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Development of Mobile Phone Addict Scale

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The aim of this study was to develop the mobile phone addict scale, which was developed based on Mobile Phone Addict Index (MPAI) according to Leung's study (2007), such as inability to control craving, anxiety and feeling lost, withdrawal/escape, and productivity loss. The development of the scale adopted items of Leung's study. Participants were 200 students who were at late stages of adolescence selected through incidental sampling (*N*=200). Results of validity, reliability, and norm are further discussed.

Keywords: mobile phone addict scale, validity, reliability, norm

Penelitian ini bertujuan mengembangkan skala *mobile phone addict*, yang dikembangkan berdasarkan *Mobile Phone Addict Index* (MPAI) hasil penelitian Leung (2007), antara lain ketakmampuan mengendalikan ketahigan, kecemasan dan perasaan hilang, penarikan diri/pelarian, dan kehilangan produktivitas. Pengembangan skala mengadopsi butir-butir hasil penelitian Leung. Partisipan adalah mahasiswa yang berada pada tahapan perkembangan remaja akhir melalui *incidental sampling* (*N*=200). Hasil uji validitas, reliabilitas, dan norma skala didiskusikan lebih lanjut.

Kata kunci: skala *mobile phone addict*, validitas, reliabilitas, norma

The advancement of mobile phone or cellular phone function is tremendous. Its multi functions such as communication, short messages service, media message service or entertainment, are enjoyed by children as well as adults. Cellular phone users were mostly youngsters (Ling, 2007). Leung and Wei (cited in Leung, 2007a) stated that mostly users of cellular phone in Hongkong were youngsters. Malaysian youngsters' active users were 20.9 % compared to 12.3% adults (Malaysian Communication and Multimedia Commission, cited in Zulkefly & Baharudin, 2009). Fifty six percentage of around 7.3 million cell phone users in Indonesia were below 20 years of age (*Kompas*, cited in Nugroho, 2008). Features commonly used were voiced call, short messages service, games, internet browsing, camera, and video. Those features made cell phone very exciting for youngsters (Leung, 2007b) and became a lifestyle (Leena, Tomi, & Arja, 2005).

Positive impacts are easier voiced communication or through short message service, chatting, or email. Games, social network, music, radio, and camera function as entertainment. Some office functions like calculator, unit converter, program for document, direction indicator, or other function are really helpful.

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The negative impact is that a lot of pornographic picture and videos are made through cell phone camera, and consumptive behavior meaning a lot of money being spent (Leena, Tomi, & Arja, 2005). Consumptive behavior of youngsters are supported by low cell phone price, great promotion by providers, eventhough youngsters mostly do not work to make a living.

The negative impacts of cell phone are studied in youngsters because firstly, they frequently get problems linked with cell phone usage (Bianci & Philips, cited in Billieux, Linden, & Rochat, 2008). Secondly, youngsters are vulnerable to be addicted to information and information technologies (ICT) (Kandell, cited in Yi, 2006). Youngsters are in transition in finding themselves to survive, and one of the efforts is to follow trend in technological development. Thirdly, in trying to find themselves, they are emotionally unstable and they do not have a good self control, and that's why they are the biggest market of almost every product including cellular phone through advertisement. Youngsters are attracted to follow advanced technology and use the newest technologies (Brickfield, cited in Billieux, Linden, & Rochat, 2008 ; Zulkefly & Baharudin, 2009), and this condition is caused y cohesivity of youngsters with their fellow youngsters (Ling, 2007). Using cell phone could increase status and self respect amongst

Table 1
Factor Analysis in Leung's Study About Symptoms of Mobile Phone Addict: Mobile Phone Addiction Index (MPAI)

Factor	Loading Factor	Cronbach's Alpha
Inability to Control Craving		
1. You have been told that you spend too much time on your mobile phone	.790	
2. Your friends and family complained about your use of the mobile phone	.774	
3. You have tried to hide from others how much time you spend on your mobile phone	.640	
4. You find yourself engaged on the mobile phone for longer period of time than intended	.583	.83
5. You can never spend enough time on your mobile phone	.576	
6. You have attempted to spend less time on your mobile phone but are unable to	.520	
7. You lose sleep due to the time you spend on your mobile phone	.517	
Feeling Anxious & Lost		
8. When out of range for some time, you become preoccupied with the thought of missing a call	.728	
9. You feel anxious if you have not checked for messages or switched on your mobile phone for some time	.723	.76
10. You find it difficult to switch off your mobile phone	.691	
11. You feel lost without your mobile phone	.648	
Withdrawal/Escape		
12. You have used your mobile phone to talk to others when you were feeling isolated	.839	
13. You have used your mobile phone to talk to others when you were feeling lonely	.824	.81
14. You have used your mobile phone to make yourself feel better when you were feeling down	.705	
Productivity Loss		
15. You find yourself occupied on your mobile phone when you should be doing other things, and it causes problem	.807	
16. Your productivity has decreased as a direct result of the time you spend on the mobile phone	.741	.60
17. There are times when you would rather use the mobile phone than deal with other more pressing issues	.421	

friends (Leena, Tomi, & Arja, 2005 ; Walsh, White, & Young, 2007).

Excessive use of mobile phone could cause mobile phone addiction. Mobile phone addiction is defined as being attached to mobile phone accompanied with less control resulting in negative impact on individuals (Leung, 2007a). Addiction is usually used in clinical context and could mean excessive behavior (James & Drennan, 2005). Concept of addiction can be applied to all behaviors widely (Lemon, Orford, Shaffer, cited in Leung, 2007b) including ICT addiction (Beranuy, Oberst, Carbonell, & Chamarro, 2009). Griffiths (cited in Leung, 2007b) presented concept of technology addiction as excessive interaction between man and machine with negative impact including internet browsing, games, watching TV, and using mobile phone as in gambling, alcohol drinking, and drug. An individual can be called an addict if he cannot control his desire to do or use mobile phone with negative impact. Mobile phone makes people able to communicate without time or place limitation, and it would be a problem if they cannot live normal lives without them such as bringing them everywhere and feel uncomfortable and disturbed if they cannot use mobile phone (Park, 2005).

Mobile phone addict has characteristics or specific symptoms that could differentiate and addict or not. Roos (cited in Yi, 2006) stated that characteristics of mobile phone addict among others were always kept his mobile phone active and used it instead of cable phone, had finacial and social problems because of excessive use of it. Park (2005) formed scale to measure mobile phone addict and got two indicators of mobile phone addict, namely problem use and guilty use. The scale developed by Park had factor loading .58 - .97 and alpha cronbach .85.

Bianchi and Philips (cited in Leung, 2007b) tested some mobile phone addict symptoms used in developing Mobile Phone Problem Use Scale (MPPUS). Those characteristics were : (a) being preocupied with mobile phone, (b) the time used is increasing to satisfy themselves, (c) trying to control the use of mobile phone but failed to do so, (d) feeling lost, anxious, depressed, uncomfortable when trying to stop using mobile phone, (e) using mobile phone for a long time, (f) secretly using mobile phone while being with friends or family, (g) using mobile phone as a means of distracting himself from feeling lonely, alone, anxious, and depressed.

Table 2
Adaptation of Statement Items in Leung's Mobile Phone Addict Into Indonesian Language

Leung's Item	Item Adaptation
Inability to Control Craving	**Inability to Control Craving**
You have been told that you spend too much time on your mobile phone.	*Anda menghabiskan banyak waktu dengan telepon genggam. (Butir 1)*
Your friends and family complained about your use of the mobile phone.	*Teman-teman dan keluarga Anda mengeluh tentang Anda terkait penggunaan telepon genggam. (Item 8)*
You have tried to hide from others how much time you spend on your mobile phone.	*Saat Anda bersama dengan orang lain Anda secara sembunyi-sembunyi menggunakan telepon genggam . (Butir 13)*
You find yourself engaged on the mobile phone for longer period of time than intended.	*Anda menggunakan telepon genggam dalam waktu yang lama. (Butir2)*
You can never spend enough time on your mobile phone.	*Anda merasa bahwa waktu untuk menggunakan telepon genggam tidak pernah cukup. (Butir 16)*
You have attempted to spend less time on your mobile phone but are unable to.	*Anda mencoba mengurangi waktu menggunakan telepon genggam namun gagal. (Butir 3)*
You lose sleep due to the time you spend on your mobile phone.	*Anda kehilangan waktu tidur karena penggunaan telepon genggam. (Butir 9)*
Feeling Anxious & Lost	**Feeling Anxious & Lost**
When out of range for some time, you become preoccupied with the thought of missing a call.	*Ketika Anda tidak membawa telepon genggam, Anda terus berpikir akan adanya panggilan tidak terjawab. (Butir 4)*
You feel anxious if you have not checked for messages or switched on your mobile phone for some time.	*Anda merasa cemas ketika tidak memeriksa pesan atau tidak mengaktifkan telepon genggam dalam waktu tertentu. (Butir 14)*
You find it difficult to switch off your mobile phone.	*Anda merasa keberatan untuk mematikan telepon genggam. (Butir 17)*
You feel lost without your mobile phone.	*Anda merasa ada yang kurang bila tidak membawa telepon genggam.(Butir10)*
Withdrawal/Escape	**Withdrawal/Escape**
You have used your mobile phone to talk to others when you were feeling isolated.	*Anda menggunakan telepon genggam untuk berbicara dengan orang lain saat Anda merasa sendiri. (Butir 5)*
You have used your mobile phone to talk to others when you were feeling lonely.	*Anda menggunakan telepon genggam untuk berbicara dengan orang lain saat merasa kesepian. (Butir 11)*
You have used your mobile phone to make yourself feel better when you were feeling down.	*Anda menggunakan telepon genggam untuk membuat diri merasa lebih baik saat sedih. (Butir15)*
Productivity Loss	**Productivity Loss**
You find yourself occupied on your mobile phone when you should be doing other things, and it causes problem.	*Anda menghabiskan waktu menggunakan HP saat harus melakukan hal lain dan berdampak buruk. (Butir 6)*
Your productivity has decreased as a direct result of the time you spend on the mobile phone.	*Produktivitas Anda menurun disebabkan terlalu sering menggunakan telepon genggam. (Butir12)*
There are times when you would rather use the mobile phone than deal with other more pressing issues.	*Ada saat-saat ketika Anda lebih suka menggunakan telepon genggam daripada menyelesaikan tugas yang lebih mendesak. (Butir7)*

Leung (2007a) studied to find out symptoms of mobile phone addict and formed instrument to measure mobile phone addict (Mobile Phone Addiction Index/MPAI). Leung composed 17 symptoms based on items of Mobile Phone Problem Use Scale (MPPUS) developed by Bianchi and Philips (cited in Leung, 2007a). MPPUS consisted of 27 items, but only 17 items were being used by Leung. Leung used youngsters as research sujects because youngsters were vulnerable to experience mobile phone addiction with negative impacts. Data was compiled from 624 subjects and analyzed using exploratory factor analysis.

Leung's study resulted in characteristics of mobile phone addict, namely inability to control craving, anxiety and feeling lost, withdrawal and escape, and

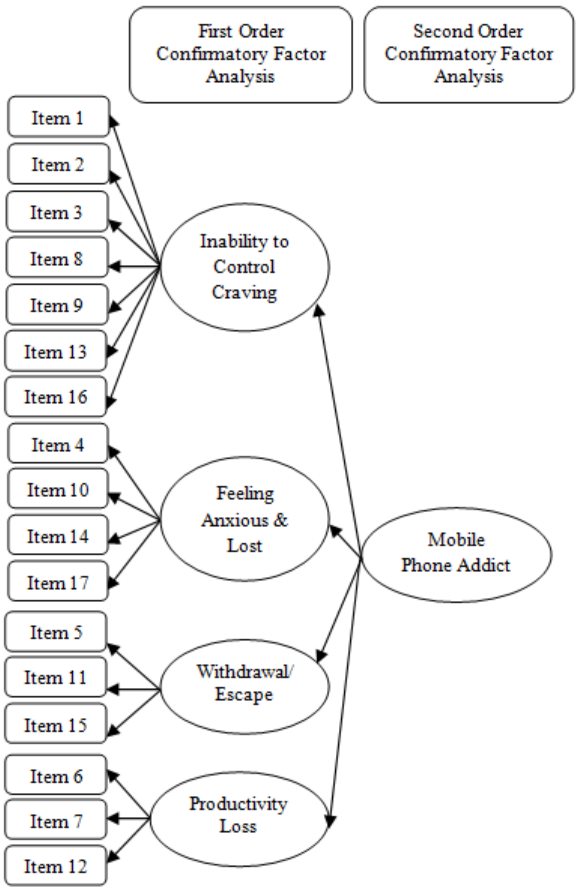

Figure 1. Research model

Table 3
Blue Print of Scale of Mobile Phone Addict

Symptom	Item number	Total
Inability to Control Craving	1, 2, 3, 8, 9, 13, 16	7
Feeling Anxious & Lost	4, 10, 14, 17	4
Withdrawal and Escape	5, 11, 15	3
Productivity Lost	6, 7, 12	3
Total		17

productivity loss. Leung's study about mobile phone addict then became the basis of arranging Mobile Phone Addiction Index (MPAI) in Table 1.

Based on available literature, it was not known any instrument that could reveal the tendency of mobile phone addict in Indonesia. Leung's Mobile Phone Addiction Index (MPAI) could be studied further to develop instrument to measure mobile phone addiction in Indonesia. The purpose of this study was to develop instrument that can measure mobile phone addiction, an adaptation based on Leung's MPAI. The focus of this study was description of scale validation of mobile phone addiction.

The accuracy of measurement in this study would be based on item content and internal structure. Validity based on item content would refer to the result of conformity of blue print and wording with theory being used. Proof based on internal structure referred to result in conformity analysis between items using construct using loading factor analysis (American Educational Research Association, American Psychological Association, and National Council on Measurement in Education (1999). The dynamics and impact of mobile phone addiction would not be discussed.

Method

This study used 200 Surabaya University students who were in late adolescent stage (17-18 year) as subjects. Subjects were chosen based on the assumption that youngsters were the biggest users of mole phone, in transitional stage of finding themselves. During transitional stage, youngsters were emotionally unstable, and did not have self control. These characteristics made youngsters a big market for products including mobile phone.

Youngsters were also attracted to follow advancement in new technologies, and vulnerable to problems linked to mobile phone use. Many experts divided stages of life differently. Monks, Knoer, and Haditono (1966) divided youngsters into two stages, adolescence, 12-18 years of age, and youngsters, 19-24 years of age. Youngsters were in a transition from adolescence to adulthood. Hurlock (1999) divided adolescence into early adolescence, 13-16 years of age, and late adolescence, 17-18 years of age. Based on thowe two divisions, it was assumed that late adolescence was 17-18 years of age. Subjects were chosen through incidental sampling.

Symptoms of mobile phone addict in MPAI were used, and the items were adapted in Indonesian language. This study was based on content vailidity principles. Results of adapted item wording were seen in Table 2. Items were translated in Indonesian without any change in meaning.

Scaling method was using Likert scale, consisted of four response choices, namely: always, often, seldom, and never. Every item was favourable in nature, so that the score always refered to 4) always, 3) often, 2) seldom, and no no 1) never. Response choice in this study was different from that of Leung. Leung used 5) always, 4) often 3) sometimes 2) seldom and 1) never.

The main purpose of this study was to develop an instrument based on construct validity, so confirmatory factor analysis was applied. The first step was using first order confirmatory factor analysis to be

Table 4
Gender and Age of Subjects

Gender	Age	Frequency	%
Male	17 years	50	25
Male	18 years	40	20
Female	17 years	65	32.5
Female	18 years	40	22.5
Total		200	100

Table 5
Faculty Origin of Subjects

Faculty	Frequency	%
Psychology	47	23.5
Business and Economics	42	21
Engineering	35	17.5
Law	32	16
Pharmacy	31	15.5
Biotechnology	13	6.5
Total	200	100

continued with second order confirmatory factor analysis. First order confirmatory factor analysis was used to test validity of each item and reliability of composite items that represented construct of the inability to control desire to use mobile phone, withdrawal, and productivity loss. Second order confirmatory factor analysis was used to test validity and reliability of composite of the inability to control desire to use mobile phone, withdrawal, and productivity loss that represented mobile phone addict construct. Study model could be seen in Figure 1, and blue print of mobile phone addict scale was seen in Table 3. Analysis was using Visual Partial Least Square program (VPLS). Condition of valid item was if loading factor ≥ .40 (Ferdinand, cited in Kusnendi, 2008). Reliability was using composite reliability model with condition ≥ .70 (Hair, Anderson, Tatham, & Black, 1998).

Results and Discussion

Description of Research Subjects

Based on data analysis**,** the spread of gender, age, and faculty origin of subjects is known in Table 4 and Table 5. The spread of gender is even between male (90 people/45%) and female (110 people/55%). The spread of faculty origin is not evenly distributed. Age 17 years old (57%) is higher than age 18 years old (42.5%). From faculty origin point of view, subjects were dominated from Faculty of Psychology (23%) and Faculty of Economics (21%), and smaller number from Faculty of Biotechnology (6.5%). This happened because incidental sampling was used.

Validity and Reliability Test on Mobile Phone Addict Scale

Statistical analysis with first order confirmatory analysis and second order confirmatory analysis through VPLS program was applied to validate mobile phone addict scale. Results of mobile phone addict scale are on Table 6, 7, 8, 9, 10, and 11. VPLS program does not show goodness of fit statistics of the whole model.

According to Table 6, item number 1, 2, 8, 9, 13, and 16 have loading factor ≥ .40. This results are in accordance with Leung's study, so it can measure the construct of the inability to control desire to use mobile phone. Item 3 has loading factor .369 and it needs to be deleted. In Leung's study, item 3 had loading factor .52, and reliability .792. Table 6 showed after item 3 was deleted. All items have loading factor ≥ .4 and have composite reliability ≥ .7. It can be concluded that items planned to measure construct of the inability to control desire to use mobile phone are valid and reliable. The dominant factor representing the construct of the inability to control desire to use mobile phone is item no 1, namely *"Anda menghabiskan banyak waktu dengan telepon genggam"* (loading factor = .843). This result is in accordance with Leung's item 1, which also had a highest loading factor compared with other items representing the inability to control using mobile phone.

Items representing symptoms of the inability to control using mobile phone were adapted from Leung's items without changing the meaning of each item. Validity and reliability test showed that those items were valid and reliable. Wording improvement was to increase the item ability to function such as item 1 said "Anda menghabiskan banyak waktu dengan telepon genggam", translated from Leung's item 1 that said "*You have been told that you spend too much time on your mobile phone*". Result shows that item 1 is still able to measure symptom and has a good loading factor.

Wording on item 16 said; *"Anda merasa bahwa waktu untuk menggunakan telepon genggam tidak pernah cukup"*. Since negative word never was not suggested (Azwar, 2005), it was changed to *"Anda merasa waktu menggunakan telepon genggam kurang"*.

Based on factor analysis on Table 7, all items adapted from Leung's study are able to function. Dominant factor representing feeling anxious and lost if not using mobile phone is item 4, namely *"Ketika Anda tidak membawa telepon genggam, Anda terus berpikir akan adanya panggilan tidak terjawab"* with factor loading .804. This is in accordance with Leung"s item no 4 which had the highest loading factor .728, followed by item "*Anda merasa cemas*

Tabel 6
Result of First Order Confirmatory Factor Analysis on The Inability to Control Craving Before and After Item 3 was Deleted

Item	*Before Item 3 was Deleted*		*After Item 3 was Deleted*	
	Loading Factor	*Composite Reliability*	*Loading Factor*	*Composite Reliability*
Anda menghabiskan banyak waktu dengan telepon genggam (Item 1) (*You have been told that you spend too much time on your mobile phone*)	.808		.843	
Teman-teman dan keluarga Anda mengeluh tentang Anda terkait penggunaan telepon genggam (Item 8) (*Your friends and family complained about your use of the mobile phone*)	.615		.617	
Saat Anda bersama dengan orang lain Anda secara sembunyi-sembunyi menggunakan telepon genggam (Item 13) (*You have tried to hide from others how much time you spend on your mobile phone*)	.543		.515	
Anda menggunakan telepon genggam dalam waktu yang lama (Item 2) (*You find yourself engaged on the mobile phone for longer period of time than intended*)	.687	.792	.703	.801
Anda merasa bahwa waktu untuk menggunakan telepon genggam tidak pernah cukup (Item 16) (*You can never spend enough time on your mobile phone*)	.539		.560	
Anda mencoba mengurangi waktu menggunakan telepon genggam namun gagal (Item 3) (*You have attempted to spend less time on your mobile phone but are unable to*)	.369			
Anda kehilangan waktu tidur karena penggunaan telepon genggam (Item 9) (*You lose sleep due to the time you spend on your mobile phone*)	.564		.563	

ketika tidak memeriksa pesan atau tidak mengaktifkan telepon genggam dalam waktu tertentu" (.723). Only item *"Anda merasa ada yang kurang bila tidak membawa telepon genggam"* and *"Anda merasa ada yang kurang bila tidak membawa telepon genggam"* results differently from Leung's. Items that represent feeling anxious and lost are valid and reliable. Items 4, 10, and 14 still have negative words or otherwise the meaning would be different. Item 14 said *"Anda merasa cemas ketika tidak memeriksa pesan atau tidak mengaktifkan telepon genggam dalam waktu tertentu"*. Item 14 had 2 ideas, and it was suggested that item should not have 2 ideas (Azwar, 2005). Improvement can be made by using two sentences instead of one, the first sentence would say *"Anda merasa cemas ketika tidak memeriksa pesan dalam waktu tertentu"*, and the second sentence would say *"Anda merasa cemas ketika tidak mengaktifkan telepon genggam dalam waktu tertentu"*.

Table 7 also shows that all items from Leung's study are valid and reliable to function. The dominant factor representing the construct of withdrawal and escape is item 11, namely *"Anda menggunakan telepon genggam untuk berbicara dengan orang lain saat merasa kesepian"* with loading factor .890. The ranking of loading factor in this study is different from Leung's study. In Leung' study, the ranking began with *"Anda menggunakan telepon genggam untuk berbicara dengan orang lain saat Anda merasa sendiri"*(.839), *"Anda menggunakan telepon genggam untuk berbicara dengan orang lain saat merasa kesepian"* (.824), and *"Anda menggunakan telepon genggam untuk membuat diri merasa lebih baik saat sedih"* (.705),

The lower part of Table 7 shows that all items can be used to measure loss of productivity since loading factor ≥ .4 and composite reliability ≥ .7. The dominant factor representing construct of loss of productivity is item 7*"Ada saat-saat ketika Anda lebih suka menggunakan telepon genggam daripada menyelesaikan tugas yang lebih mendesak"* with loading factor .811. this is different from Leung's study in which the dominant factor was *"Anda menghabiskan waktu menggunakan HP saat harus melakukan hal lain dan berdampak buruk"* with loading factor .807, then *"Produktivitas Anda menurun disebabkan terlalu sering menggunakan telepon genggam"* with factor loading .741, and item *"Ada saat-saat ketika Anda lebih suka menggunakan*

Table 7
Result of First Order Confirmatory Factor Analysis: Feeling Anxious and Lost, Withdrawal and Escape, and Productivity Loss

	Item	*Loading Factor*	*Composite Reliability*
Feeling Anxious and Lost	Ketika Anda tidak membawa telepon genggam, Anda terus berpikir akan adanya panggilan tidak terjawab (Item 4) (*When out of range for some time, you become preoccupied with the thought of missing a call*)	.804	.821
	Anda merasa cemas ketika tidak memeriksa pesan atau tidak mengaktifkan telepon genggam dalam waktu tertentu (Item 14) (*You feel anxious if you have not checked for messages or switched on your mobile phone for some time*)	.765	
	Anda merasa keberatan untuk mematikan telepon genggam (Item 17) (*You find it difficult to switch off your mobile phone*)	.662	
	Anda merasa ada yang kurang bila tidak membawa telepon genggam (Item 10) (*You feel lost without your mobile phone*)	.704	
Withdrawal and Escape	Anda menggunakan telepon genggam untuk berbicara dengan orang lain saat Anda merasa sendiri (Item 5) (*You have used your mobile phone to talk to others when you were feeling isolated*)	.815	.893
	Anda menggunakan telepon genggam untuk berbicara dengan orang lain saat merasa kesepian (Item 11) (*You have used your mobile phone to talk to others when you were feeling lonely*)	.890	
	Anda menggunakan telepon genggam untuk membuat diri merasa lebih baik saat sedih (Item 15) (*You have used your mobile phone to make yourself feel better when you were feeling down*)	.869	
Productivity Loss	Anda menghabiskan waktu menggunakan HP saat harus melakukan hal lain dan berdampak buruk (Item 6) (*You find yourself occupied on your mobile phone when you should be doing other things, and it causes problem*)	.754	.822
	Produktivitas Anda menurun disebabkan terlalu sering menggunakan telepon genggam (Item 12) (*Your productivity has decreased as a direct result of the time you spend on the mobile phone*)	.773	
	Anda saat-saat ketika Anda lebih suka menggunakan telepon genggam daripada menyelesaikan tugas yang lebih mendesak (Item 7) (*There are times when you would rather use the mobile phone than deal with other more pressing issues*)	.811	

telepon genggam daripada menyelesaikan tugas yang lebih mendesak" with loading factor .421.

Based on Table 8, it can be concluded that all symptoms are symptoms of mobile phone addiction (loading factor ≥ .4 and composite reliability ≥ .7). The dominant symptom is the inability to control desire to use mobile phone with loading factor .750. Result of dominant symptom analysis makes this study complete because Leung did not test until second order confirmatory factor analysis. Based on validation of mobile phone addict scale, the list of item of mobile phone addict scale is made on Table 9.

The spread of items of mobile phone addict scale is dominated by 6 items that reveal the inability to control desire to use mobile phone. Since mobile phone addict scale is 16, it is still possible to add more items that reveal symptoms of feeling anxious and lost if not using mobile phone, withdrawal and escape, and productivity loss.

Norms and Levels of Mobile Phone Addict Scale

After validity and reliability test to choose items that can be used to measure mobile phone addict level, the next step is to develop norms of mobile phone addict scale. The norms of mobile phone addict appeared in Table 10 and 11**.** The norms are obtained by using formula of ideal mean. The highest and the lowest value of each item and number of items of the scale become reference in the ideal mean formula and ideal standard deviation. Mobile phone addict scale norms from calculation of ideal mean and ideal

Table 8
Result of Second Order Confirmatory Factor Analysis on Mobile Phone Addict Scale

Symptom	Validity	Composite Reliability
Inability to control craving	.750	.753
Feeling anxious and loss	.431	
Withdrawal/escape	.743	
Productivity lost	.699	

standard deviation can be applied to other population or groups without taking group condition such as mean and standard deviation into account. These norms can also be applied for individual measurement.

Formula of ideal mean is as follows:

Formula of ideal $\frac{(n_t \text{ x } jb) + (n_r \text{ x } jb)}{2}$ as follows:

$$\frac{(n_t \text{ x } jb) - (n_r \text{ x } jb)}{6}$$

Note.
nt = the highest response score of each item (score 4 for always response)
nr = the lowest response score of each item (score 1 for never response)
jb = number of valid items (16 items)

Table 9
Item of Mobile Phone Addict Scale

English Language	Indonesian Language
Inability to Control Craving	***Tidak Mampu mengontrol penggunaan telepon genggam***
You have been told that you spend too much time on your mobile phone	*Anda menghabiskan banyak waktu dengan telepon genggam.*
Your friends and family complained about your use of the mobile phone	*Teman-teman dan keluarga Anda mengeluh tentang Anda terkait penggunaan telepon genggam.*
You have tried to hide from others how much time you spend on your mobile phone	*Saat Anda bersama dengan orang lain Anda secara sembunyi-sembunyi menggunakan telepon genggam.*
You find yourself engaged on the mobile phone for longer period of time than intended.	*Anda menggunakan telepon genggam dalam waktu yang lama.*
You can never spend enough time on your mobile phone.	*Anda merasa bahwa waktu untuk menggunakan telepon genggam tidak pernah cukup.*
You lose sleep due to the time you spend on your mobile phone.	*Anda kehilangan waktu tidur karena penggunaan telepon genggam.*
Feeling Anxious & Lost	***Merasa cemas dan kehilangan bila tidak menggunakan telepon genggam***
When out of range for some time, you become preoccupied with the thought of missing a call.	*Ketika Anda tidak membawa telepon genggam, Anda terus berpikir akan adanya panggilan tidak terjawab.*
You feel anxious if you have not checked for messages or switched on your mobile phone for some time.	*Anda merasa cemas ketika tidak memeriksa pesan atau tidak mengaktifkan telepon genggam dalam waktu tertentu.*
You find it difficult to switch off your mobile phone.	*Anda merasa keberatan untuk mematikan telepon genggam.*
You feel lost without your mobile phone.	*Anda merasa ada yang kurang bila tidak membawa telepon genggam*
Withdrawal/Escape	***Menarik diri/mengalihkan dari masalah***
You have used your mobile phone to talk to others when you were feeling isolated.	*Anda menggunakan telepon genggam untuk berbicara dengan orang lain saat Anda merasa sendiri.*
You have used your mobile phone to talk to others when you were feeling lonely.	*Anda menggunakan telepon genggam untuk berbicara dengan orang lain saat merasa kesepian.*
You have used your mobile phone to make yourself feel better when you were feeling down.	*Anda menggunakan telepon genggam untuk membuat diri merasa lebih baik saat sedih.*
Productivity Loss	***Kehilangan Produktivitas***
You find yourself occupied on your mobile phone when you should be doing other things, and it causes problem.	*Anda menghabiskan waktu menggunakan HP saat harus melakukan hal lain dan berdampak buruk.*
Your productivity has decreased as a direct result of the time you spend on the mobile phone.	*Produktivitas Anda menurun disebabkan terlalu sering menggunakan telepon genggam.*
There are times when you would rather use the mobile phone than deal with other more pressing issues.	*Ada saat-saat ketika Anda lebih suka menggunakan telepon genggam daripada menyelesaikan tugas yang lebih mendesak.*

Production of norms is done by calculating ideal mean as much as 40 and ideal SD as much as 8. The norms of mobile phone addict scale and mobile phone addict level of the subjects can be seen on Table 10. Most subjects have a moderate level of mobile phone addict (53%). The second category is high level (30.5%) and very high level (10.5%). Subjects' addiction level is from low to high. None of the subjects has very low level of addiction or not yet addicted.

Production of norms of the inability to control desire to use mobile phone is done by calculating ideal mean=15 and ideal *SD*=3, norms of symptom of feeling anxious and lost if not using mobile phone is done by calculating ideal *mean*=10 and ideal *SD*=2 and Production of norms of the scale of mobile phone addict on withdrawal and escape symptoms was done by calculating ideal mean as much as 7.5 and ideal standard deviation as much as 1.5, Production of norms of the scale of mobile phone addict on withdrawal and escape symptoms was done by calculating ideal mean as much as 7.5 and ideal standard deviation as much as 1.5, and The scale norm of mobile phone addict symptoms on production loss was done by calculating ideal mean of 7.5 and ideal standard deviation of 1.5, are revealed on Table 11.

Table 10

Norms and Frequency Level of Mobile Phone Addict Scale

Score range	Category	Frequency	%
$X \geq 54.4$	Very high	21	10.5
$44.8 \leq X < 54.4$	High	61	30.5
$35.2 \leq X < 44.8$	Moderate	106	53
$25.6 \leq X < 35.2$	Low	12	6
$17 \leq X < 25.6$	Very low	-	-
$X = 16$	Not yet addicted (no symptom)*	-	-
	Total	200	100

Note. *if subject fill out all items with never, so the score = 1x16 (16).

The data on Table 11 also support the category description, level of the inability to control desire to use mobile phone, which goes from very low to very high with the highest frequency at fair level 35.5%) (None of the subjects have no symptoms), level of feeling anxious and lost goes from no symptoms to very high. Mostly subjects have moderate category

Table 11

Norms of Mobile Phone Addict Symptoms and Frequency for Each Symptom

	Score Range	Category	Frequency	%
Inability to Control Craving	$X \geq 20.4$	Very high	33	16.5
	$16.8 \leq X < 20.4$	High	68	34
	$13.2 \leq X < 16.8$	Moderate	71	35.5
	$9.6 \leq X < 13.2$	Low	26	13
	$7 \leq X < 9.6$	Very low	2	1
	$X = 6$	No symptom*	-	-
Feeling Anxious and Lost	$X \geq 13.6$	Very high	47	23.5
	$11.2 \leq X < 13.6$	High	56	28
	$8.80 \leq X < 11.2$	Moderate	68	34
	$6.40 \leq X < 8.80$	Low	22	11
	$5 \leq X < 6.40$	Very low	4	2
	$X = 4$	No symptoms**	3	1.5
Withdrawal and Escape	$X \geq 10.2$	Very high	41	20.5
	$8.40 \leq X < 10.2$	High	62	31
	$6.60 \leq X < 8.40$	Moderate	42	21
	$4.80 \leq X < 6.60$	Low	41	20.5
	$4 \leq X < 4.80$	Very low	3	1.5
	$X = 3$	No symptoms***	11	5.5
Productivity Lost	$X \geq 10.2$	Very High	45	22.5
	$8.40 \leq X < 10.2$	High	90	45
	$6.60 \leq X < 8.40$	Moderate	49	24.5
	$4.80 \leq X < 6.60$	Low	15	7.5
	$4 \leq X < 4.80$	Very Low	1	0.5
	$X = 3$	No symptoms****	-	-

Note.

*Category no symptom if subject fill out all items with never, so the score would be 1x6 (6)

**Category if there is no symptoms if subject fill out every item with 'never' response so that the individual get 1x4 (4) score

***Category no symptom if subject fill out all items with never, so the score would be 1x3 (3)

****Category no symptom if subject fill out all items with never, so the score would be 1x3 (3)

Table 12
Analysis of Subject's Response on Each Item of Mobile Phone Addict Scale

Item	Frekuensi (%)			
	Never	Seldom	Often	Always
Anda menghabiskan banyak waktu dengan telepon genggam. (You have been told that you spend too much time on your mobile phone)	18 (9)	**79 (39.5)**	48 (24)	55 (27.5)
Anda menggunakan telepon genggam dalam waktu yang lama (You find yourself engaged on the mobile phone for longer period of time than intended)	8 (4)	58 (29)	**87 (43.5)**	47 (23.5)
Anda mencoba mengurangi waktu menggunakan telepon genggam namun gagal (You have attempted to spend less time on your mobile phone but are unable to)	5 (2.5)	47 (23.5)	**94 (47)**	54 (27)
Ketika Anda tidak membawa telepon genggam, Anda terus berpikir akan adanya panggilan tidak terjawab (When out of range for some time, you become preoccupied with the thought of missing a call)	12 (6)	46 (23)	70 (35)	**72 (36)**
Anda menggunakan telepon genggam untuk berbicara dengan orang lain saat Anda merasa sendiri (You have used your mobile phone to talk to others when you were feeling isolated)	27 (13.5)	**70 (25)**	54 (27)	49 (24.5)
Anda menghabiskan waktu menggunakan telepon genggam saat harus melakukan hal lain dan berdampak buruk. (You find yourself occupied on your mobile phone when you should be doing other things, and it causes problem)	1 (0.5)	28 (14)	80 (40)	**91 (45.5)**
Ada saat-saat ketika Anda lebih suka menggunakan telepon genggam daripada menyelesaikan tugas yang lebih mendesak. (There are times when you would rather use the mobile phone than deal with other more pressing issues)	6 (3)	34 (17)	**100 (50)**	60 (30)
Teman-teman dan keluarga Anda mengeluh tentang Anda terkait penggunaan telepon genggam. (Your friends and family complained about your use of the mobile phone)	16 (8)	**73 (36.5)**	70 (35)	41 (20.5)
Anda kehilangan waktu tidur karena penggunaan telepon genggam. (You lose sleep due to the time you spend on your mobile phone)	15 (7.5)	**72 (36)**	63 (31.5)	50 (25)
Anda merasa ada yang kurang bila tidak membawa telepon genggam. (You feel lost without your mobile phone)	7 (3.5)	41 (20.5)	**80 (40)**	72 (36)
Anda menggunakan telepon genggam untuk berbicara dengan orang lain saat merasa kesepian. (You have used your mobile phone to talk to others when you were feeling lonely)	28 (14)	45 (22.5)	**81 (40.5)**	46 (23)
Produktivitas Anda menurun disebabkan terlalu sering menggunakan telepon genggam. (Your productivity has decreased as a direct result of the time you spend on the mobile phone)	8 (4)	57 (28.5)	**100 (50)**	35 (17.5)
Saat Anda bersama dengan orang lain Anda secara sembunyi-sembunyi menggunakan telepon genggam. (You have tried to hide from others how much time you spend on your mobile phone)	26 (13)	**80 (40)**	66 (14)	28 (14)
Anda merasa cemas ketika tidak memeriksa pesan atau tidak mengaktifkan telepon genggam dalam waktu tertentu. (You feel anxious if you have not checked for messages or switched on your mobile phone for some time)	12 (6)	40 (20)	**86 (43)**	62 (31)
Anda menggunakan telepon genggam untuk membuat diri merasa lebih baik saat sedih. (You have used your mobile phone to make yourself feel better when you were feeling down)	19 (9.5)	42 (21)	**86 (43)**	53 (26.5)
Anda merasa bahwa waktu untuk menggunakan telepon genggam tidak pernah cukup. (You can never spend enough time on your mobile phone)	20 (10)	**80 (40)**	62 (31)	38 (19)
Anda merasa keberatan untuk mematikan telepon genggam. (You find it difficult to switch off your mobile phone)	43 (21.5)	61 (30.5)	**68 (34)**	28 (14)

(34%), and the others are in high category (23.5%), very high category (28%), and no symptoms (1.5%). It also shows the category of no symptoms until very high. Mostly subjects have high category (31%), the others have very high category (20.5%), moderate (21%), low (20.5%), and very low (1.5%), and no symptoms

(5.5%). This table also shows that high level category is 45%, very high 22%, moderate 24.5%, low 7.5%, and very low .5%, and no subject in no symptom category.

It can be concluded that most subjects have a moderate category on the inability to control desire to use mobile phone and feeling anxious and lost if not using mobile phone. Most subjects have a high category on withdrawal and escape symptoms and productivity loss. Whereas on no symptom category, there are symptoms of feeling anxious and lost, and withdrawal and escape.

Table 12 states the subjects' response analysis on every item of mobile phone addict scale. Its shows mostly subjects give 'often' response. It also shows analysis of subject response on every item of mobile phone addict scale. Item analysis shows that item 3 has a loading factor less than .4 and deleted on first order confirmatory analysis. Overall subjects choose all response choice, and have fair, high and very high addiction category. Based on Table 11, items chosen give 'often', 'seldom', and 'always' responses.

Items that most subjects gave 'seldom' response are as follows:

1. You have been told that you spend too much time on your mobile phone (39.5%)
2. You have used your mobile phone to talk to others when you were feeling isolated (25%)
3. Your friends and family complained about your use of the mobile phone (36.5%)
4. You lose sleep due to the time you spend on your mobile phone (36%)
5. You have tried to hide from others how much time you spend on your mobile phone (40%)
6. You can never spend enough time on your mobile phone (40%)

Items that most subjects give 'often' responses are as follows:

1. You find yourself engaged on the mobile phone for longer period of time than intended (43.5%)
2. You have attempted to spend less time on your mobile phone but are unable to (47%)
3. There are times when you would rather use the mobile phone than deal with other more pressing issues (50%)
4. You feel lost without your mobile phone (40%)
5. You have used your mobile phone to talk to others when you were feeling lonely (40.5%)
6. Your productivity has decreased as a direct result of the time you spend on the mobile phone (50%)
7. You feel anxious if you have not checked for messages or switched on your mobile phone for some time (43%)
8. You have used your mobile phone to make yourself feel better when you were feeling down (43%)
9. You find it difficult to switch off your mobile phone (34%)

Items that most subjects give 'always' responses are as follows:

1. When out of range for some time, you become preoccupied with the thought of missing a call (36%)
2. You find yourself occupied on your mobile phone when you should be doing other things, and it causes problem (45.5%)

Conclusion

Result of the study shows that item testing of adapted symptoms of mobile phone addict is in accordance with Leung' study except item 3 that said *"Anda mencoba mengurangi waktu menggunakan telepon genggam namun gagal"*. It has a loading factor .369, less than minimal validity of .4. in Leung's study, item no3 said " *You have attempted to spend less time on your mobile phone but are unable to*" , and it had a loading factor .52. So, item no 3 was deleted.

The purpose of this study was to develop an instrument to measure mobile phone addict with reference to items in Mobile Phone Addiction Index (MPAI) in Leung's study. Four symptoms have been confirmed, namely the inability to control desire to use mobile phone, feeling anxious and lost if not using mobile phone, withdrawal and escape, and productivity loss. From construct validity view point, adapted items of the instrument should have value of $\geq .4$ and composite reliability of $\geq .7$. Subjects in this study are still limited, so the instrument still needs to be validated more by adding a lot of subjects with large age range, not only 17-18 years of age. The next study would develop instrument with new adapted items.

The instrument in this study is not the only one available for measuring the addiction level of mobile phone use. This study do not reveal intensity, how long the phone is used, mobile phone features, and the impact of excessive mobile phone usage, so that it can give a better picture of mobile phone addiction. From the literature, these is a kind of studies have been done, and of course out of Indonesian context. Factors that cause addiction and the impact of excessive use of mobile phone can still be explored in the next studies

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