Jurnal Psikologi | E-ISSN: 2302-1098
2024, Vol. 23, No. 1, 61-70
https://doi.org/10.14710/jp.23.1.61-70

Adaptation and validation of Social Media Use Integration Scale in Indonesian context: An exploratory and confirmatory factor analysis

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ABSTRACT

Background: The growing popularity of social media has allowed people to be able to communicate in a more efficient and effective manner, as well as sharing any information in real time. Other numerous instruments were developed to measure individuals' social media influence in their daily lives, but these have yet remained insufficient due to solely focusing on duration.

Purpose: This study aims to examine the psychometric properties of the Social Media Use Integration Scale (SMUIS) for users of the Instagram platform in the Indonesia context. The scale was originally developed by Jenkins-Guarnieri et al. (2013) to measure how individuals integrate their social media usage with their social lives and psychological state.

Method: This study used a sample of 305 participants (Male = 19.7%, Female = 80.3%) aged 18-29 years old (M = 21, SD = 3.15) which collected using purposive sampling method. Psychometric properties were analyzed using Exploratory Factor Analysis and Confirmatory Factor Analysis. Results contributed preliminary evidence of a satisfactory reliability and validity of the SMUIS in the Indonesian context.

Implication: Further study should focus on testing the SMUIS on different age contexts and other social media platforms such as TikTok.

KEYWORDS
emerging adults; Instagram; psychological scale adaptation; scale validation; social media use integration

Introduction

The growing popularity of social media has allowed people to be able to communicate more efficient and effective, as well as sharing any information in real time (Khan et al., 2022). Through social media, it is easier for people to maintain their relationships with friends, family, and relatives. Not only that, social media has also become part of our social life in which often share our personal thoughts or post a picture we like (Xu et al., 2023). There are numerous social media nowadays which offer various features of networking such as Facebook, LinkedIn, Tik Tok, and Instagram.

Specifically, Instagram is one of the widely used social media platforms where it offers features such as posting a picture, a story, or a personal chat with other users through Direct Message (Widjajanta & Senen, 2018). Currently, there are over two billion active Instagram users worldwide (Riyanto, 2021). Furthermore, Indonesia is currently ranked as the fourth largest Instagram user in the world, with more than 107 million of active users (NapoleonCat, 2022). Interestingly, among these users, emerging adults are the largest user group. This could mean that Instagram is considered as an important aspect among emerging adults (Rahma & Setiasih, 2021).

Emerging adulthood is a stage of development of individuals aged 18 to 29 years (Arnett, 2014). This stage of development is an exploration phase where individuals can search for interests and desires in their lives (Ardelia & Dewi, 2018). This exploration cannot be separated from the active use of social media, where emerging adults are the group that uses the internet the most, owns smart devices, and uses social media (Ardelia & Jaro'ah, 2023; Prensky, 2001).

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Furthermore, social media is an important aspect in the lives of emerging adults as a way to form their identity and form social relationships (Bjornsen, 2018). Therefore, social media brings a major influence on emerging adults, and it is important to examine more deeply how emerging adults integrate their social life through social media.

Various studies have measured behavioral trends in social media use, but most still focus on frequency and duration of use (Maree, 2017). While in reality, the influence of social media on human behavior and mental processes cannot be explained only by the duration of use, but also needs to be highlighted from the emotional connection to social media use and how social media then becomes part of the individual's social routine (Matsuzaka et al., 2023). Among emerging adults, social media use serves as an important socialization context where individuals begin to establish autonomy over themselves and then explore their identity, especially through building relationships with others (Bjornsen, 2018). This in turn makes the use of social media an inseparable thing from the emerging adult phase and becomes an interesting study and needs to be explored how individuals' emotional connections to social media and how social media becomes an individual's social routine.

Several measurement instruments regarding social media use currently exist, including the Facebook Intensity Scale (Ellison et al., 2007) which seeks to measure the use of Facebook social media in aspects of duration, frequency, and social behavior of the individual. Although this scale can be adapted for other social media platforms such as Instagram (Trifiro, 2018), the validity of this scale was not reported, and this scale is criticized for measuring social use behavior in unidimensional fashion (Maree, 2017). Furthermore, another scale was developed by Orosz et al. (2016) namely the Multidimensional Facebook Intensity Scale (MFIS), but this scale specifically can only be used on the Facebook social media platform. To answer the above criticism, Jenkins-Guarnieri et al. (2013) developed the Social Media Use Integration Scale (SMUIS) which aims to measure the integration between social media use and individual social behavior and routines. SMUIS shows adequate psychometric properties with good reliability and good discriminant and convergent validity (Jenkins-Guarnieri et al., 2013). This scale has the potential to be able to measure social media use behavior in a more in-depth and meaningful way. The initial development of this scale was focused on the use of Facebook social media, but Jenkins-Guarnieri stated that this scale can be adapted to other social media, and only needs to replace the word "Facebook" in each statement.

The Social Media Use Integration defined as an individual's ability to unify the use of social media, which is seen in two ways, namely: 1) how individuals build emotional connections with social media use (SIEC) and 2) how individuals involve social media use as part of their social routine (ISR). Specifically, the social media platform used in this study is Instagram, due to several previous studies discovering that image-based social media such as Instagram is most favored and used by emerging adults (Bjornsen, 2018). Therefore, exploring how individuals' integrating their social routine with Instagram would be essential to get an in-depth insight on social media behavior. In addition to that, emerging adults were chosen in this study because they are the most population which actively using social media specifically Instagram, meanwhile Facebook was less popular among emerging adults (NapoleonCat, 2022). Moreover, some studies have attempted to test the validity of SMUIS but in the context of Western society (Asghar, 2015; Berryman, 2014). However, so far there is no study that measures the psychometric properties of SMUIS in the Instagram platform, specifically in Indonesian context. This placed an urgency to adapt SMUIS into Indonesian context due to possible differences on values, cultures, and social routine behavior. Adapting the SMUIS to Indonesian context would provide a more in-depth understanding on how individual integrate their social behavior from the cyberpsychology perspectives. Therefore, this study aims to adapt the SMUIS in Indonesian and specifically on the

Instagram social media platform. Further, this study will also test the validity and reliability of this adaptation scale to emerging adults in Indonesia.

Method

Participants

Participants in this study were selected based on a purposive sampling method, in which the inclusion criteria were individual aged 18 to 29 years old. To estimate the number of participants, G*Power software was used to calculate and at least 150 participants are required to obtain a power of .8 and a moderate effect size. There were 305 participants who contributed to this study, therefore the minimum targeted participants for the current study were achieved.

Design

This study used a quantitative method with a survey data collection method. Data was collected from February to June 2023 using an online questionnaire software (Google Forms). Participants were asked to provide informed consent before participating in the study questionnaire.

Procedure

The Social Media Use Integration Scale adaptation process is guided by the International Test Commission (ITC) Guidelines for Test Adaptation 2017. This adaptation procedure is divided into two processes, namely the adaptation of the scale into Indonesian and then evaluating the psychometric aspects of the scale. A more detailed explanation for the adaptation process will be explained below while the explanation of the evaluation of psychometric aspects will be explained in the Analysis Technique section.

Before carrying out the adaptation process, there was a precondition stage, where the researcher corresponded with Jenkins-Guarnieri to ask permission to adapt the Social Media Use Integration scale and had received approval. Accordingly, ethical approval was also obtained from The Board of Ethics, Faculty of Psychology, Universitas Airlangga, before the study (Number 2806-KEPK).

The scale adaptation process consists of 1) Forward translation, is the process of translating the scale into Indonesian. This process is carried out independently by a translator with an IELTS score above seven. 2) After doing forward translation, the synthesis process is carried out by means of discussion between the translator and the author related to the translation results. 3) Then from the results of the discussion, backward translation is carried out by translating the scale to its original language that is English. This process was conducted by translator with proficient competency in English (having IELTS score greater than seven). 4) The next stage was a panel discussion which discussed all the scales adaptation results including the original version, forward translation, and backward translation to obtain a pre-final version which would be used in the readability test. 5) A readability test was conducted on a number of participants who matched the inclusion criteria for this study. Lastly, the final version of adapted scale was used to the targetted participants for further psychometric testing.

Instruments

Two measurements were used in this study, namely the socio-demographic scale and the Social Media Use Integration scale. For the socio-demographic scale includes questions related to participants personal information such as age, sex, and educational level (junior high school, high school, undergraduate, or doctoral degree).

The Social Media Use Integration Scale (SMUIS) measures the integration between social media use and individuals' social behaviors and routines (Jenkins-Guarnieri et al., 2013). This scale consisted of a total of ten items which divided into two dimensions, that is six items in Social Integration and Emotional Connection (SIEC) dimension and four items represent Integration into Social Routines (ISR) dimension (Jenkins-Guarnieri et al., 2013). The SMUIS were using a

Likert scale response with scores ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). One item required reverse scoring before calculating the total score (Item number eight). High-scoring participants represented a high levels of social media use integration (Ardelia & Jaro'ah, 2023).

Data Analysis

Reliability. Reliability test refers to the consistency test of a scale. The reliability test used in this study was internal consistency using the Cronbach Alpha test in which scores of .7 or more were deemed acceptable (Maree, 2017).

Exploratory Factor Analysis. To test the validity of the adapted version of SMUIS, Exploratory Factor Analysis (EFA) was first conducted to analyze the suitability of the scale in the Indonesian context. EFA looks for the fewest speculative constructions that can parsimoniously explain the covariation seen between a group of measurable variables (Watkins, 2018). Prior to EFA, Bartlett's test of sphericity analysis and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy were conducted to determine the data suitability for factor analysis. Bartlett's test of sphericity is considered as significant at .05 or smaller and the Kaiser-Meyer-Olkin (KMO) should be at least .6 (Pallant, 2020).

The EFA was conducted based on the method used by Jenkins-Guarnieri et al. (2013) namely Maximum Likelihood with Promax Rotation and Kaiser Normalization. Further, eigenvalues exceeding 1 and factor loadings cut-off at .3 were considered. The EFA was carried out using Jamovi for Mac (Navarro & Foxcroft, 2018).

Confirmatory Factor Analysis. A Confirmatory Factor Analysis (CFA) is a statistical analysis method that forms a group with Structural Equation Modelling (SEM; Rios & Wells, 2014). CFA is a technique for multivariate analysis that verifies that variables are created in a suitable and reliable measurement model (Hair et al., 2019). Therefore, CFA is used for confirmatory purposes that the measurement model which was designed is the same as the one which had been hypothesized (Natalya & Purwanto, 2018).

Several assumptions need to be fulfilled in conducting CFA namely a normal distribution of data, an accurate parameter estimation is calculated using the correct method such as Maximum Likelihood Estimator, and model should have adequate fit index values (Hair et al., 2019). To test the validity of CFA, several indices of fit are also performed to ensure that all items are grouped accordingly. The χ^2 is included as an absolute fit measure, which acceptable score defines as smaller than 0.05 (Kim et al., 2016). Additionally, incremental fit measure values used in this study were the Tucker-Lewis Index (TLI), Norm Fit Index (NFI), Comparative Fit Index (CFI), Goodness of Fit Index (GFI), and Adjusted Goodness of FIT (AGFI) which all of these are required to be greater than .9 (Finch, 2020). Lastly, Root Mean Square of Approximation (RMSEA) also needed to be observed, which should be less than .05 to indicate a good fit, albeit values as high as .08 considered as reasonable errors of approximation in the population (Finch, 2020).

Result and Discussion

Adaptation of Social Media Use Integration to Bahasa Indonesia

Based on the results of forward-backward translation, there are three items that have changed from the original items. These changes were made based on the results of the panel discussion process to make the items in accordance with their original meaning and easy to understand. Items one and four are items that come from the Social Integration and Emotional Connection (SIEC) dimension then item 10 comes from the Integration to Social Routines (ISR) dimension.

Table 1 shows the results of the scale adaptation process. In item SIEC1, the item was changed from "*Saya merasa terputus dari teman-teman ketika saya tidak masuk ke Instagram*" to "*Saya merasa jauh dari teman-teman ketika saya tidak membuka ke Instagram*". Furthermore, on item SIEC4, the item changed from "*Saya kesal ketika tidak bisa masuk ke Instagram*" to "*Saya kesal*

ketika tidak bisa membuka Instagram". Then on item 10 or ISR4, the item changed from "*Saya menanggapi konten yang dibagikan orang lain menggunakan Instagram*" to "*Saya menanggapi konten Instagram orang lain*".

After the adaptation scale from the Forward-Backward Translation results was obtained, then a readability test of this scale was conducted on 30 students who had similar characteristics to the target participants. From the results of this readability test, minor changes were made to make the item easier to understand, namely the removal of the word "*akan*" in item SIEC3.

Table 1
Sample of Items in Social Media Use Integration Scale Adaptation

No	Original Item	Forward Translation	Backward Translation	Final Item
SIEC1	I feel disconnected from friends when I have not logged into Instagram	*Saya merasa terputus dari teman-teman ketika saya tidak masuk ke Instagram*	I feel disconnected from friends when I am not logged in to Instagram	*Saya merasa jauh dari teman-teman ketika saya tidak membuka ke Instagram*
			I feel disconnected from friends when I'm not in the Instagram	
SIEC4	I get upset when I can't log on to Instagram	*Saya kesal ketika tidak bisa masuk ke Instagram*	I get annoyed when I cannot log in to Instagram	*Saya kesal ketika tidak bisa membuka Instagram*
			I get annoyed when I couldn't login to Instagram	
ISR1	I enjoy checking my Instagram account	*Saya senang memeriksa akun Instagram saya*	I enjoy checking my Instagram account	*Saya senang memeriksa akun Instagram saya*
			I love to check my Instagram account	
ISR4	I respond to content that others share using Instagram	*Saya menanggapi konten yang dibagikan orang lain menggunakan Instagram*	I respond to content other people share using Instagram	*Saya menanggapi konten Instagram orang lain*
			I respond to content that shared by others in Instagram	

Data Analysis

Reliability. Results of reliability test can be seen in Table 2. Overall, the SMUIS scale showed a good internal consistency reliability (Cronbach's α = .846; McDonalds's ω = .847). Specifically, the Social Integration and Emotional Connection (SIEC) dimension has a Cronbach's α reliability of .794 and McDonald's ω of .795. These results indicate that the reliability of the SIEC dimensions are quite good. Furthermore, the Integration to Social Routines (ISR) dimension showed satisfactory reliability (Cronbach's α = .716; McDonalds's ω = .728). The item-rest dimensions are quite good. Furthermore, the Integration to Social Routines (ISR) dimension showed satisfactory reliability (Cronbach's α = .716; McDonalds's ω = .728). The item-rest correlation value also

showed quite good results, ranging from .374 to .641 (all values are above .3). From the reliability test results, it can be said that the SMUIS in this study meets the requirement of measurement reliability.

Table 2
Reliability Analysis Results

Dimension	α	ω	$r_{i\text{-}t}$	n_{item}
Social Integration and Emotional Connection	.794	.795	.482 - .608	6
Integration to Social Routine	.716	.728	.352 - .622	4

Notes. α = Cronbach's; ω = McDonald's.

Exploratory Factor Analysis. The Exploratory Factor Analysis (EFA) which was conducted from 306 participants showed a KMO result of .867 in which according to Kaiser (1974) KMO results above .6 are considered significant. Furthermore, the value of Bartlett's test of sphericity showed a significant result, $\chi^2(45) = 942$, $p < .001$. This result shows that the data in this study is suitable for factor analysis.

As expected, the EFA resulted in a two-factor solution (results in Table 3 & Table 4). Factor loadings ranged between .374 to .641, which according to Hair et al. (2019), factor loadings around .3 and above are acceptable. The two factors found from EFA are similar to those found by Jenkins-Guarnieri et al. (2013), namely SIEC and ISR. However, in line with the results found by Maree (2017), there are 3 items in the SIEC dimension, namely the items "I feel disconnected from friends when I have not logged into Instagram", "I would be disappointed if I could not use Instagram at all", and "I get upset when I can't log on to Instagram" which are also classified as Factor 2 (ISR). However, these three items according to Jenkins-Guarnieri et al. (2013) belong to the SIEC dimension. Therefore, because the value of factor loadings on SIEC is higher, these three items are retained in the SIEC dimension.

Table 3
Factor Loadings Value of SMUIS Bahasa Indonesia Version

Dimension	Items	Loading Factor	*p*	Number of Items
Social Integration and Emotional Connection (SIEC)	Item 1	.571	< .001	6
	Item 2	.564	< .001	
	Item 3	.681	< .001	
	Item 4	.803	< .001	
	Item 5	.561	< .001	
	Item 6	.767	< .001	
Integration to Social Routine (ISR)	Item 7	.765	< .001	4
	Item 8	.574	< .001	
	Item 9	.707	< .001	
	Item 10	.447	< .001	

Confirmatory Factor Analysis. The results of CFA analysis using Jamovi software can be seen in Figure 1. From the results, it was found that all standardized and unstandardized parameter estimates scores in the Indonesian version of SMUIS were significant ($p < .001$). Furthermore, most of items' regression weight scores were above .5, although one item showed a score .4 but on behavioral context this result considered as acceptable (Chen & Tsai, 2007). The CFI (.943) and TLI (.911) values are all above .9 and indicate a good fit (Maree, 2017). Furthermore, the RMSEA score is .077 and the SRMR score is .041, which resonates with the

studies conducted by Jenkins-Guarnieri et al. (2013) and Akin et al. (2015). With the parameters of the RMSEA value > .05 and the SRMR value < .08 is fit (Schermelleh-Engel et al., 2003), this result is the basis to acknowledge that the model is a good fit, resulting in the retention of all items. Based on the CFA results, because all values show fit indices, this model can provide preliminary evidence that confirms the validity of the internal structure of SMUIS in the context of Instagram social media in Indonesia.

This study aims to validate the SMUIS in an Indonesian context and to test it on the Instagram social media platform which has never been studied before. The SMUIS in Indonesian context were analyzed using EFA and CFA. In the EFA analysis, it was found that SMUIS is divided into two dimensions, namely SIEC and ISR, which is in line with the original version of the SMUIS scale (Jenkins-Guarnieri et al., 2013) and in the South African context (Maree, 2017). However, there are three items which originated from SIEC dimension but also overlapped with ISR dimension. These three items were retained in the original SIEC dimension because similar things also happened in SMUIS validation research in other contexts (e.g., Akin et al., 2015; Maree, 2017). It is also possible that the meaning of the items in the SIEC and ISR dimensions are similar to each other so that participants in the Indonesian context find it difficult to distinguish (Natalya & Purwanto, 2018).

Table 4

CFA Results Summary

Model	χ^2	*df*	TLI	CFI	RMSEA	SRMR
1	81.3***	34	.911	.943	.077	.041

Notes. ***p < .001.

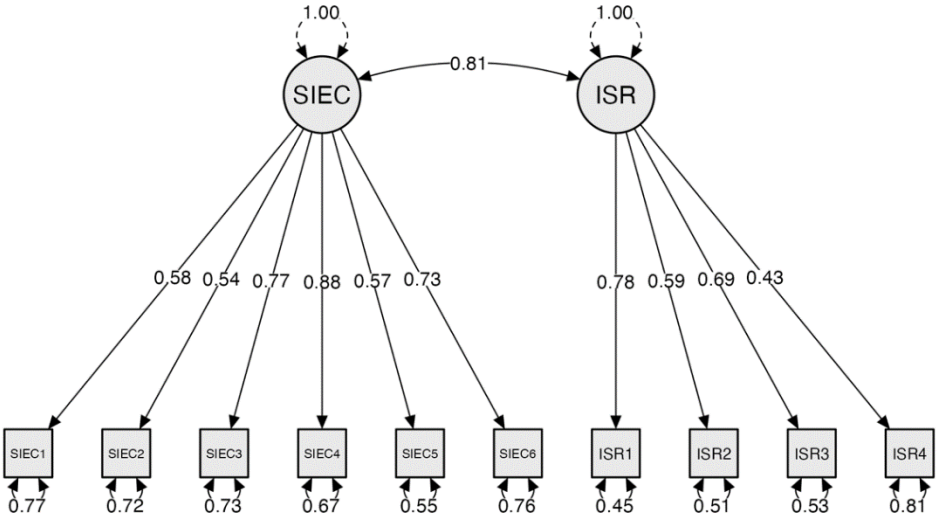

Figure 1. *Measurement Model of CFA SMUIS Bahasa Indonesia*

The results of the CFA analysis show that almost all items have a factor-loading value > .5, there is one item that has a factor loading value of .4 in the ISR dimension. However, because the overall goodness of fit results shows good results, the one item is retained. Based on the results of EFA and CFA, we conclude that each dimension of Indonesian SMUIS on the Instagram social media platform is valid.

Additionally, it was found that the overall ISR dimension was higher in participants. This shows that accessing Instagram has become an integral part of emerging adults' daily lives. This result is similar to the results found by Maree (2017) and Jenkins-Guarnieri et al. (2013). Therefore, it can be said that emerging adults tend not to have an emotional connection to Instagram, but access Instagram because it has become their daily habit.

This study has several limitations namely generalization of results which can only be applied to the context of Indonesian emerging adults because purposive sampling was used in this study. Future research can test the validity of SMUIS in the context of Indonesian society with a wider age range.

The next limitation is the SMUIS dimension which was found to be prominent in this study's participant group. Where the results found emerging adults tend to use Instagram out of habit and not because of an emotional connection to the social media platform. Therefore, future research can identify Instagram users based on their level of intensity, namely users who rarely use Instagram with users whose duration of Instagram use is high. Thus, it is expected to find differences in emotional connections between the two groups of users.

Conclusion

This study shows that the SMUIS scale is valid in the Indonesian context and specifically on the social media platform Instagram. These results are expected to contribute to the impact of social media use on emotional connection and integration to individuals' daily lives. Future research can test the validity of SMUIS on other social media platforms such as X (formerly called Twitter) and TikTok. In addition, messaging platforms such as WhatsApp are also an interesting context to explore regarding emotional connection and integration in individual daily life.

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