calling since I got my cellular phone.					
10. I don't think I could stand spending a week without a cellular phone.					
11. I use the cellular phone when I'm lonely or I'm bored.					
12. I have 30 different application installed on my cellular phone and I use them all.					
13. I have alarms telling me when to do everything in your life.					
14. I have cut back on necessities to afford my monthly cell phone bill.					
15. I charge my cellular phone every day even in public place.					
16. I can only talk on the phone when I meet people with the same phone.					
17. I justify being on my phone all the time because I "might miss an important text or email."					
18. I insist that I can do two things at once — text AND walk, text AND listen! — but in reality, I cannot.					
19. I wait 30 minutes to like status and updates on facebook, Instagram or other social networking sites because I don't want to seem lame even I notice it right away.					
20. I find something weirdly comforting in that familiar motion of sliding my finger across the glass.					
21. I always have my cell phone with me even when I'm sleeping.					
22. I always feel anxious about my cell phone, especially when I am unable to use it (meeting, plane, class, church).					
23. I sometimes believe my phone is ringing, but when I answer it or listen longer I find it was not ringing at all (known as 'phantom ringing').					
24. I am unable to resist special offers on the latest cell phone models.					
25. The first thing upon waking is check phone for messages					
26. I can type or perform phone functions without looking					
27. I am always rocking a Bluetooth headset.					