



Problematic Social Media Use and Mental Distress among Indonesian and Taiwanese University Students: Comparing Problematic Generalized Use and Specific Problematic YouTube Use

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Abstract

Mental distress is associated with problematic social media use (PSMU). However, research has rarely discussed the relationship with the consideration of different types of PSMU (i.e., generalized PSMU and specific forms of PSMU) across countries. Therefore, the present study compared different types of PSMU between Indonesian and Taiwanese university students and their associations with mental distress. Using a cross-sectional online survey, 1402 university students from Indonesia (mean age=20.02 years [SD±1.48]; 411 females [79.8%]) and Taiwan (mean age=28.82 years [SD±6.06]; 565 females [63.7%]) completed measures assessing generalized PSMU (i.e., Bergen Social Media Addiction Scale [BSMAS]), specific problematic YouTube use (i.e., YouTube Addiction Scale [YAS]), and mental distress (i.e., Depression, Anxiety and Stress Scale-21 [DASS-21]). Indonesian students had higher levels of generalized PSMU (16.30 ± 4.19 vs. 14.83 ± 5.19 ; $p < 0.001$) but lower specific problematic YouTube use (12.76 ± 3.77 vs. 14.43 ± 5.04 ; $p < 0.001$) than Taiwanese students. Moreover, multiple linear regressions showed that mental distress, especially depression, significantly explained generalized PSMU and specific problematic YouTube use. Based on the present findings, healthcare providers may want to help university students find appropriate methods to cope with their mental distress, which may in turn, lower their generalized PSMU and specific problematic YouTube use.

Keywords Social media addiction · Problematic social media use · Psychological distress · Problematic YouTube use · Young adults

Introduction

Over the past decades, technology has evolved dramatically, leading to the rise of social media. Social media platforms were originally created to facilitate information exchange, interactivity, entertainment, and marketing (Bal & Bicen, 2017; Beheshti-Kashi & Makki, 2013;

Qualman, 2013). The use of social media in everyday life is deeply ingrained for some individuals. In Taiwan, 91% of the population (21.7 million individuals) are active internet users and they frequently use social media (Thomala, 2024). In Indonesia, internet penetration is approximately 75% (210 million individuals), and internet users frequently use social media (Nurhayati-Wolff 2024). As of February 2024, Taiwan had 19.2 million YouTube users, and as of December 2024, Indonesia had 139 million YouTube users (Kemp, 2024; Mortensen, 2025).

Problematic social media use (PSMU) refers to individuals who experience psychological, social, academic, and/or work difficulties due to their use of social media (Ahorsu et al., 2024). PSMU is a form of problematic internet use characterized by psychological, social, academic, or occupational difficulties due to excessive social media engagement (Aboujaoude, 2010; Pettorruso et al., 2020; Liu et al., 2024). PSMU occurs worldwide, including Indonesia and Taiwan (where the present study was conducted) (P.-C. Huang et al., 2024; Langlais et al., 2025).

Despite high rates of PSMU in both contexts, few studies have directly compared generalized versus platform-specific PSMU between an advanced economy (Taiwan) and an emerging economy (Indonesia). Moreover, PSMU can be classified into two types: generalized PSMU and specific PSMU. The former refers to individuals that have generalized PSMU (i.e., their problematic use is not specific to a particular social media platform), whereas the latter refers to individuals that have specific problems with a particular social media platform (e.g., Instagram, Facebook, YouTube) (I. Hua Chen et al., 2020). In sum:

- Generalized PSMU refers to problematic use across all social media platforms.
- Specific PSMU refers to problematic use of a single platform (e.g., Facebook, Instagram, YouTube)

Because the popularity of specific social media platform is different across countries (*Global Social Media Statistics*, 2024), generalized PSMU and specific PSMU might be

different across countries. However, research has rarely compared generalized and specific PSMU across countries in the extant literature. Moreover, YouTube was used in the present study as a specific PSMU for investigation. The reasons for choosing YouTube include (i) its popularity as a specific form of online social media activity (as aforementioned, both Indonesia and Taiwan have millions of YouTube users); (ii) there have only been a few studies examining problematic YouTube use (e.g., Jafari et al., 2024; Pakpour et al., 2023) in comparison to the many studies examining problematic use of Facebook (e.g., Andreassen & Pallesen, 2014; Rajesh & Rangaiah, 2022; Ryan et al., 2014) and Instagram (e.g., Kircaburun & Griffiths, 2018; Rogowska & Libera, 2022; Sepas et al., 2024); and importantly (iii) YouTube comprises a singular video format and high time investment. Therefore, YouTube was focused on because video content demands sustained attention and represents a distinct form of social media engagement.

Theoretical Frameworks

Several theories have been proposed to explain the development of PSMU. The Interaction of Person-Affect-Cognition Execution (I-PACE) model posits that individuals using online activities (e.g., social media) as a method to cope with their mental distress (e.g., anxiety, depression, and stress), may develop PSMU if their executive functioning is unable to control their impulsivity (Brand et al., 2019; Brand et al., 2016). Uses and gratifications theory posits that individuals perceive the benefits of using social media and may develop PSMU to reduce their anxiety and stress in physical daily environments (Bhatiasavi, 2024). The fear of missing out (FoMO) model posits that individuals do not want to disconnect with their online social networks and therefore keep checking their social media to avoid missing out what is going on in the lives of their family, friends and/or peers (Alutaybi et al., 2020; Roberts & David, 2020; Servidio et al., 2024; Soraci et al., 2025). Addiction models proposed by Brailovskaia (2024)

posit that social media use and mental distress could be reciprocally associated. That is, one of the main reasons for individuals using social media is to overcome or to improve mental distress, while using social media may contribute to subsequent mental distress.

The Present Study

The present study addressed the literature gap by comparing two types of PSMU (generalized PSMU and a specific form of PSMU [i.e., PYU]) between Indonesian and Taiwanese university students. Moreover, the study further examined how different types of mental distress (i.e., anxiety, depression, and stress) were associated with the two types of PSMU among individuals in the two populations. It was hypothesized that both generalized PSMU and problematic YouTube use would be positively associated with anxiety, depression, and stress in both samples. Next, the sample, measures, and procedures used to test these hypotheses are described.

Methods

Participants and Procedure

A cross-country comparison study was conducted using a cross-sectional study design. Online surveys were used to collect data via *SurveyMonkey* for both Taiwanese and Indonesian participants. The online surveys were distributed via various social media platforms (e.g., *WhatsApp* and *LINE*) for Taiwanese participants and via emails to students studying at the Universitas Airlangga for Indonesian participants. In terms of recruitment among Taiwanese participants, the present study distributed the online survey to the university students in their teaching universities (including two universities located in Southern Taiwan and two in Northern Taiwan). In addition, the Taiwanese authors asked their colleagues teaching in Eastern Taiwan (one university), Central Taiwan (two university), Southern Taiwan (one university),

and Norther Taiwan (one university) to help distribute the online survey. In total, university students from at least 10 universities distributed across Taiwan likely received the online survey. In terms of recruitment among Indonesian participants, all were from the same university (i.e., Universitas Airlangga). Moreover, participants were encouraged to share the online survey to their friends who were eligible. This snowball sampling method of data collection enabled the present study to reach at least 500 participants for each country.

The first page of the online survey clearly described the study purpose and participants' rights, including the right to withdraw anytime without any consequences, before asking the participants to provide written informed consent. The inclusion criteria for the eligible participants were (i) being an active university student; (ii) being Indonesian or Taiwanese; (iii) being able to read the online survey questions; and (iv) having internet access to take part in an online survey. The exclusion criteria were (i) being aged below 18 years or above 40 years; and (ii) self-reporting a diagnosis of serious mental health illness (e.g., schizophrenia). The study was given ethical clearance by the Ethics Commission for Health Research, Faculty of Nursing, Universitas Airlangga (Ref: 3016-KEPK) for Indonesia participants, and the Human Research Ethics Committee, National Cheng Kung University (Ref: NCKU HREC-E-111-563-2) for Taiwanese participants.

Measures

Demographics. The online survey asked the following demographic information from all participants: (i) age (in years) and (ii) sex (male, female, or other).

Mental distress. Mental distress was assessed using the 21-item Depression Anxiety and Stress Scale (DASS-21). The DASS-21 contains seven items assessing anxiety, seven items assessing depression, and seven items assessing stress. Every item is rated from 0 (*never*) to 3 (*almost always*), with a higher score indicating a greater level of mental distress in that domain. The item scores were summed for the entire DASS-21 (i.e., total score) and each subscale (i.e.,

anxiety score, depression score, and stress score). The subscale scores can also classify each type of mental distress into a different level: scoring 5 or above indicates moderate level or above for anxiety; scoring 7 or above indicates moderate level or above for depression; and scoring 10 indicates moderate level or above for stress (Lovibond & Lovibond, 1996). The psychometric properties of the DASS-21 are widely supported in the literature (Cao, Liao, Gamble, et al., 2023; Cao, Liao, Jiang, et al., 2023; Evans et al., 2021), including the Indonesian version (Ifdil et al., 2022) and Chinese version (Chen et al., 2023). Moreover, the DASS-21 has been translated into Indonesian and Chinese using standardized guidelines (i.e., Hambleton et al., 2004) to ensure its linguistic and cultural validity.

Problematic social media use. Generalized PSMU was assessed using the Bergen Social Media Addiction Scale (BSMAS), and a specific form of PSMU (i.e., PYU) was assessed using the YouTube Addiction Scale (YAS). Items in both the BSMAS and YAS are based on the component model of addiction (Griffiths, 2005). Each scale has six items rated from 1 (*never*) to 5 (*very often*), and a higher score indicates a greater level PSMU (Jafari et al., 2024; Schou Andreassen et al., 2016). The psychometric properties of the BSMAS are widely supported in the literature (Y.-T. Huang et al., 2024; Ruckwongpatr et al., 2024), including the Indonesian version (Pramukti et al., 2023) and Chinese version (I. H. Chen et al., 2020; Leung et al., 2020). Similar to DASS-21, the BSMAS was translated into Indonesian and Chinese versions using standardized guidelines (i.e., Beaton et al., 2000) to ensure its linguistic and cultural validity. The psychometric properties of the YAS are supported by recent evidence (Dinç et al., 2025; Pakpour et al., 2023). However, there is no current psychometric evidence of YAS for its Indonesian and Chinese versions. Therefore, these scales were adapted specifically for the present study, and the authors followed international translation guidelines (i.e., Beaton et al., 2000) to ensure the linguistic validity of the YAS in both Indonesian and Chinese

Statistical Analysis

First, sample characteristics across countries were compared, then associations between mental distress and PSMU via multiple regressions were tested. Participants from Indonesia and Taiwan were compared for their demographics and scores on mental distress and PSMU using independent *t*-tests (for continuous variables) or chi-square (χ^2) tests (for categorical variables). Then, the associations between mental distress and PSMU were analyzed using 12 multiple linear regression models. Table 1 additionally provide specific arrangements of the 12 multiple linear regression models in terms of what the dependent variables (DV; i.e., generalized PSMU or PYU), type of independent variables (IV; i.e., dichotomous or continuous for DASS-21 anxiety, depression, or stress), and samples (i.e., pooled or country-specific) are. Anxiety, depression, and stress were each dichotomized at ‘mild or below’ vs. ‘moderate or above’ based on DASS-21 anxiety (cutoff: 5), depression (cutoff: 7), and stress (cutoff: 10) scores. All models were adjusted for age and sex. The models were tested using both dichotomized and continuous IVs because this provides a more thorough examination of the relationships between generalized PSMU/PYU and mental distress. More specifically, it is unclear if mental distress might be linearly associated with generalized PSMU/PYU, and using both dichotomized and continuous scores can help understand both linear (continuous) and nonlinear (dichotomous) relationships with generalized PSMU/PYU. In brief, the models were:

Models 1-4 (pooled sample)

- Models 1-2: DVs = generalized PSMU (M1) and PYU (M2); IVs = dichotomized anxiety, depression, stress, + country.
- Models 3-4: Same DVs; IVs = continuous anxiety, depression, stress, + country

Models 5-12 (country-specific sample): Indonesia (M5, M7, M9, M11) vs. Taiwan (M6, M8, M10, M12)

- Models 5, 6, 9, and 10: DVs = generalized PSMU (M5/M6) or PYU (M9/M10); IVs = dichotomized anxiety, depression, stress
- Models 6, 8, 10, and 12: DVs = generalized PSMU (M7/M8) or PYU (M11/M12); IVs = continuous anxiety, depression, stress

Collinearity was assessed using variance inflation factors (VIF); all VIFs were < 4 , indicating no problematic multicollinearity (O’Brien, 2007). All the analyses were performed using the IBM SPSS 20.0.

(Insert Table 1 here)

Results

Among the 1402 participants, 515 were Indonesian students (36.7%) and 887 were Taiwanese students (63.2%). The Taiwanese students (28.82 years [SD±6.06]; 63.7% females) were significantly older and comprised a lower proportion of female participants than the Indonesian students (20.02 years [SD±1.48], 79.8% females; $p<0.001$). Regarding mental distress, compared to Taiwanese students, Indonesian students had a significantly higher (i) total DASS-21 score (17.22 [SD±10.48] vs. 12.78 [SD±11.27]; $p<0.001$), the DASS-21 anxiety score (5.56±3.66 vs. 3.58±3.72; $p<0.001$), (ii) DASS-21 depression score (5.22 [SD±3.99] vs. 3.88 [SD±4.18]; $p<0.001$), and (iii) DASS-21 stress score (6.44 [SD±3.71] vs. 5.31 [SD±4.34]; $p<0.001$). However, when examining the proportions of mental distress at moderate level or above, Indonesian students were only significantly lower than Taiwanese students in anxiety (56.9% vs. 32.5%; $p<0.001$) and depression (34.4% vs. 22.7%), but not stress (19.4% vs. 16.8%; $p=0.22$). Moreover, compared to Taiwanese students, Indonesian students had significantly higher levels of generalized PSMU (16.30 [SD±4.19] vs. 14.83 [SD±5.19]; $p<0.001$) but lower levels of PYU (12.76 [SD±3.77] vs. 14.43 [SD±5.04]; $p<0.001$) (Table 2).

(Insert Table 2 here)

None the independent variables had any issue in collinearity because all the VIF values were below 4 (Tables 2 to 4). After controlling for age and sex, all types of mental distress at moderate level or above significantly explained greater levels of generalized PSMU (standardized coefficients [β]=0.203 for anxiety, 0.115 for depression, and 0.139 for stress; $p<0.001$ [Model 1]) and PYU (β =0.110 for anxiety, 0.124 for depression, and 0.097 for stress; $p<0.01$ [Model 2]). However, when using continuous scores of mental distress, anxiety became nonsignificant for both generalized PSMU ($p=0.194$; Model 3) and PYU ($p=0.165$; Model 4), while depression and stress remained significant ($p<0.03$; Models 3 and 4). Similar to the findings in Table 2, regression models showed that Indonesian students (compared to Taiwanese students) had significantly higher levels of generalized PSMU (Models 1 and 3) but

lower levels of PYU (Models 2 and 4) (Table 3).

(Insert Table 3 here)

When examining the regression results stratified by country, all types of mental distress at moderate level or above significantly explained greater levels of generalized PSMU among both Indonesian students ($\beta=0.189$ for anxiety, 0.164 for depression, and 0.130 for stress; $p<0.01$ [Model 5]) and Taiwanese students ($\beta=0.299$ for anxiety, 0.091 for depression, and 0.149 for stress; $p<0.03$ [Model 6]). However, when using continuous scores of mental distress, anxiety became nonsignificant among Indonesian students ($p=0.966$; Model 7), and anxiety and stress became nonsignificant among Taiwanese students ($p=0.111$ and 0.174; Model 8) (Table 4).

(Insert Table 4 here)

For the associations between mental distress and PYU among Indonesian students, depression and stress at moderate level or above were significant factors ($\beta=0.121$ and 0.115; $p=0.018$ and 0.021). However, anxiety at moderate level or above was not ($\beta=0.076$; $p=0.131$; Model 9). For the associations between mental distress and PYU among Taiwanese students, all types of mental distress were significant factors ($\beta=0.124$ for anxiety, 0.132 for depression, and 0.087 for stress; $p<0.03$; Model 10). However, when using continuous scores of mental distress, only stress was significant among Indonesian students ($p=0.034$; Model 11) and only depression was significant among Taiwanese students ($p<0.001$; Model 12) (Table 5).

(Insert Table 5 here)

Discussion

Indonesian students reported higher mental distress and generalized PSMU but lower PYU than Taiwanese peers. After adjusting for age and sex, factors known to influence social media use (Hysa et al., 2021; Krasnova et al., 2017; Stirnberg et al., 2024), country and distress remained the strongest predictors of both PSMU types. Given that the present study has

controlled age and sex, the relationships found between mental distress and PSMU were not confounded by the age or sex. In this regard, the present study's hypothesis (i.e., mental distress would be significantly associated with generalized PSMU/PYU) was supported. In addition, the explorations regarding the differences between the two populations (i.e., Taiwanese and Indonesians) in the associations of PSMU and mental distress showed some interesting findings.

According to uses and gratifications theory, high social-movement engagement among Indonesian students (Ida et al., 2020; Nisa, 2018) may drive them to spread content across multiple platforms, fueling generalized PSMU. Because Indonesian students are active in political and democratic activities (Ida et al., 2020; Lee, 2011), they are eager to use different social media to promote their participation in democratic activities and social movements (Nisa, 2018). Moreover, Indonesian individuals are large consumers of social media, which means they are exposed to various types of social media. In this regard, they may not only use YouTube but may use a variety of different social media platforms. Unlike Indonesian students having higher scores in generalized PSMU, Taiwanese students had higher scores in PYU. Taiwanese students' greater PYU aligns with findings that Asian youth favor video platforms for both peer interaction and civic expression (Hsu & Lin, 2023; Wang, 2014).

Apart from the aforementioned political factors, some socio-cultural and educational factors may explain the significant differences. First, Indonesians as compared to Taiwanese have higher levels of trust with their government, which increases their willingness to share information via social media. A recent study found that a higher level of trust was associated with greater use of social media among Indonesian university students (Muliadi et al., 2024). Another study found that Taiwanese tended not to share information via social media, and a potential reason is that they cannot ensure the correctness of the information (Mede et al., 2024). Given that Southeast Asians (e.g., Indonesians) had higher levels of trust than East Asians (e.g., Taiwanese) (Baniamin, 2025), the socio-cultural factors support higher levels of social media

use (and possibly greater PSMU) among Indonesians than in Taiwanese. Second, Indonesian universities have identified the benefits of using social media to deliver distance learning in their higher education (Meyliana, et al., 2015). The use of social media and related technology was further increased during COVID-19 pandemic (Amir et al., 2020). In addition, a recent study recruited over 1000 Indonesian medical students and found that they had high scores in using social media to achieve their learning objectives (Findyartini et al., 2024). In contrast, Taiwanese university students do not believe that using social media for learning can improve their grades (Buarki & Sung, 2024). Therefore, from the perspective of educational factors, Indonesian university students as compared to Taiwanese university students have more positive attitudes of using social media in learning and may subsequently use more social media leading higher levels of PSMU.

Consistent with the I-PACE model (Brand et al., 2019; Brand et al., 2016), FoMO (Alutaybi et al., 2020; Roberts & David, 2020), use and gratifications theory (Bhatiasavi, 2024), and addiction model (Brailovskaia, 2024) frameworks, mental distress appeared as both a driver and consequence of PSMU, with threshold effects emerging when symptoms exceed moderate levels—suggesting a non-linear relationship between distress severity and problematic use. More specifically, when individuals encounter specific life events that trigger their psychological needs (e.g., afraid of being isolated [FoMO], seeking virtual encouragements and psychological rewards [use and gratifications theory]), they may use social media to satisfy these needs. After they have developed PSMU or PYU because of their inability to control impulsivity (I-PACE model), it may result in a vicious cycle of mental distress and PSMU/PYU (addiction models). Moreover, recent research has found associations between PSMU and mental health outcomes (Chen et al., 2025; Gan et al., 2025; Mitropoulou, 2024; Stănculescu & Griffiths, 2024; Tung et al., 2025). Taken the present findings as an example, both Indonesian and Taiwanese university students may use social media as a method

to help them cope with their mental distress.

Moreover, the significant associations between mental distress and problematic use were more obvious when using cut-off scores for mental distress (i.e., moderate level or above versus mild level or below) than using continuous mental distress scores. These findings suggest that the relationship between mental distress and PSMU may not be linear. Future studies may consider using quadratic terms in DASS-21 scores to identify the non-linear relationship between distress severity and problematic use.

In addition, mental distress was associated with greater levels of generalized PSMU but lower levels of PYU among Indonesian students than Taiwanese students. These findings may be explained by the greater levels of generalized PSMU and lower levels of PYU among Indonesian students as compared to Taiwanese students. That is, Indonesian students might use various types of social media rather than only use YouTube to cope with their mental distress (Ida et al., 2020). In contrast, Taiwanese students might specifically use YouTube to cope with their mental distress (Lee et al., 2021). Therefore, helping university students use appropriate methods to cope with their mental distress may be helpful in reducing generalized PSMU among Indonesian students, and reducing PYU among Taiwanese students.

Pramukti et al. (2020) reported higher anxiety among Indonesian vs. Taiwanese students during COVID-19. The present study replicated this and further showed elevated depression, potentially amplified by greater generalized PSMU. More specifically, Pramukti et al. (2020) found that Indonesian students had higher levels of anxiety than Taiwanese students (effect size of Cohen's $d = 0.55$). Apart from anxiety, the present findings also indicated that Indonesian students had higher levels of depression than Taiwanese students. The reason proposed by Pramukti et al. (2020) for the higher levels of anxiety among Indonesian students compared to Taiwanese students was because of the lowered perceived support. In addition, higher levels of generalized PSMU may be another reason explaining the higher levels of mental distress in

Indonesian students. The present study found that Indonesian students had higher levels of generalized PSMU but lower levels of PYU than Taiwanese students. Therefore, generalized PSMU might have stronger effects than PYU in negatively impacting individuals' mental health.

Although there were some differences in the associations of PSMU/PYU with different types of mental distress, the general findings in Table 3 indicate that both PSMU and PYU were significantly associated with anxiety, depression, and stress. These findings concur with the extant literature reporting the associations between generalized PSMU and the three types of mental distress. For example, meta-analyses have confirmed small-to-moderate associations between generalized PSMU and depression (Fisher's Z score = 0.23), anxiety (Fisher's Z score = 0.37), and stress (Fisher's Z score = 0.38) (Alimoradi et al., 2021; Lopes et al., 2022). Moreover, an empirical study showed significant associations between PYU and mental distress (i.e., depression, anxiety, and stress) (Jafari et al., 2024), mirroring the pooled findings for both PSMU and PYU in the present study.

Implications for Practice

Mental distress among participants was more significant when using cut-off scores than using the total raw scores. Consequently, it is important for healthcare providers to use screening tools (such as the DASS-21) to identify those who have different types of mental distress and to help them prevent developing PSMU. Therefore, screening students using validated cut-offs (e.g., DASS-21) can flag those at risk for PSMU. Tailored interventions—for instance, digital literacy workshops in Indonesia and time-management coaching around YouTube in Taiwan—may curb escalating use.

Study Limitations and Future Directions

There are some limitations in the present study. First, the present study had sampling bias. The study comprised an online survey and used snowball sampling and convenience sampling

to recruit university students limiting the generalizability of the findings to university students. More specifically, there is an issue of representativeness of the studied participants. This non-random type of sampling may increase the homogeneity of the sample's characteristics. Additionally, participants from Taiwan and Indonesia were recruited using different methods (i.e., using social media for Taiwanese participants and via email for Indonesian participants), which could also have led to biased comparisons between the two countries. Second, the cross-sectional design precludes causal inference, and longitudinal or experimental studies are needed. Third, the present study had risk of social-desirability because data were self-report, of which social desirability and recall biases could not be avoided. Future studies could incorporate passive usage data to corroborate the present findings. Lastly, the present study only examined YouTube. Exploring TikTok, Instagram, etc., would test the robustness of these patterns. By addressing these gaps, future research could better delineate causal pathways and platform-specific risks in diverse cultural contexts.

Conclusion

The present study found that mental distress was significantly associated with generalized PSMU and PYU. Moreover, Indonesian university students had higher levels of generalized PSMU but lower levels of PYU than Taiwanese university students. The study's findings correspond to several theoretical frameworks, including the I-PACE model, uses and gratifications theory, FoMO, and addiction models, all of which support the relationships between mental distress and PSMU (both generalized and specific forms). Based on the findings, healthcare providers may want to help university students find alternative methods to cope with their mental distress, which may in turn, lower their generalized PSMU and PYU. Moreover, using DASS-21 cutoffs may help healthcare providers to identify earlier those having an issue with PSMU.

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Statements and Declarations

Compliance with Ethical Standards: All procedures were approved by the Ethics Commission for Health Research, Faculty of Nursing, Universitas Airlangga (Ref: 3016-KEPK) for Indonesia participants, and the Human Research Ethics Committee, National Cheng Kung University (Ref: NCKU HREC-E-111-563-2) for Taiwanese participants; and were conducted according to the 1964 Declaration of Helsinki and its later amendments, as well as comparable ethical standards.

Informed consent: All participants were informed about the study and parents provided informed consent.

Data availability statement (DAS): The data that support the findings of this study are available from the corresponding author upon reasonable request

Competing Interests: All authors declare that there are no competing interests.

Funding Declaration

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Table 1. Summarized information of the 12 multiple regression models in the present study

Model #	Dependent variable	Independent variable type	Sample
1	GPSMU	Dichotomous	Pooled
2	PYU	Dichotomous	Pooled
3	GPSMU	Continuous	Pooled
4	PYU	Continuous	Pooled
5	GPSMU	Dichotomous	Indonesia
6	GPSMU	Dichotomous	Taiwan
7	GPSMU	Continuous	Indonesia
8	GPSMU	Continuous	Taiwan
9	PYU	Dichotomous	Indonesia
10	PYU	Dichotomous	Taiwan
11	PYU	Continuous	Indonesia
12	PYU	Continuous	Taiwan

Note. GPSMU=generalized problematic social media use; PYU=problematic YouTube use. Pooled sample includes both Indonesian and Taiwanese samples.

Table 2. Demographics, mental distress, and problematic social media use (PSMU) of Indonesian (N=515) and Taiwanese (N=887) participants

	Indonesia (N=515)	Taiwan (N=887)	<i>t</i> or χ^2 (<i>p</i> -value)
	Mean (SD) or n (%)	Mean (SD) or n (%)	
Demographics			
Age (year)	20.02 (1.48)	28.82 (6.06)	41.22 (<0.001)
Sex			41.56 (<0.001) ^a
Male	104 (20.2)	319 (36.0)	
Female	411 (79.8)	565 (63.7)	
Others	0 (0.0)	3 (0.3)	
Mental distress			
Total score	17.22 (10.48)	12.78 (11.27)	7.45 (<0.001)
Anxiety score	5.56 (3.66)	3.58 (3.72)	9.63 (<0.001)
Depression score	5.22 (3.99)	3.88 (4.18)	5.87 (<0.001)
Stress score	6.44 (3.71)	5.31 (4.34)	5.17 (<0.001)
Anxiety			80.09 (<0.001)
Mild or below	222 (43.1)	599 (67.5)	
Moderate or above	293 (56.9)	288 (32.5)	
Depression			22.68 (<0.001)
Mild or below	338 (65.6)	686 (77.3)	
Moderate or above	177 (34.4)	201 (22.7)	
Stress			1.53 (0.22)
Mild or below	415 (80.6)	738 (83.2)	
Moderate or above	100 (19.4)	149 (16.8)	
PSMU			
Social media score	16.30 (4.19)	14.38 (5.19)	7.57 (<0.001)
YouTube score	12.76 (3.77)	14.43 (5.04)	7.04 (<0.001)

Note. Mental distress was assessed using Depression Anxiety Stress Scale-21; PSMU in social media score was assessed using Bergen Social Media Addiction Scale; PSMU in YouTube score was assessed using YouTube Addiction Scale.

Cutoffs for moderate or above were 5 out of 21 for anxiety, 7 out of 21 for depression, and 10 out of 21 for stress.

^a Adjusted using Fisher's exact test.

Table 3. Regression models showing associations of different types of mental distress with generalized problematic social media use (GPSMU) and problematic YouTube use (PYU)

Independent variable	GPSMU			PYU		
	Model 1			Model 2		
	B (SE)	β (<i>p</i> -value)	VIF	B (SE)	β (<i>p</i> -value)	VIF
Anxiety (Ref: mild or below)	2.032 (0.305)	0.203 (<0.001)	1.565	1.042 (0.301)	0.110 (0.001)	1.565
Depression (Ref: mild or below)	1.279 (0.335)	0.115 (<0.001)	1.535	1.313 (0.331)	0.124 (<0.001)	1.535
Stress (Ref: mild or below)	1.796 (0.374)	0.139 (<0.001)	1.416	1.192 (0.369)	0.097 (0.001)	1.416
Country (Ref: Taiwan)	1.072 (0.336)	0.105 (0.001)	1.819	-2.358 (0.332)	-0.243 (<0.001)	1.819
Fit statistics						
F-value		48.75 (<0.001)			27.76 (<0.001)	
R ² (adj. R ²)		0.173 (0.170)			0.107 (0.103)	
Independent variable	Model 3			Model 4		
	B (SE)	β (<i>p</i> -value)	VIF	B (SE)	β (<i>p</i> -value)	VIF
	B (SE)	β (<i>p</i> -value)	VIF	B (SE)	β (<i>p</i> -value)	VIF
Anxiety (continuous score)	0.073 (0.56)	0.057 (0.194)	3.343	0.078 (0.056)	0.063 (0.165)	3.343
Depression (continuous score)	0.143 (0.048)	0.121 (0.003)	2.856	0.187 (0.048)	0.166 (<0.001)	2.856
Stress (continuous score)	0.312 (0.053)	0.263 (<0.001)	3.502	0.122 (0.053)	0.108 (0.021)	3.502
Country (Ref: Taiwan)	1.124 (0.329)	0.110 (0.001)	1.813	-2.433 (0.327)	-0.250 (<0.001)	1.813
Fit statistics						
F-value		59.64 (<0.001)			34.94 (<0.001)	
R ² (adj. R ²)		0.204 (0.201)			0.131 (0.127)	

Note. Age and sex were controlled for all the regression models. B=unstandardized coefficient; SE=standard error; β =standardized coefficient; adj. R²=adjusted R²; VIF=variance inflation factor.

Table 4. Regression models showing associations of different types of mental distress with generalized problematic social media use (GPSMU) stratified by country

Indonesia				Taiwan		
Model 5				Model 6		
Independent variable	B (SE)	β (<i>p</i> -value)	VIF	B (SE)	β (<i>p</i> -value)	VIF
Anxiety (Ref: mild or below)	1.593 (0.405)	0.189 (<0.001)	1.381	2.313 (0.433)	0.209 (<0.001)	1.566
Depression (Ref: mild or below)	1.444 (0.427)	0.164 (0.001)	1.413	1.126 (0.488)	0.091 (0.021)	1.595
Stress (Ref: mild or below)	1.377 (0.498)	0.130 (0.006)	1.331	2.073 (0.527)	0.149 (<0.001)	1.485
Fit statistics						
F-value		18.30 (<0.001)			29.30 (<0.001)	
R ² (adj. R ²)		0.152 (0.144)			0.143 (0.138)	
Model 7				Model 8		
Independent variable	B (SE)	β (<i>p</i> -value)	VIF	B (SE)	β (<i>p</i> -value)	VIF
Anxiety (continuous score)	-0.004 (0.083)	-0.003 (0.966)	3.350	0.121 (0.076)	0.086 (0.111)	3.090
Depression (continuous score)	0.237 (0.068)	0.226 (0.001)	2.660	0.088 (0.065)	0.071 (0.174)	2.870
Stress (continuous score)	0.285 (0.087)	0.253 (0.001)	3.821	0.326 (0.067)	0.273 (<0.001)	3.330
Fit statistics						
F-value		26.39 (<0.001)			35.02 (<0.001)	
R ² (adj. R ²)		0.206 (0.198)			0.166 (0.161)	

Note. Age and sex were controlled for all the regression models. B=unstandardized coefficient; SE=standard error; β =standardized coefficient; adj. R²=adjusted R²; VIF=variance inflation factor.

Table 5. Regression models showing associations of different types of mental distress with generalized problematic YouTube use (PYU) stratified by country

Independent variable	Indonesia			Taiwan		
	Model 9			Model 10		
	B (SE)	β (<i>p</i> -value)	VIF	B (SE)	β (<i>p</i> -value)	VIF
Anxiety (Ref: mild or below)	0.581 (0.384)	0.076 (0.131)	1.381	1.337 (0.432)	0.124 (0.002)	1.566
Depression (Ref: mild or below)	0.962 (0.405)	0.121 (0.018)	1.413	1.590 (0.488)	0.132 (0.001)	1.595
Stress (Ref: mild or below)	1.095 (0.472)	0.115 (0.021)	1.331	1.172 (0.527)	0.087 (0.026)	1.485
Fit statistics						
F-value		6.79 (<0.001)			18.04 (<0.001)	
R ² (adj. R ²)		0.063 (0.053)			0.093 (0.088)	
Independent variable	Model 11			Model 12		
	B (SE)	β (<i>p</i> -value)	VIF	B (SE)	β (<i>p</i> -value)	VIF
	B (SE)	β (<i>p</i> -value)	VIF	B (SE)	β (<i>p</i> -value)	VIF
Anxiety (continuous score)	0.025 (0.080)	0.025 (0.752)	3.350	0.111 (0.075)	0.082 (0.140)	3.090
Depression (continuous score)	0.101 (0.065)	0.107 (0.122)	2.660	0.233 (0.065)	0.193 (<0.001)	2.870
Stress (continuous score)	0.179 (0.084)	0.176 (0.034)	3.821	0.088 (0.067)	0.076 (0.189)	3.330
Fit statistics						
F-value		9.28 (<0.001)			23.66 (<0.001)	
R ² (adj. R ²)		0.084 (0.075)			0.118 (0.113)	

Note. Age and sex were controlled for all the regression models. B=unstandardized coefficient; SE=standard error; β =standardized coefficient; adj. R²=adjusted R²; VIF=variance inflation factor.