MIMIC MODEL OF PROBLEMATIC INTERNET USE SHORT FORM (PIUQ-SF 6) IN INDONESIA

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Abstract: The Problematic Internet Use Questionnaire (PIUQ) consists of three dimensions (Demotrovics, 2016): Obsession (i.e., obsessive thoughts about the internet, and mental withdrawal symptoms when there is a lack of internet use), neglect (i.e., ignoring basic needs and daily activities), and impaired self-control (i.e., difficulty in controlling the internet). This study aims to analyse the PIUQ measuring instrument further using the Rating Scale analysis technique. The number of respondents in this study was 550, who was chosen voluntarily by spreading it on social media. The findings show that this unidimensional PIUQ has excellent validity quality and good item reliability and can be profitable if used on a large scale because of the small number of items. The MIMIC model is ideal; the absence of susceptibility to differences in characteristics indicates that the scale used in the measurement remains consistent in a heterogeneous population.

INTRODUCTION
According to Asosiasi Penyelenggara Jasa Internet Indonesia (Indonesian Internet Service Providers Association, 2020), internet users in Indonesia aged 16 - 64 years who have gadgets are 98.3 per cent. Moreover, internet users in Indonesia spent 8 hours and 52 minutes on internet surfing. Several data said internet use could be concluded from teenagers to late adulthood. The increasing use of the internet makes a person obsessive and compulsive.

The International Telecommunication Union (ITU), a United Nations agency, had 3.9 billion internet users worldwide in 2018, exceeding half

the world's population. Moreover, that also happened in Indonesia; since 2018, the number of internet users in Indonesia has reached 171.1 million, an increase of around 27.9 million from last year. While in big cities such as Greater Jakarta (85%), Bandung (82.5%), Semarang (70%), Yogyakarta (70%), and Surabaya (83%) of the internet user.

Nur, Misrawati, and Utami (2019) revealed that smartphone use significantly influences smartphone addiction and students' psychological well-being. Ambarwaty et al. (2020) found that affiliation, ownership, sensation, adventure, and experience-seeking variables were insignificant for smartphone addiction. Meanwhile, research from Agusti and Leonardi (2015) revealed a positive but weak relationship between loneliness and Problematic Internet Use in students. In contrast to the results of a study by Asmarany and Syahlaa (2019), which revealed that there is a positive relationship direction, it means that the higher the loneliness, the higher the problematic internet use among adolescent social media users.

This internet problem continues with the issue of FOMO (Fear Of Missing Out), as research conducted by Sidik, Mafaza, and Sembiring (2020) showed a significance between self-esteem and FOMO. The more FOMO a person is, the higher the level of obsession with the internet will be.

Obsession is part of smartphone addiction. Specifically, obsession is part of Problematic Internet Use. The Problematic Internet Use Questionnaire consists of three dimensions (Demotrovics, 2016). Obsession (i.e., obsessive thoughts about the internet and symptoms of mental withdrawal when there is a lack of internet use), neglect (i.e., neglecting basic needs and daily activities), and impaired self-control (i.e., difficulty controlling the internet). This is closely related to human psychology.

Previous research in Spain stated a significant negative relationship between PIU and health-related quality of life (Machimbarrena, 2019). Restrepo et al. (Restrepo, 2020) also researched PIU, with 564 respondents resulting in a positive relationship between PIU and depression, autism, spectrum disorders, and increased sleep disorders. This is increasingly facing a crisis because it has seen the fact that PIU is a crucial topic in today's era.

In line with the research of Rahayu and Prasetyoadji, it is found that

someone who has Problematic Internet Use will experience physical and mental disorders. His research used a scale adapted from the Generalized Problematic Internet Use Scale 2 (GPIUS 2) from Caplan, which consisted of 31 items with a reliability value of 0.881 (Rahayu & Prasetyoadji, 2020).

Meanwhile, Andangsari (2018) has conceptualised a scale for Problematic Internet Use in Indonesia. However, the scale has 63 items with six modified dimensions from Caplan's GPIUS2, which are by Rahayu's use— followed by Nathanael (2021), who has researched to test one of the many dimensions that Andangsari has made, namely Obsessive, which consists of 10 items and all the items are valid for measuring one dimension. Putri (2019) discussed several articles on Problematic Internet Use and concluded that two of the seven literature reviews use GPIUS.

From the seven kinds of literature, it could be concluded that the impact of Problematic Internet Use is a condition of social anxiety and loneliness. The higher the level of loneliness, the higher the level of Problematic Internet Use. People with social anxiety fear of negative judgments about themselves and lack communication ability (Putri, 2019; Asmarany & Syahlaa, 2019).

Likewise, Thahir et al.'s research concluded that Problematic Internet Use and psychological well-being significantly affect adolescents with social anxiety using the GPIUS scale (Thahir et al., 2020). Of all the available references, a scale using the Problematic Internet Use Short Form Version and testing it using scale vulnerabilities has yet been discovering.

According to Sills and Brown, one of the challenges faced by measuring using a scale is the vulnerability of the scale to the heterogeneity of the population that is the target of the scale (in, Widhiarso, 2012). Several analytical techniques can be used to identify scale susceptibility to the heterogeneity of population characteristics. The analytical technique commonly used is factor analysis to test the construct validity of the attributes measured by the scale. Two types of factor analysis were developed: exploratory factor analysis (EFA) and confirmatory factor analysis (CFA; Brown, 2006). Lu et al. (2020) studied with the MIMIC model, which resulted in PIU (Pathological Internet Use) using the IAT Scale risk factors: male, time spent online, years of internet use experience,

game users and SNS less effect on the study.

Picture 1. MIMIC Model
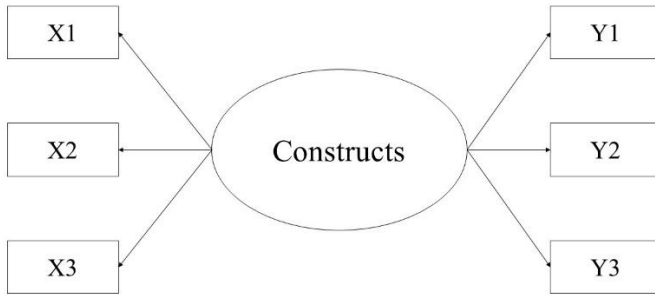
It is infrequent for research using the MIMIC model to examine the scale, especially in Indonesia. Brown (2006) said that the MIMIC model emphasises latent factors, which assumes that structural and measurement parameters (load factor, error variance and error factor) are related to the level of covariates. Many studies using the MIMIC method have been carried out in the field of education; however, to correct the problem of the problematic internet, there has been no research in Indonesia. Several studies became the reference material for researchers to review the scale test. There is no research scale regarding the Problematic Internet Use scale of the short-form version. Therefore, the researcher is interested in using the MIMIC model on the short-form version of the Problematic Internet Use scale.

This research aims to identify the Problematic Internet Use measures unidimensionality and its adaptability in Indonesia. Besides, the next objective is to identify how the covariates affect the formation of dimensions within the scale.

Problematic Internet Use
According to some researchers, internet addiction or internet use problems have been defined as excessive and/or inappropriate internet use, which can cause psychological, social, academic, and/or professional difficulties among a small number of users and exhibits high comorbidity with the disorder. other mental disorders (Aboujaoude, 2017; Beard & Wolf, 2001;

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Chou et al., 2017; Koronczai et al., 2011; Stavropoulos et al., 2017). Demetrovics (2008) created a three factors model of internet addiction, with two versions of 18 items and nine items.

Problematic aspects of Internet Use
- **Obsession**. In problematic internet use, obsessions are also referred to as obsessive thoughts about the internet and mental withdrawal symptoms caused by lack of internet use.
- **Abandonment**. That is when there is the neglect of basic needs and daily activities.
- **Distraction control**. That is if someone finds it difficult to use the internet.

MIMIC Model
A scale is invariant if it provides consistent information and is not disturbed by the characteristics of the subject being measured. To test the invariance of the measurement on samples with different backgrounds, the MIMIC Model was applied. This analysis can test the heterogeneity of the population by including several predictors or covariates in the model (Muthen, 1989). The MIMIC model involves one measurement model and one data matrix for analysis. In contrast to research abroad that has used the MIMIC model frequently, research in Indonesia has not used this model, especially those that discuss Problematic Internet Use. The confirmatory factor analysis has been carried out in various themes, but no confirmatory analysis exists in testing the Problematic Internet Use Short Form scale.

METHOD
Respondents
The population in this study are people who use the internet either using mobile phones or laptops. The number of populations is diverse. The sample is teenagers (13 years) and adults, as the use of the internet today is not something special because almost all people are familiar with the internet. Furthermore, internet usage has also increased.

Participants in this study amounted to 550 respondents consisting of 290 people aged between 12 and 14, 46 people aged between 15 and

17, 115 people aged between 18 and 24, 28 people aged between 25 and 30, 31-40 were at 37 years old, aged between 41 and 50 amounted to 18 people. In contrast, those aged over 50 years amounted to 16 people. There were 367 female participants and 183 male participants.

Of all participants, 51 people used gadgets for 1-3 hours. One hundred twenty-five people with 3-6 hours and 106 playing in 6-8 hours. While the rest use gadgets more than 8 hours a day. They surf the internet, chat, or access social media, and work because many are still working at home.

Instrument
This study used the Problematic Internet Use Questionnaire Short Form (PIUQ-SF6) scale, a shortened version that only amounts to 6 items. This scale is unidimensional, and this 6-item version consisted of two items from each previously created dimension. Respondents used a Likert scale (from never to always/almost always).

RESULTS
It can be seen from the table below that the highest level of Problematic Internet Use is at the medium level, which is 372 people, while the low level is 93 people, and the high level is 85 people.

Table 1: Descriptive Statistics Problematic Internet Use

Variable	Dimension	Item	Min	Max	Mean	SD
PIU	Obsession	2	2	10	5.118	1.965
	Abandonment	2	2	10	5.809	1.785
	Distraction control	2	2	10	5.336	1.990

Table 2: Categorization of Problematic Internet Use

Category	Value	Frequency	Percentage (%)
Low	< 41	93	16.9
Middle	42-59	372	67.6
High	>60	85	15.5

Correlation Data Matrix

The following matrix is analyzed in this study using a correlation matrix containing the correlation between the dimensions of PIU and the correlation of the dimensions of PIU with covariates. In table 3, the correlation between the dimensions and other variables has small correlation and the direction of the correlation is negative.

Table 3： Correlation matrix

PIU	1	2	3	4	5	6	7	8
1. Obsession	-							
2. Abandonment	.497	-						
3. Distraction control	.434	.552	-					
4. Age	.086	.042	.035	-				
5. Development	.094	.056	.060	.853	-			
6. Gender	.017	-.015	.015	-.082	.017	-		
7. Education	.074	.025	.039	.835	.859	-.006	-	
8. Occupation	.054	.017	-.029	.788	.595	-162	.602	-

MODEL TEST

The testing of the model that will be described in this study was carried out twice. The first model is commonly used, namely the CFA model. Meanwhile, the second model is a model in which all covariates are included. The model test results show that all items on the scale have satisfactory items and a high accuracy value (Model 1).

When covariates are included in the analysis, the value of the accuracy of the model changes. The measurement of problematic internet use is not affected by gender, age, development, education, or occupation.

Table 4. Model Test Result

Scale	Model	Chi-Square	CFI	TLI	RMSEA	WRMR	Indication
PIU-SF	I	26.939	.988	.977	.066	.613	CFA
	II	89.930	.965	.954	.049	.932	MIMIC

DISCUSSION

The study found that the six items from the PIUQ short form are of good quality, and suitable for the use for further research (suitable for use in

various situations, whether done with adolescent respondents or adult respondents. This adds insight to previous research that has been conducted). In addition, this study used the MIMIC model on the PIUQ scale. The variables involved in this study to become covariates were gender, education, and level of development. The results showed that the problematic internet use scale represents the heterogeneity of the population because it is invariant to the three covariates.

Invariance or stability in the measurement results is very important, as mentioned by Borsboom (in Widhiarso, 2012), because it shows that a measuring instrument developed could accommodate a heterogeneous population.

From the available data, the PIUQ Scale can also improve positive psychology, as stated by Wardhani and Amalia (2020), the positive psychology principles applied to help patients who experience psychological disorders in continuing their life. In this case, the results of the PIUQ categorization turned out to be moderate, which was 372 people. This means that people who took part in this study did not experience symptoms of problems in using the internet even though they used the internet for a very long time.

CONCLUSION

This study is sufficient to provide reasons to be able to use the PIUQ scale, because the results obtained from this study are quite satisfactory. However, for further research suggestions, researchers can conduct analysis or other evidence that can support research. This can strengthen existing data or be investigated by researchers. For example, by adding evidence of convergent validity, or other evidence according to the manual and adding other parameters. For further research of Problematic Internet Use, the PIUQ-SF could be one of the measurements for problem internet use because of its psychometric properties proven in the CFA. Also, further research is expected to expand the scope of research by increasing the number of respondents or separating employees who do WFH (Work from Home) or who continue to work in the office. Or with the respondents of teenagers who have started gadgets at a very young age.

Informed Consent Statement

All participants had granted their consent to this study.

Conflict of interest

The author declared no conflict of interest

Ethics Statement

The study was done compliance with the ethical guidelines.

Author's Contribution

Nursakinah Oktaviana Sasmita has contributed fully to the conception and design, data acquisition, data analysis and interpretation.

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Data Availability Statement

All data is available upon request.

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