

Cross-Cultural Adaptation and Psychometric Validation of the Indonesian Version of the Online Cognition Scale (OCS)

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ABSTRACT

The growing use of the Internet increases the risk of psychological problems, highlighting the need for valid instruments to assess problematic Internet use. However, adapted and psychometrically tested measures in the Indonesian context remain limited. This study adapted and validated the Indonesian version of the Online Cognition Scale (OCS) using data from 317 participants aged 18–40 years. Psychometric analyses included item–total correlations, EFA, CFA, and reliability testing. The scale was restructured from four dimensions into two—Reality Substitution and Preoccupation & Loss of Control—resulting in 23 reliable items ($\alpha = 0.902$). CFA indicated acceptable model fit. Overall, the Indonesian OCS demonstrates good validity and reliability for assessing online cognition related to problematic Internet use.

INTRODUCTION

The internet no longer functions merely as a communication tool or source of information, but has become a psychological space that influences individuals' cognitive, emotional, and behavioral processes (Brand et al., 2019). Excessive and uncontrolled internet use is often associated with difficulties in impulse control, increased psychological dependence, and a tendency to use online activities as a mechanism for escaping emotional problems and the demands of real life (Andrade & Viñán-Ludeña, 2025; Wei et al., 2025).

As attention to the phenomenon of problematic internet use has increased, researchers have begun to emphasize the importance of understanding the cognitive aspects underlying this behavior. The cognitive approach views problematic internet use as being determined not only by the duration or frequency of access, but also by patterns of beliefs, automatic thoughts, and individuals' interpretations of their online experiences (Davis, 2001). OCS was developed as a psychological instrument aimed at measuring specific cognitions related to compulsive and uncontrolled internet use (Davis et al., 2002). The OCS is based on the assumption that individuals with problematic internet use tend to have certain cognitive distortions, such as difficulty resisting the urge to stay online, the perception that the online world is safer or more comfortable than the real world, and the belief that online activities can alleviate feelings of loneliness, stress, or depression (Augner et al., 2022).

THEORETICAL REVIEW

Online Cognition Scale

The OCS instrument conceptually categorizes online cognition into several main interrelated dimensions. These dimensions reflect conditions in which individuals experience diminished impulse control in their internet use, use the internet as a means to cope with feelings of loneliness and depression, find greater social comfort in online interactions than in face-to-face interactions, and use the internet as a distraction to avoid responsibilities or pressures of daily life (Davis et al., 2002). OCS not only measures behavior, but also reveals the internal psychological mechanisms that underlie the emergence and persistence of problematic internet use behavior (Andrade & Viñán-Ludeña, 2025).

Davis' cognitive-behavioral model (2001) became the main theoretical basis for the development of the OCS. This model emphasizes that pathological internet use arises not only from the characteristics of the technology, but also from the maladaptive cognitions possessed by individuals. Maladaptive cognitions, as measured by the OCS, play an important mediating role in the development of addictive internet behavior (Brand et al., 2019).

The existence of OCS is highly relevant in modern psychological research, particularly in studies on mental health, psychological well-being, and addictive behavior in the digital age (Lu et al., 2025). In addition, OCS can also be used in various population groups, including students, university students, workers, and young people who are heavy users of digital technology (Wang & Zhang, 2025). Understanding online cognition is important because it can help identify individuals at risk of psychological problems due to internet use, while also providing an empirical basis for the development of prevention and intervention

strategies that focus on changing mindsets and self-regulation (Augner et al., 2022; Wang & Zhang, 2025).

Several attempts to validate instruments related to internet addiction have been made in Indonesia, such as the validation of the Indonesian version of the Internet Addiction Test (IAT) (Siste et al., 2021) and the development of the Internet Addiction Diagnostic Questionnaire (KDAI) (Siste et al., 2021). However, these instruments focus more on measuring behavioral symptoms and consequences of problematic internet use, rather than the underlying cognitive aspects of such behavior. OCS fills this gap by measuring specific cognitive distortions that contribute to compulsive internet use, thereby providing more in-depth information about the internal psychological mechanisms underlying the emergence of problematic behavior.

Based on this conceptual framework, research using the Online Cognition Scale aims to understand and measure the extent to which individuals exhibit maladaptive online cognition in their use of the internet. This research is directed at identifying cognitive patterns related to decreased impulse control, the use of the internet as an emotional escape, the search for social comfort online, and the tendency to be distracted from the demands of real life. In addition, the use of OCS aims to provide a valid and reliable measuring tool in assessing the cognitive aspects of online behavior, so that it can be used as a basis for analyzing the relationship between cognition, emotions, and individual behavior in the context of internet use.

METHOD

Respondents

This study involved 317 respondents, consisting of 138 men and 179 women who were students aged 18-40 years old and residing in the Greater Jakarta area, with 20.5% from Bekasi, 13.2% from Bogor, 22.1% from Depok, 33.1% from Jakarta, and 11.0% from Tangerang.

All respondents provided complete data. Based on descriptive statistical analysis, the average score on the Social Comfort dimension was 53.57 (SD=13.81), Loneliness Depression was 26.74 (SD= 6.15), Diminished Impulse Control of 40.93 (SD=10.27), and Distraction of 29.31 (SD=8.21). The total Online Cognition Scale (OCS) score showed an average value of 150.60 (SD= 33.62), with a score range of 47-235. The variation in scores across all dimensions showed sufficient diversity among respondents to support the analysis.

Instrument

The instrument used was the Online Cognition Scale (OCS) by Davis, R. A., Flett, G. L., & Besser, A. (2002), which was adapted into Indonesian. The OCS was created to measure problematic internet use with a multidimensional approach, identify psychological behavioral components that play a role in internet addiction, and provide a valid psychometric measurement tool for research. The OCS views problematic internet use as a multidimensional phenomenon.

1. Loneliness/Depression, using the internet as a way to cope with feelings of loneliness or depression.
2. Diminished Impulse Control, weak self-control in using the internet, leading to excessive use.
3. Distraction, using the internet as a form of avoidance from tasks, responsibilities, or stress.
4. Social Comfort, a preference for interacting online because it is considered safer, more comfortable, and more acceptable than face-to-face interaction.

The total OCS score, obtained from the sum of all items in 4 dimensions (Likert scale 1-7). The higher the total score, the higher the level of problematic internet use. The instrument consists of 36 items, in accordance with the OCS journal by Davis, R. A., Flett, G. L., & Besser, A. (2002). Measuring problematic Internet use: The Online Cognition Scale. *CyberPsychology & Behavior*, 5(4), 331-345.

Design

The approach used in adapting this test is a non-experimental quantitative approach. This approach is divided into two stages, namely the stage of translating the scale from English to Indonesian and through expert judgment, as well as the stage of testing validity and reliability.

Analysis Techniques

The data analysis process in this study was conducted in stages to ensure the psychometric quality of the adapted instruments. The first stage involved evaluating item quality through corrected item-total correlation with a threshold of $r > 0.4$, indicating that each item contributed significantly to the overall measurement tool (Zijlmans et al., 2018). Items that did not meet this criterion were considered for revision or elimination. In the second stage, exploratory factor analysis (EFA) is conducted to explore the latent structure of the data and identify the optimal number of factors, as well as to further select items based on the resulting factor loadings (Samuel, 2017). The internal consistency of the instrument is then evaluated using Cronbach's alpha reliability coefficient to ensure that the items measure the same construct consistently. Construct validity is tested through confirmatory factor analysis (CFA), which is a standard procedure in testing the construct validity of psychological instruments (Atkinson et al., 2011). The use of CFA allows for more precise statistical testing and has been shown to improve accuracy in the instrument validation process (Wibisono & Sasia, 2020; Widayatmoko et al., 2019). Through CFA, the fit between the theoretical structure of OCS and the empirical data obtained from the Indonesian sample will be evaluated. The model fit evaluation in CFA uses various goodness-of-fit indices with the following criteria: chi-square to degrees of freedom ratio (χ^2/df) < 2.0 with a p-value $> .05$; Goodness of Fit Index (GFI) $> .90$; Root Mean Square Error of Approximation (RMSEA) $< .08$; Standardized Root Mean Square Residual (SRMR) $< .09$; Tucker-Lewis Index (TLI) $> .95$; and Comparative Fit Index (CFI) $> .95$ (Brown, 2006; Cangur & Ercan, 2015; Hu & Bentler, 1999; Schumacker & Lomax, 2010). This combination of indices provides a comprehensive evaluation of model fit from various statistical perspectives. All statistical analysis procedures were performed using

RESULT

The adaptation process began with translating the Online Cognitive Scale by Davis, R. A., Flett, G. L., & Besser, A. (2002) into Indonesian. Translators were selected based on their English language skills, expertise in psychology, and familiarity with psychological behavioral issues that play a role in internet addiction. The first stage in the translation process was to convert the English scale into Indonesian (forward translation). This stage produced two translated versions, which were synthesized by the researchers into an Indonesian scale. The second stage was to convert the scale from Indonesian into English by experts (back translation). The original forward translation and back translation versions were then reviewed by experts in the field of psychology who also had good English language skills. All versions were compared and assessed in terms of similarity of meaning. The Indonesian version of the scale was confirmed to have no differences in meaning from the English version. After that, a readability test was conducted.

After the translation stage, the analysis process continued to the next stage, which was testing the item analysis through item-rest correlation. The item-rest correlation technique calculates the correlation between each item and the total score of other items. The item-rest correlation results from the scale are as follows:

Table 1. Summary of Item-Rest Correlation Tests

No. Statement	Dimension	Statement	Item Rest-Correlation	Preliminary Conclusions
SC01		I feel most comfortable when I'm online.	0.366	Eliminated
SC02		I feel safest when I am accessing the internet.	0.414	Eliminated
SC03		It's better to get to know someone through the internet than in person.	0.539	Accepted
SC04		I often feel calm when I'm online.	0.488	Eliminated
SC05	Social comfort	I can be myself when I'm online.	0.514	Accepted
SC06		I am more respected in the online world than in real life.	0.506	Accepted
SC07		People accept me for who I am in the online world.	0.364	Eliminated
SC08		Online relationships are more satisfying than offline relationships.	0.521	Accepted
SC09		I am at my best when I am online.	0.580	Accepted

SC10		I hope my friends and family know how people are. viewing me online.	0.532	Accepted
SC11		The internet feels more "real" than real life.	0.578	Accepted
SC12		I say or do things on the Internet that I would never be able to do offline.	0.445	Eliminated
SC13		When I'm online, I can feel free.	0.438	Eliminated
LODE14		Only a few people love me besides those I know online.	0.190	Eliminated
LODE15		I don't feel too lonely when I'm online.	0.240	Accepted
LODE16		I can't imagine living without the internet for a long time.	0.286	Accepted
LODE17	Loneliness/depression	The internet is an important part of my life.	0.226	Eliminated
LODE18		I feel helpless when I don't have access to the internet.	0.380	Accepted
LODE19		I feel disturbed because I cannot stop my habit of excessive internet use.	0.357	Accepted
DIC20		I often think about something I experienced online even after I have logged off.	0.487	Accepted
DIC21		When I access the internet, I often feel a sense of "excitement" or pleasant euphoria.	0.296	Eliminated
DIC22		I use the internet more than I should.	0.345	Eliminated
DIC23	Diminished impulse control	Other people complain when I use the internet too much.	0.422	Eliminated
DIC24		I stopped at the time I had planned.	-0.063	Eliminated
DIC25		When I'm offline, I often think about the internet.	0.504	Accepted
DIC26		The real world feels less interesting compared to what can be done on the internet.	0.468	Accepted
DIC27		I can't stop thinking about the internet.	0.565	Accepted

DIC28		Even though I want to stop, I can't reduce my internet usage.	0.525	Accepted
DIC29		Sometimes I can't control my internet usage.	0.459	Accepted
DIS30		When I'm online, I don't think about my responsibilities.	0.491	Accepted
DIS31		When there's nothing better to do, I go online.	0.210	Eliminated
DIS32		I realize that I am online more often when there are other things I should be doing.	0.423	Accepted
DIS33	Distraction	When I'm online, I don't have to think about problems in the real world.	0.442	Accepted
DIS34		Sometimes I use the internet to procrastinate.	0.499	Accepted
DIS35		I often use the internet to avoid doing things I don't enjoy.	0.453	Accepted
DIS36		Using the internet is my way of forgetting the things I should do but am reluctant to do.	0.574	Accepted

The results of Table 1, which shows the item-residual correlation test in the early stages of adapting the Indonesian version of the Online Cognition Scale (OCS), indicate that most of the 36 original items still have relatively low correlation values. Since this is a preliminary analysis prior to the sorting process, all items were tested as they were to see their respective contributions to the four dimensions of the OCS construct. The initial findings show that a number of items are not yet able to consistently represent the construct in the context of Indonesian respondents, indicating that there is considerable room for improvement in the item structure.

Overall, although some items showed moderate correlations and were worth retaining, many other items had correlations below the standard and were recommended for elimination in the next stage. This confirms that the psychometric quality of the Indonesian version of the OCS still needs to be strengthened through stricter item selection and further analysis, such as reliability and construct validity. Thus, these preliminary results provide an important basis that the adaptation of the OCS still requires significant refinement before it can be used as a stable and accurate measurement tool in the Indonesian context.

Table 2. EFA test

No. Statement	Dimension	Statement	Factor Loading	Preliminary Conclusions
RS01	Reality substitution	It's better to get to know someone through the internet than in person.	0.484	Accepted
RS02		I can be myself when I'm online.	0.376	Accepted
RS03		I am more respected in the online world than in real life.	0.850	Accepted
RS04		Online relationships are more satisfying than offline relationships.	0.773	Accepted
RS05		I am at my best when I am online.	0.484	Accepted
RS06		I hope my friends and family know how people view me online.	0.732	Accepted
RS07		The internet feels more "real" than real life.	0.612	Accepted
RS08		I don't feel too lonely when I'm online.	0.402	Accepted
RS09		The real world feels less interesting compared to what can be done on the internet.	0.660	Accepted
RS10		When I'm online, I don't think about my responsibilities.	0.439	Accepted
RS11		When I'm online, I don't need to	0.400	Accepted
PLC01	preoccupation and loss of control	I can't imagine living without the internet for a long time.	0.664	Accepted
PLC02		I feel helpless when I don't have access to the internet.	0.574	Accepted
PLC03		I feel troubled because I can't stop my excessive internet use.	0.444	Accepted
PLC04		I often think about something I experienced online even after I have logged off.	0.407	Accepted
PLC05		When I'm offline, I often think about the internet.	0.534	Accepted
PLC06		I can't stop thinking about the internet.	0.342	Accepted
PLC07		Even though I want to stop, I can't reduce my internet usage.	0.375	Accepted
PLC08		Sometimes I can't control my internet usage.	0.667	Accepted
PLC09		I realize that I am online more often when there are other things I should be doing.	0.290	Accepted
PLC10		Sometimes I use the internet to procrastinate.	0.406	Accepted

PLC11	I often use the internet to avoid doing things I don't enjoy.	0.287	Accepted
PLC12	Using the internet is my way of forgetting the things I should do but am reluctant to do.	0.562	Accepted

The results of Exploratory Factor Analysis (EFA) in Table 2 show that the initial four-dimensional structure of the OCS underwent significant simplification after the adaptation and item selection process. Of the 36 initial items, only 23 items met the criteria for factor loading and theoretical consistency, and all of these items were clearly grouped into two main factors. The first factor, Reality Substitution, describes the tendency of individuals to use the internet as an alternative space that is considered more comfortable, more satisfying, or more "real" than offline life. The items in this factor had loadings between 0.376 and 0.850, indicating a strong and stable contribution. This dimension reflects how the internet has become a means of self-expression, seeking social acceptance, avoiding problems, and replacing interactions.

The second factor, Preoccupation and Loss of Control, consists of 12 items with loadings ranging from 0.287 to 0.667. This dimension describes cognitive and behavioral aspects related to difficulties in controlling internet use, obsessive thoughts about online activities, and the use of the internet as an avoidance mechanism. Although some items have relatively low loadings, the overall pattern shows strong theoretical consistency and relevance to the concept of loss of control in internet use. Overall, these EFA results confirm that the adaptation of the Indonesian version of the OCS produces a more concise two-factor structure that still reflects the core of problematic internet use behavior, while also indicating that there is still room for further refinement in the next validation stage.

Table 3. CFA Model Fit Test

Category	Criteria	Value	Reference Value	Interpretation
Absolute fit	Chi-square test/df	3.202	< 5	Fulfils
	p	< 0.001	> 0.05	Does not Fulfils
	Goodness of fit index (GFI)	0.924	> 0.90	Fulfils
	Root mean square error of approximation (RMSEA)	0.083	< 0.08	Fulfils
	Standarized RMR (SRMR)	0.055	< 0.09	Fulfils
Incremental fit	Tucker-Lewis index (TLI)	0.872	> 0.80	Fulfils
	Comparative fit index (CFI)	0.898	> 0.80	Fulfils

After the EFA process, Table 3 produced two new dimensions – Reality Substitution and Preoccupation and Loss of Control – the next step was to test the model's suitability through Confirmatory Factor Analysis (CFA). The CFA

test results showed that the two-factor model developed from 23 selected items had a fairly good level of fit. Several absolute fit indicators, such as the Chi-square/df value of 3.202, were within acceptable limits (5), while the GFI reached 0.924, exceeding the minimum limit of 0.90. Although the p-value 0.001 did not meet the ideal criteria, this is common in medium sample sizes and models with many parameters. Error indicators such as RMSEA (0.083) and SRMR (0.055) are within acceptable ranges, indicating that the model has a relatively low level of error.

In terms of incremental fit, TLI values of 0.872 and CFI values of 0.898 indicate that this two-factor model has a better fit than the basic model. Overall, the CFA results indicate that the two-dimensional structure of the Indonesian adaptation is acceptable and has adequate empirical support. Although there is still room for improvement, particularly in terms of increasing the p value and decreasing the RMSEA, this model has demonstrated sufficient stability and consistency to proceed to the next stage of validation.

Table 4. CFA Exam Summary

No. Statement	Dimension	Statement	Factor Loading	p	CR	AVE
RS01		It's better to get to know someone online than in person.	0.484	< 0.001		
RS02		I can be myself when I'm online.	0.376	< 0.001		
RS03		I am more respected in the online world than in real life.	0.850	< 0.001		
RS04		Online relationships are more satisfying than offline relationships.	0.773	< 0.001		
RS05		I am at my best when I am online.	0.484	< 0.001		
RS06	Reality substitution	I hope my friends and family know how people view me online.	0.732	< 0.001	0.846	0.655
RS07		The internet feels more "real" than real life.	0.612	< 0.001		
RS08		I don't feel too lonely when I'm online.	0.402	< 0.001		
RS09		The real world feels less interesting compared to what can be done on the internet.	0.660	< 0.001		
RS10		When I'm online, I don't think about my responsibilities.	0.439	< 0.001		
RS11		When I'm online, I don't have to think about problems in the real world.	0.400	< 0.001		

PLC01		I can't imagine living without the internet for a long time.	0.664	< 0.001		
PLC02		I feel helpless when I don't have access to the internet.	0.574	< 0.001		
PLC03		I feel disturbed because I can't stop my excessive internet use..	0.444	< 0.001		
PLC04		I often think about something I experienced online even after I have logged off.	0.407	< 0.001		
PLC05		When I'm offline, I often think about the internet.	0.534	< 0.001		
PLC06	preoccupation and loss of control	I can't stop thinking about the internet.	0.342	< 0.001		
PLC07		Even though I want to stop, I can't reduce my internet usage.	0.375	< 0.001	0.829	0.769
PLC08		Sometimes I can't control my internet usage.	0.667	< 0.001		
PLC09		I realize that I am online more often when there are other things I should be doing.	0.290	< 0.001		
PLC10		Sometimes I use the internet to procrastinate.	0.406	< 0.001		
PLC11		I often use the internet to avoid doing things I don't enjoy.	0.287	< 0.001		
PLC12		Using the internet is my way of forgetting the things I have to do but don't want to do.	0.562	< 0.001		

The results of the CFA test summary in Table 4 at the item level show that all 23 items remaining from the EFA stage have significant factor loadings with $p < 0.001$, so that statistically all items contribute to their respective constructs. In the Reality Substitution dimension, the loadings range from 0.376 to 0.850. Although there are several items with moderate loadings, the overall pattern shows strong consistency in describing individuals' tendency to substitute real-world experiences with online experiences. The Composite Reliability (CR) value of 0.846 and Average Variance Extracted (AVE) of 0.655 indicate that this dimension has good internal reliability and adequate ability to explain the overall variance of the construct.

On the Preoccupation and Loss of Control dimension, the loading values ranged from 0.287 to 0.667, with all items remaining significant at $p < 0.001$. Although some items had relatively low loadings, the overall structure remained stable and reflected obsessive aspects and difficulties in controlling internet use. The CR value of 0.829 and AVE of 0.769 indicate that this dimension has strong

internal consistency and is able to capture construct variance more comprehensively. Overall, these CFA results reinforce that the two dimensions of the Indonesian adaptation – Reality Substitution and Preoccupation and Loss of Control – have an adequate psychometric basis for use at this stage.

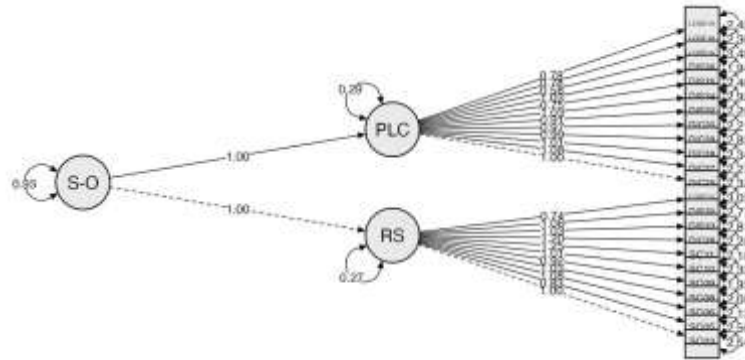


Figure 1. 23-item Online Cognition Scale in Indonesian

DISCUSSION

According to the analysis results, it can be concluded that the Indonesian version of the Online Cognitive Scale measurement tool has met the specified psychometric standards. The analysis results were obtained through the translation stage, the validity and reliability testing stage using the item-rest correlation technique ($r = -0.063 - 0.580$), Cronbach's alpha ($\alpha = 0.902$), and exploratory factor analysis.

The results of exploratory and confirmatory factor analysis on the Indonesian version of the Online Cognitive Scale (OCS) adaptation show changes in the factor structure compared to the original model, which consists of four dimensions. In this study, the four initial dimensions (Davis et al., 2002), namely Loneliness/Depression, Diminished Impulse Control, Distraction, and Social Comfort, were empirically regrouped into two main dimensions, namely Reality Substitution and Preoccupation & Loss of Control. These findings indicate that in the Indonesian cultural context and sample, online cognition related to problematic internet use tends to be organized at a more global and integrative level.

Reality substitution is defined as an individual's cognitive and affective tendency to interpret and use the internet as a substitute for unfulfilled social, emotional, and psychological realities in the real world, making the internet the primary space for obtaining comfort, security, escape, and self-identity. This dimension refers to the phenomenon in which individuals use the virtual world as a substitute for interactions and experiences in the real world (Bojic, et al., 2025). Reality substitution is established as a new dimension in OSC adaptation, which is based on compulsive and excessive internet use. In line with previous findings by Kilic et al. (2025), individuals tend to rely on online spaces as the main source of anxiety regulation and decision-making, replacing direct interaction with professionals or real experiences, which is a characteristic of reality substitution. In the literature review, problematic internet use is often understood as a multidimensional phenomenon that encompasses aspects of

impulse control and emotion regulation, social comfort, and distraction functions (Davis, 2001; Davis et al., 2002). However, a number of studies also show that these dimensions often overlap empirically and can form broader factors in certain cultural contexts. The results of this study reinforce the view that the cognitive dimensions of problematic internet use are not always clearly separated, but can merge into a more general construct.

In their latest study, Zou, et al. (2021) specifically proved that this "feedback deficit" in the real world increases the level of social comfort in the internet world. In agreement with this study, Bojic, et al. (2025) revealed that the social comfort felt on the internet today can be felt with an immersive "physical sensation." This research aligns with Davis (2001), who suggests that maladaptive cognition can become significantly stronger when supported by technology that facilitates this by making the 'sense of escape' feel more real.

On the other hand, the phenomenon of internet addiction has also been widely studied in several cultural contexts. However, empirical findings show that the prevalence of addiction is not universal, but is influenced by the social and cultural background of the research location. A study in Indonesia by Ghifari, et al. (2021) shows that internet addiction tends to be oriented towards the intensity of social interaction and the need for collectivity, while online cognitive scale-based research in Western contexts emphasizes aspects of impulse control and emotional regulation, social comfort, and distraction functions (Davis, 2001; Davis et al., 2002).

The second dimension, Preoccupation & Loss of Control, represents the integration between excessive focus on online activities and difficulty in controlling internet use. Items in this dimension describe the cognitive dominance of the internet in an individual's life, failure to regulate the duration of use, and a strong internal drive to stay online (Davis et al., 2002). Loss of control is generally understood to refer to an individual's inability to consciously limit impulses and behaviors as a result of intense or overwhelming emotions (Walker, et. al., 1990). Preoccupation refers to a cognitive condition in which individuals persistently focus on online activities even when they are not actually online (Gui, et al., 2025; Young, 1998). These findings indicate that among Indonesian respondents, the cognitive aspect of preoccupation with the internet cannot be separated from weak self-control. Loss of control is not only a behavioral phenomenon, but is rooted in an intense cognitive attachment to the online world.

Theoretically, this dimension is in line with the cognitive-behavioral model of pathological internet use proposed by Davis (2001), which states that maladaptive conditions such as obsessive thoughts about the internet and the belief that individuals are "unable to stop" play an important role in maintaining problematic internet use behavior. Cognitive preoccupation weakens impulse control, making it increasingly difficult for individuals to voluntarily stop online behavior.

Empirical research also shows that preoccupation with the internet is strongly correlated with impulsivity and lack of self-control (Brand et al., 2019; Wegmann et al., 2022). Within the framework of the I-PACE model (Brand et al.,

2019), preoccupation and loss of control are the result of interactions between cognitive, affective, and impaired executive functions. Thus, this dimension can be understood as the cognitive core of problematic internet use, reflecting the severity of an individual's psychological attachment to the internet.

The results of the study show that adapting the Online Cognition Scale (OCS) to the Indonesian context produces a two-dimensional structure that differs from the four dimensions of the original version by Davis et al. (2002). This simplification not only reflects the statistical process through EFA and CFA, but also illustrates how internet usage behavior in Indonesia is influenced by cultural, social, and local technological development factors. The first dimension, Reality Substitution, describes the tendency of individuals to use the internet as an alternative space to express themselves, seek social acceptance, and avoid social pressures in the real world. This phenomenon is particularly relevant in Indonesian culture, which is known for its collectivist social norms, politeness norms, and tendency to avoid conflict or embarrassing situations (saving face), as described by Hofstede (2011) and Hwang (2012). The internet, especially social media, provides a safer and freer space to express oneself without the pressure of strict social norms. This explains why items related to online identity, comfort with virtual interaction, and the perception that the online world is more "real" have a strong loading in this dimension.

The second dimension, Preoccupation and Loss of Control, reflects cognitive and behavioral aspects related to difficulties in controlling internet use, obsessive thoughts, and the use of the internet as an avoidance mechanism. In the Indonesian context, this phenomenon can be understood through two cultural aspects: first, the high use of the internet as a means of entertainment and escape from life's pressures, especially among the urban youth (APJII, 2023). Second, the work and education culture in Indonesia, which often demands obedience, a busy work rhythm, and high academic pressure, encourages individuals to seek escape through easily accessible digital activities. Studies in East Asia and Southeast Asia show similar patterns, where excessive internet use is often associated with academic stress, family pressure, and the need to avoid social demands (Young, 2015; Kuss & Griffiths, 2017). This explains why items related to obsessive thoughts, inability to stop, and internet use to avoid tasks remain a strong dimension.

Overall, the emergence of these two new dimensions shows that in the context of Indonesian culture, problematic internet use behavior is more centered on the function of the internet as an alternative space for social identity and a mechanism for escaping the pressures of life, compared to the more separate four-dimensional structure found in the original version. This finding reinforces the importance of cultural adaptation in the development of psychological measurement tools, as constructs that appear universal can be transformed according to the values, norms, and social interaction patterns of the local community. This two-dimensional model provides a more accurate picture of how individuals in Indonesia experience and interpret excessive internet use, and can serve as a basis for more sensitive interventions and assessments.

CONCLUSION

Based on the results of the adaptation and psychometric testing of the Online Cognitive Scale measurement tool, it can be concluded that the Indonesian version of the OCS has adequate validity and reliability, making it suitable for use as a measurement tool to assess online cognition related to internet addiction in the Indonesian context. This adaptation process also explains that the results of the item-total correlation analysis and reliability test show that the OCS items are able to measure the construct quite well. In addition, the EFA and CFA results show a factor structure with dimensions in the original construct, from 4 main dimensions to 2 dimensions, namely Reality Substitution and Preoccupation and Loss of Control.

In the context of Indonesian culture, the results of the adaptation and validation of the OCS, which produced two dimensions—Reality Substitution and Preoccupation and Loss of Control—show that problematic internet use behavior in Indonesia is more influenced by collectivist social norms, the need to maintain self-image, and the tendency to use digital space as an escape from life's pressures. The internet serves as a safe space to express identity without direct social risk, while also providing a means to avoid academic demands, work pressures, or emotional stress, as reflected in the strong items related to reality substitution and loss of control. These findings confirm that the two-dimensional structure is more consistent with the patterns of social interaction and psychological dynamics of Indonesian society, thus providing a more accurate and culturally sensitive picture of how individuals experience and interpret excessive internet use.

The results of the item-total correlation analysis show that OCS items contribute significantly to the measured construct, while reliability tests indicate good internal consistency. EFA and CFA show that the OCS factor structure in the Indonesian context has changed from the original four-dimensional model to two main dimensions, namely Reality Substitution and Pre-occupation & Loss of Control. Practically, the Indonesian version of OCS can be used as a comprehensive assessment tool for screening and research related to problematic internet use, as well as a basis for designing psychological interventions that focus on cognitive restructuring and strengthening self-control.

FURTHER STUDY

Further research is recommended to test the measurement invariance of OCS in more diverse population groups and to examine its predictive validity for other mental health indicators, in order to strengthen the generalization and usefulness of this instrument in the future.

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