

Loneliness, Boredom and Information Anxiety on Problematic Use of Social Media during the COVID-19 Pandemic

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Abstract: COVID-19 is a global health concern with emerging economies expected to endure lasting effects. Massive information in social media while beneficial for some is perceived to have caused unnecessary anxiety for others. Although research on technological factors and their relationships to social media adoption is well documented, limited studies explored the psychology behind problematic use of social media especially during a health crisis. Analyzing survey responses from 257 participants, we tested the influence of loneliness, boredom and information anxiety on the problematic use of social media during the COVID-19 health crisis. Structural regression analysis supported prior literature that boredom and anxiety positively influence the escalation of problematic social media use. Although previous findings support the influence of loneliness on problematic social media use, this cannot be supported within the context of this study. We conclude this paper by discussing the implications of our study to informal education while highlighting the limitations of the study to provide directions for future scholarly endeavors.

Keywords: Problematic Social Media Use, Facebook, COVID-19 Pandemic, Information Anxiety, Loneliness, Boredom

1. Introduction

The affordance of social media as a primary source of information and misinformation created an ambivalent situation which remains to be unsolved. In the past, mankind acquired relevant news from traditional forms of media technology such as the television and radios. Wider internet penetration and increased social media popularity ushered in a new generation of information consumers who prefer getting news from social media, share opinions in public spaces and participate in a wide array of social interactions (C. Chan & Suarez, 2017; Fletcher & Nielsen, 2019; Ramos, Suarez, & Tighe, 2019). When a crisis unfolds, individuals prefer to learn news and updates from social media (e.g., Twitter, Facebook) due mostly to its accessibility and speed. In a 2016 study, Pew Research Center reported that the majority of US adults (62%) get news from social media (Shearer & Gottfried, 2016).

During crisis, social media is an alternative platform for individuals and communities to stay connected without physical interactions. With this, an enormous spike of people was observed to have spent excessive time online, reading news, and using social media platforms to get updated on any outbreak-related information. We Are Social (2020) revealed that countries with the strictest quarantine or lockdown measures, experienced a significant increase in social media use, mainly attributed to plenty of spare time. However, excessive use of these social media platforms impair social activities, decrease productivity, affect interpersonal relationships, and negatively affect the general well-being (Shensa et al., 2017). To this date, one of social media's challenge as a resource for updates is the lack

of appraisal on the accuracy and reliability of the shared information. Individuals are at risk of any rumors and opposing information from different accounts on the social media platform causes them to be more anxious or distressed (Jones, Thompson, Schetter, & Silver, 2017). For this, we draw on a previous health crisis in which overly exposure to any media coverage for acquiring event information may have unintended consequences for mental health and psychological well-being.

Although social media usage has many potential benefits to any individual, concerns have been raised on the possible adverse effects of uncontrolled social media's activities, especially for individual mental health and well-being (Bányai et al., 2017). A study from Casale & Banchi (2020) has found positive associations between intensive social media use and symptoms of psychological disorder (e.g., anxiety or depressive symptoms). Other researchers argue that excessive or problematic social media use is an individual response to common stressors or losses (Carbonell & Panova, 2017). The existence of inaccurate or exaggerated information from the media coupled with political discourses may result in anxiety among individuals seeking health information, causing them to display maladaptive behaviors (e.g., sharing unverified health information, repeated consultation to untrusted parties) (Rajkumar, 2020). Individuals may exhibit these behaviors because of their inability to access or understand the needed information due to the insufficient or overloaded information, disorganized or wrongly presented information (Girard & Allison, 2015). The excessive use of social media platforms to be informed on any issues surrounding this pandemic and the underlying stress of using it is highlighted by the World Health Organization's calls to be cautious of any unverified information from social media (WHO, 2020). Today, the unprecedented spread of false information on social media has become a public concern that requires attention from different stakeholders (Baloran, 2020).

In this research, we investigate the influence of psychological factors on the escalation of social media's problematic use during the pandemic to address several opportunities for further study. Curation of prior studies reveal the lack of study on the exploration of psychological factors such as loneliness, boredom and information anxiety in the problematic use of social media during health crises, with most studies primarily focused on the association between individual personalities and excessive internet use (Casale & Banchi, 2020). We contribute to current studies by identifying the avenues to which we draw our motivation in conducting this study, First, prior studies revealed that extant research was conducted in developed economies even though emerging economies in the Asia Pacific use social media the most (Balhara, Mahapatra, Sharma, & Bhargava, 2018). Second, social media use is popular among different social clusters but most research focused on age groups belonging to adolescents and university students. Understanding the general public overly used of social media during the natural disasters remain under-investigated (Baloran, 2020; Bányai et al., 2017). In this study, we provide an overview of influential factors in the problematic use of social media during this difficult time and hypothesize that loneliness, boredom and information anxiety may lead to problematic use of social media during a health crisis. In the next sections, we discuss our synthesis of the reviewed literature, present our theoretical framework and its corresponding set of hypotheses. Also, we discuss our methodology, the results of our analysis and conclude with limitations and recommendations.

2. Related Literature and Theoretical Foundations

At the start of 2020, information of the coronavirus disease (COVID-19) quickly circulated on social media sowing panic and fear among people (Ahmad & Murad, 2020). Moreover, with the imposition of quarantines and lockdowns, people spend more time on social media use, exposing themselves with unvetted information about COVID-19. In this research, we describe problematic use of social media as its excessive use, consuming time and resources impairing psychological health as well as the well-being of an individual (Andreassen & Pallesen, 2014). In the study of Shensa et al. (2017), the prevalence of problematic social media use appears to be strongly associated with increased depressive symptoms among young adults in the USA. The increase of depressive symptoms is closely related to the frequency of social media use, suggesting that the way we use social media poses a risk (Liu, Ming, Yi, Wang, & Yao, 2016), especially during a crisis (Rajkumar, 2020). In another cross-sectional study investigating maladaptive behaviors on social media among older adults in the United States, revealed

that higher perceived self-isolation is closely associated with the problematic use of social media (Meshi, Cotten, & Bender, 2020).

Social media has become the public source of shared and published information while the rest of the population is experiencing isolation during lockdowns and hospitalization amid the pandemic crisis. The study of Ahmad & Murad (2020) revealed that people are using social media information about COVID-19, and the nature of its impact varies among individual's age, gender, and level of education. However, researchers argue that social media has played a vital role in escalating anxiety about the said outbreak. During the pandemic or public health crises, limited studies have investigated the social media's role in increasing individuals' anxieties and the relationship towards problematic social media use. A paper by a group of medical practitioners (Király et al., 2020) suggests that vulnerable individuals are at risk of developing uncontrolled usage patterns. These at-risk groups of individuals reported low self-esteem, high levels of depression symptoms, and elevated social media use (Bányai et al., 2017). Uncontrolled use of any technology generates noticeable distress that may impair personal, social and other important areas of functioning (Rumpf et al., 2018). The role of social ties in the propagation of information (Tran & Lee, 2016) and the exaggeration of discussions on unverified information on social media raises fear from the outbreak (Ahmed, Bath, Sbaifi, & Demartini, 2018). Garfin, Silver, and Holman (2020) highlighted that too much exposure of individuals to any crisis-related information amplifies public health consequences such as the cases of H1N1 (Taha, Matheson, & Anisman, 2014) and Ebola outbreaks (Thompson, Garfin, Holman, & Silver, 2017).

Moreover, in this pandemic, the public has been asked to follow social distancing guidelines and self-isolation. Although following to the advice is necessary in the present crisis, staying at home with limited social contact can have a significant effect on an individual's mental well-being and, in particular, feelings of loneliness. Limiting social interaction is likely to affect the mood if individuals who failed to maintain that connection consciously by other means. Evidence suggests that individuals who feel lonely dwell too much time using the internet to alleviate their Loneliness (Kim, Larose, & Peng, 2009). However, loneliness is usually associated with the development of problematic use of social media since they developed uncontrolled patterns of self-regulation and control. (Skues, Williams, Oldmeadow, & Wise, 2016). As such, we hypothesized:

H1: Loneliness positively influence problematic use of social media

Based on Flow theory (Csikszentmihalyi, 1991, 2002), boredom is a context-specific experience which is dependent upon an activity and its corresponding environmental factors. It occurs when an individual fails to perceive a sense of flow and feels indifferent and uninterested in the engaged activity during free time. Individuals are likely to experience boredom when they cannot reorganize their time to engage in more exciting activities (Barnett & Klitzing, 2006). However, boredom can be eased by seeking stimulation that raises incitement, therefore, one approach to dealing with boredom is to engage in activities using networked mobile devices (Skues et al., 2016; Wang, 2019). Several studies found boredom to be significantly related with problems of negative effect on behavior, social relationships, and employment. In addition, boredom can be a common trigger for excessive internet use (Li, O'Brien, Snyder, & Howard, 2015) and can result in particularly problematic internet use behavior (Skues et al., 2016; Wang, 2019). Studies found that boredom is also associated with internet addiction (Nichols & Nicki, 2004), particularly, in social media (Pempek, Yermolayeva, & Calvert, 2009) and gaming applications (Rooij, Ferguson, Mheen, & Schoenmakers, 2017). As such, we hypothesized:

H2: Boredom positively influence problematic use of social media

Information anxiety represents a state when an individual's effectiveness and efficiency in using information impeded by the amount of pertinent and potentially useful information available to them (Bawden & Robinson, 2008). It may refer to individual's negative experience typified by their inability to access, understand, organize, or make use of information in any setting at their disposal (Ojo, 2016). Wurman (1989) argued that information anxiety occurs when information doesn't give an individual enough understanding (Wurman, 1989, p. 34; Wurman, Leifer, Sume and Whitehouse, 2001, p.14). He noted that the uncertainty of information is a major cause of information anxiety. According to him,

information anxiety includes five components, namely: a) information understanding; b) information overload; c) the existence of the information; d) finding information; and e) accessing information. Since social media could be a source of information shared by different sources, any individual who cannot assess the veracity of information might cause them with information anxiety. As such, we hypothesized:

H3: Information anxiety positively influence problematic use of social media

In the context of this study, we hypothesize that Loneliness, Boredom and Information Anxiety are psychological determinants in the problematic use of social media as summarized in Figure 1 – Theoretical Framework:

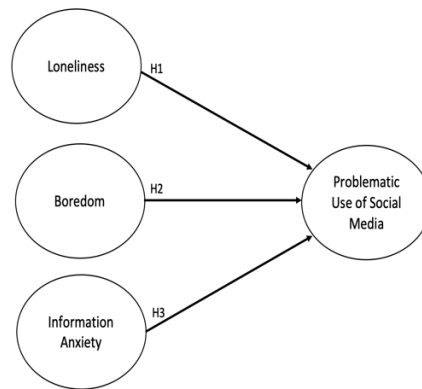


Figure 1. Theoretical Framework

3. Methods and Procedures

Items for each variable of the conceptual framework were adapted from past literature. The lone dependent variable, problematic use of social media, is represented in the instrument by items from Bergen Facebook Addiction Scale (BFAS) which captures the six dimensions of addiction namely (1) conflict, (2) salience, (3) mood, (4) withdrawal, (5) relapse and (6) modification (Andreassen, Torbjørn, Brunborg, & Pallesen, 2012). On the other hand, the three independent variables are represented in the instrument by items from various studies. There are three questions from the simplified loneliness scale by Hughes et al. (2004), eight questions from the information anxiety study of Girard and Allison (2015) and eight questions from the short boredom proneness scale of Struk, Carriere, Cheyne, & Danckert (2017). All items used a 5-point likert scale.

Considering the research locale and adaptation of items from different disciplines, testing for reliability and convergent validity is essential to establish instrument precision. A pilot test was conducted online with thirty-four (34) participants and responses were analyzed using SmartPLS. This study extracted the Cronbach Alpha and Composite Reliability for reliability as well Average Variance Extracted or AVE for convergent validity using a Partial Least Square or PLS algorithm. This process was repeated in several iterations after removing items until values of 0.70 for reliability and 0.50 for convergent validity was above the minimum values (J. Hair, Hult, Ringle, & Sarstedt, 2014; Nelson, Verhagen, & Noordzij, 2016). After the pilot test, 23 items were retained in the final model. In addition, this study checked for multicollinearity by examining the variance inflation factor or VIF on the independent variables. All values are below 3.3 indicating low collinearity among the predictor variables (Kock, 2015; Ramírez-Correa, 2017). In summary, it can be inferred that the instrument demonstrates reliability, validity and free from collinearity issues as shown in Table 1 – Variable Coefficients after Instrument Validation.

Table 1. *Variable Coefficients after Instrument Validation*

Variable	VIF	α	CR	AVE
Loneliness	1.143	0.907	0.912	0.778
Boredom	1.395	0.873	0.890	0.540
Information Anxiety	1.358	0.710	0.873	0.775
Problematic Social Media Use	n/a	0.906	0.921	0.516

VIF – Variance Inflation Factor (collinearity), α – Cronbach Alpha (reliability), CR – Composite Reliability (reliability), AVE – Average Variance Extracted (convergent validity)

4. Results and Discussions

A total of two hundred fifty-seven (257) social media users participated in this study and 56.3% are male while 43.7% are female. The minimum age is 18 years old and the maximum is 64 years old. The median age for the group is 34 years old. To test our proposed hypotheses in the operationalized framework, we performed a bootstrapping technique to verify the significance of the relationships between the dependent variables to the independent variables. Given the predictive perspective of the authors in presenting their hypotheses and the small sample size, the application of Partial Least Squares – Structural Equation Model through bootstrapping is justified (Hair, Hult, Ringle, & Sarstedt, 2014; Joe Hair, Hollingsworth, Randolph, & Chong, 2017).

Subscribing to the statistical procedures proposed by Hair et al. (2014), the authors tested the relationships in the structural model using the nonparametric bootstrap analysis to acquire the t-values as shown in Table 2 – Structural Model Coefficients. Both boredom and information anxiety are both positively related to the problematic use of social media as their coefficients are above the minimum 1.96 to establish significant relationships resulting in the acceptance of H2 and H3. The value of 3.047 for information anxiety has the strongest effect on the proposed predictors of problematic use of social media. Another factor that can contribute to the problematic use of social media is boredom with a path coefficient value of 2.048. While both information anxiety and boredom have positive relationships with the problematic use of social media, the same conclusion cannot be inferred with loneliness as its coefficient is 0.134 and therefore H1 is rejected in the context of this study.

Table 2. *Structural Model Test Results*

HYPOTHESIS	SD	T STATISTICS	P Values	DECISION
H1: Loneliness positively influence problematic use of social media	0.116	0.134	0.894	Reject
H2: Boredom positively influence problematic use of social media	0.145	2.048	0.041	Accept
H3: Information anxiety positively influence problematic use of social media	0.119	3.047	0.002	Accept

The COVID-19 pandemic has created educational disruptions globally, forcing policymakers to shift to technology to ensure learning continuity (United Nations, 2020). However, with the use of ICT for online learning at home, individuals are usually confronted with various distractions, including the frequent use of social media that linked them to different unfruitful channels inhibiting their learning engagement and focus (Knowles & Dixon, 2016). Individuals failing to self-regulate their behavior with the said distractions are vulnerable to psychological disorder (Shensa et al., 2017), especially at this pandemic, when people may experience loneliness, boredom, and anxiety. While prior and related literature confirmed loneliness to be highly influential in the problematic use of social media (Ceyhan & Ceyhan, 2008), this cannot be proven in the context of this study as indicated in the T-statistics value of 0.134 for H1. This finding supports that the majority of Filipinos (65%) reported that they are less

likely to be lonely most of the time (Martha Jean Sanchez, 2020) since Filipinos are regarded as social people and also known for close family ties (Reyes, 2015). Filipinos' characteristics may explain the findings from the United Nations Happiness Report reported that Filipinos ranked notably higher in the 2019 World Happiness Report compared to other emerging economies in Southeast Asia (Helliwell, Layard, & Sachs, 2019). This is also supported by a separate study of Porio & See (2017), which revealed that 72% of Filipinos reported being happy with only a small fraction (6%) reported being unhappy. This current study emphasized that despite the hardships brought by pandemic, Filipinos in general, despite usual exposures from the natural calamities and socio-economic struggles, remain to be resilient, hopeful and supportive (Porio & See, 2017).

Filipinos regularly use social technologies to connect with their loved ones and friends. This made the country lead in terms of time spent and social media usage even before the global pandemic (We Are Social, 2018). Moreover, the country's imposition of longer and stringent quarantines has contributed to the extended use of Filipinos of social media sites (Li et al., 2015). Various restrictions of outdoor activities during quarantine caused a lot of boredom among Filipinos that triggered the desire to use social media platforms (Skues et al., 2016). However, the study of Stockdale & Coyne (2020) revealed that the more prolonged use of technology to alleviate boredom might expose individuals with the risk of developing problematic outcomes and patterns of behavior in using technology. The extensive use of these social media platforms during the pandemic to relieve boredom may lead to an unconscious habit of unregulated technology use (Skues et al., 2016). This study supports previous literature on the association between boredom and problematic use of social media (H2) and suggests that Filipinos who are prone to boredom are more likely to experience difficulty in disengaging with the social media platforms, pre-occupied with the technology, interference with other aspects of their lives, and problems controlling their social media use (Li et al., 2015; Pempek et al., 2009; Skues et al., 2016; Stockdale & Coyne, 2020). However, eliminating technological distractions would be impractical as a preventative strategy considering that the internet and social media platforms are crucial for Filipinos, especially during this pandemic. Many researchers argued on the exploration of various interventions and self-regulation mechanisms that influence the relationship between boredom and problematic use of social media (Skues et al., 2016).

Due to recent movements in the Philippine media and broadcasting industry, following the closure of the biggest TV network, social media offers Filipinos an alternative channel to access news and up-to-date information. Social media provides a continuous flow of rapidly evolving information from around the globe during this health crisis. However, social media, as a platform for social interaction, are filled with opinions and information that may or may not be accurate. The persistent flood of information makes it challenging to differentiate between reliable and useful, sensationalized, biases, or deliberately false news. The onset of a new pandemic for which Filipinos had no prior experience dealing with has caused fears among the general population, especially with the constant stream of news reports and information about an outbreak that causes anyone to feel anxious or distressed. In the Philippines, the National Center for Mental Health (NCMH) recorded a spike in the number of Filipinos having anxiety and depression during this pandemic. Our findings supported the relationship between information anxiety and the problematic use of social media (H3). This is consistent with the study of Garfin, Silver, & Holman (2020) that constant media exposure causes negative mental health effects. During this time of uncertainty and crisis, Filipinos increase reliance on media to make informed decisions regarding health-related measures as the government continuously change policies and guidelines in addressing the pandemic crisis. However, the information should be effectively communicated so as not to create ambiguity leading to heightened appraisals of threat, such as in the context of the H1N1 crisis, when increased uncertainty and uncontrollability amplifies anxiety (Taha et al., 2014). The World Health Organization (WHO, 2020) provided communications in support of mental health and psychosocial well-being during the COVID-19 outbreak. The guidelines highlighted the need to seek information only from trusted sources at a scheduled interval since the rapid constant stream of

information about the outbreak could cause anyone to feel anxious and worried.

5. Conclusion and Recommendations

This study used empirical evidence from an online survey to investigate how psychological factors influence the problematic use of social media during the COVID-19 pandemic. Our results indicate that boredom and information anxiety relate positively to the problematic use of social media following the Filipinos' reliance on socially enabled technologies to make informed health-protective decisions and to connect to family and friends in a time where physical and social interactions are significantly reduced. On the contrary, the Filipinos' happy and resilient nature reflects how loneliness did not influence the problematic use of social media platforms during a worldwide health crisis. This finding may be limited to this specific culture and future studies may investigate whether this is true in other contexts. In addition, further studies could be done to explore intervention and self-regulation strategies that would reduce the problematic use of social media amongst individuals. It is also recommended that this study is replicated with a larger sample size to increase its generalizability. Lastly, future research may consider qualitative interviews, content analysis, or social media analytics approaches to discover individual experiences and strategies in dealing with information anxiety concerning the use of social media platforms.

In the fight against this pandemic, social media platforms play a critical role in the way important information about COVID-19 is presented. Informally educating the general public about a health crisis through social media was found to be effective but challenges exist (Civelek, Cemberci, & Eralp, 2016). To maximize its potential, stakeholders must present verified information concisely to deter information anxiety (Malecki, Keating, & Safdar, 2020). Interactive presentation of information and the use of rich media can induce a form of enjoyment and therefore counter boredom. Infographics can be well understood by the general public and can present the substance of the message effectively and rapidly across different social media platforms (Chan, Nickson, Rudolph, Lee, & Joynt, 2020). Keeping these findings in mind, we urge individuals and public health officials to exercise good judgment when using social media particularly with respect to receiving and providing effective communication during a public health crisis

References

- Ahmad, A. R., & Murad, H. R. (2020). The impact of social media on panic during the COVID-19 pandemic in iraqi kurdistan: Online questionnaire study. *Journal of Medical Internet Research*, 22(5), 1–11. <https://doi.org/10.2196/19556>
- Ahmed, W., Bath, P. A., Sbaffi, L., & Demartini, G. (2018). Moral panic through the lens of Twitter: An analysis of infectious disease outbreaks. *ACM International Conference Proceeding Series*, 217–221. <https://doi.org/10.1145/3217804.3217915>
- Andreassen, C. S., & Pallesen, S. (2014). Social network site addiction - an overview. *Current Pharmaceutical Design*, 20(25), 4053–4061. <https://doi.org/10.2174/13816128113199990616>
- Andreassen, C. S., Torbjørn, T., Brunborg, G. S., & Pallesen, S. (2012). Development of a facebook addiction scale. *Psychological Reports*, 110(2), 501–517. <https://doi.org/10.2466/02.09.18.PR0.110.2.501-517>
- Balhara, Y. P. S., Mahapatra, A., Sharma, P., & Bhargava, R. (2018). Problematic internet use among students in South-East Asia: Current state of evidence. *Indian Journal of Public Health*, 62(3), 197–210. https://doi.org/10.4103/ijph.IJPH_288_17
- Baloran, E. T. (2020). Knowledge, Attitudes, Anxiety, and Coping Strategies of Students during COVID-19 Pandemic. *Journal of Loss and Trauma*. <https://doi.org/10.1080/15325024.2020.1769300>
- Bányai, F., Zsila, Á., Király, O., Maraz, A., Elekes, Z., Griffiths, M. D., ... Demetrovics, Z. (2017). Problematic social media use: Results from a large-scale nationally representative adolescent sample. *PLoS ONE*, 12(1), 10–14. <https://doi.org/10.1371/journal.pone.0169839>
- Carbonell, X., & Panova, T. (2017). A critical consideration of social networking sites' addiction potential. *Addiction Research and Theory*, 25(1), 48–57. <https://doi.org/10.1080/16066359.2016.1197915>
- Casale, S., & Banchi, V. (2020). Narcissism and problematic social media use: A systematic literature review.

- Addictive Behaviors Reports*, 11(December 2019). <https://doi.org/10.1016/j.abrep.2020.100252>
- Ceyhan, A. A., & Ceyhan, E. (2008). Loneliness, depression, and computer self-efficacy as predictors of problematic internet use. *Cyberpsychology and Behavior*, 11(6), 699–701. <https://doi.org/10.1089/cpb.2007.0255>
- Chan, A. K. M., Nickson, C. P., Rudolph, J. W., Lee, A., & Joynt, G. M. (2020). Social media for rapid knowledge dissemination: early experience from the COVID-19 pandemic. *Anaesthesia*, 1–4. <https://doi.org/10.1111/anae.15057>
- Chan, C., & Suarez, M. (2017). *Social Media as Enabler for ICT Inclusion to Achieve Active Ageing*.
- Civelek, M. E., Cemberci, M., & Eralp, N. E. (2016). The Role of Social Media in Crisis Communication and Crisis Management. *International Journal of Research in Business and Social Science (2147-4478)*, 5(3), 111–120. <https://doi.org/10.20525/ijrbs.v5i3.279>
- Fletcher, R., & Nielsen, R. K. (2019). Generalised scepticism: how people navigate news on social media. *Information Communication and Society*, 22(12), 1751–1769. <https://doi.org/10.1080/1369118X.2018.1450887>
- Garfin, D. R., Silver, R. C., & Holman, E. A. (2020). *The Novel Coronavirus (COVID-2019) Outbreak : Amplification of Public Health Consequences by Media Exposure*. 39(5), 355–357.
- Girard, J., & Allison, M. (2015). *Information Anxiety : Fact , Fable or Fallacy Information Anxiety : Fact , Fable or Fallacy*. 6(January 2007), 111–124.
- Hair, J., Hult, G., Ringle, C., & Sarstedt, M. (2014). Partial least squares structural equation modeling (PLS-SEM). *Sage Publisher*, pp. 1–329. <https://doi.org/10.1108/EBR-10-2013-0128>
- Hair, Joe, Hollingsworth, C. L., Randolph, A. B., & Chong, A. Y. L. (2017). An updated and expanded assessment of PLS-SEM in information systems research. *Industrial Management and Data Systems*, 117(3), 442–458. <https://doi.org/10.1108/IMDS-04-2016-0130>
- Helliwell, J. F., Layard, R., & Sachs, J. D. (2019). *John F. Helliwell, Richard Layard and Jeffrey D. Sachs*.
- Hughes, M. E., Waite, L. J., Hawkey, L. C., & Cacioppo, J. T. (2004). A short scale for measuring loneliness in large surveys: Results from two population-based studies. *Research on Aging*, 26(6), 655–672. <https://doi.org/10.1177/0164027504268574>
- Jones, N. M., Thompson, R. R., Schetter, C. D., & Silver, R. C. (2017). Distress and rumor exposure on social media during a campus lockdown. *Proceedings of the National Academy of Sciences of the United States of America*, 114(44), 11663–11668. <https://doi.org/10.1073/pnas.1708518114>
- Kim, J., Larose, R., & Peng, W. (2009). Loneliness as the cause and the effect of problematic internet use: The relationship between internet use and psychological well-being. *Cyberpsychology and Behavior*, 12(4), 451–455. <https://doi.org/10.1089/cpb.2008.0327>
- Király, O., Potenza, M. N., Stein, D. J., King, D. L., Hodgins, D. C., Saunders, J. B., ... Demetrovics, Z. (2020). Preventing problematic internet use during the COVID-19 pandemic: Consensus guidance. *Comprehensive Psychiatry*, 100, 1–4. <https://doi.org/10.1016/j.comppsy.2020.152180>
- Knowles, M., & Dixon, D. (2016). Guidance Techniques to Improve Student Engagement in Critical Reflection Regarding the Preparation of Technical Reports. *Student Engagement and Experience Journal*, 5(1). <https://doi.org/10.7190/seej.v5.i1.104>
- Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of E-Collaboration*, 11(4), 1–10. <https://doi.org/10.4018/ijec.2015100101>
- Li, W., O'Brien, J. E., Snyder, S. M., & Howard, M. O. (2015). Characteristics of Internet Addiction/Pathological Internet Use in U.S. university students: A qualitative-method investigation. *PLoS ONE*, 10(2). <https://doi.org/10.1371/journal.pone.0117372>
- Liu, M., Ming, Q., Yi, J., Wang, X., & Yao, S. (2016). Screen time on school days and risks for psychiatric symptoms and self-harm in mainland Chinese adolescents. *Frontiers in Psychology*, 7(APR), 1–11. <https://doi.org/10.3389/fpsyg.2016.00574>
- Malecki, K. M. C., Keating, J. A., & Safdar, N. (2020). Crisis Communication and Public Perception of COVID-19 Risk in the Era of Social Media. *Clinical Infectious Diseases*, 53726(Xx), 1–6. <https://doi.org/10.1093/cid/ciaa758>
- Martha Jean Sanchez. (2020). *statistic_views-on-feeling-lonely-frequently-philippines-2020.pdf*.
- Meshi, D., Cotten, S. R., & Bender, A. R. (2020). Problematic Social Media Use and Perceived Social Isolation in Older Adults: A Cross-Sectional Study. *Gerontology*, 66(2), 160–168. <https://doi.org/10.1159/000502577>
- Nelson, E. C., Verhagen, T., & Noordzij, M. L. (2016). Health empowerment through activity trackers: An empirical smart wristband study. *Computers in Human Behavior*, 62, 364–374. <https://doi.org/10.1016/j.chb.2016.03.065>
- Nichols, L. A., & Nicki, R. (2004). Development of a psychometrically sound internet addiction scale: A preliminary step. *Psychology of Addictive Behaviors*, 18(4), 381–384. <https://doi.org/10.1037/0893-164X.18.4.381>

- Ojo, O. J. (2016). Information anxiety and information overload of undergraduates in two universities in South-West Nigeria. *Library Philosophy and Practice*, 2016(1).
- Pempek, T. A., Yermolayeva, Y. A., & Calvert, S. L. (2009). College students' social networking experiences on Facebook. *Journal of Applied Developmental Psychology*, 30(3), 227–238. <https://doi.org/10.1016/j.appdev.2008.12.010>
- Porio, E., & See, J. (2017). Social Well-Being in the Philippines : Indicators and Patterns. *The Senshu Social Well-Being Review*, 4, 95–116.
- Rajkumar, R. P. (2020). *COVID-19 and mental health: A review of the existing literature*. (January).
- Ramírez-Correa, P. E. (2017). Relationship Between Cyber Plagiarism and the Big Five Personality Traits: an Empirical Study in a Chilean University. *Holos*, 5, 125. <https://doi.org/10.15628/holos.2017.5191>
- Ramos, C. D., Suarez, M. T., & Tighe, E. (2019). Analyzing national film based on social media tweets input using topic modelling and data mining approach. *Lecture Notes in Electrical Engineering*, 481, 379–389. https://doi.org/10.1007/978-981-13-2622-6_37
- Reyes, J. (2015). Loób and kapwa: An introduction to a Filipino virtue ethics. *Asian Philosophy*, 25(2), 148–171. <https://doi.org/10.1080/09552367.2015.1043173>
- Rooij, A. J. Van, Ferguson, C. J., Mheen, D. Van De, & Schoenmakers, T. M. (2017). *Internet addiction & terminology*. 113–121.
- Rumpf, H.-J., Achab, S., Billieux, J., Bowden-Jones, H., Carragher, N., Demetrovics, Z., ... Poznyak, V. (2018). Including gaming disorder in the ICD-11: The need to do so from a clinical and public health perspective. *Journal of Behavioral Addictions*, 7(3), 556–561. <https://doi.org/10.1556/2006.7.2018.59>
- Shearer, B. Y. E., & Gottfried, J. (2016). *News Use Across Social Media Platforms 2016*.
- Shensa, A., Escobar-Viera, C. G., Sidani, J. E., Bowman, N. D., Marshal, M. P., & Primack, B. A. (2017). Problematic social media use and depressive symptoms among U.S. young adults: A nationally-representative study. *Social Science and Medicine*, 182, 150–157. <https://doi.org/10.1016/j.socscimed.2017.03.061>
- Skues, J., Williams, B., Oldmeadow, J., & Wise, L. (2016). The Effects of Boredom, Loneliness, and Distress Tolerance on Problem Internet Use Among University Students. *International Journal of Mental Health and Addiction*, 14(2), 167–180. <https://doi.org/10.1007/s11469-015-9568-8>
- Stockdale, L. A., & Coyne, S. M. (2020). Bored and online: Reasons for using social media, problematic social networking site use, and behavioral outcomes across the transition from adolescence to emerging adulthood. *Journal of Adolescence*, 79(January), 173–183. <https://doi.org/10.1016/j.adolescence.2020.01.010>
- Struk, A. A., Carriere, J. S. A., Cheyne, J. A., & Danckert, J. (2017). A Short Boredom Proneness Scale: Development and Psychometric Properties. *Assessment*, 24(3), 346–359. <https://doi.org/10.1177/1073191115609996>
- Taha, S. A., Matheson, K., & Anisman, H. (2014). H1N1 Was Not All That Scary: Uncertainty and stressor appraisals predict anxiety related to a coming viral threat. *Stress and Health*, 30(2), 149–157. <https://doi.org/10.1002/smi.2505>
- Thompson, R. R., Garfin, D. R., Holman, E. A., & Silver, R. C. (2017). Distress, Worry, and Functioning Following a Global Health Crisis: A National Study of Americans' Responses to Ebola. *Clinical Psychological Science*, 5(3), 513–521. <https://doi.org/10.1177/2167702617692030>
- Tran, T., & Lee, K. (2016). Understanding citizen reactions and Ebola-related information propagation on social media. *Proceedings of the 2016 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining, ASONAM 2016*, 106–111. <https://doi.org/10.1109/ASONAM.2016.7752221>
- United Nations. (2020). *Policy Brief: Education during COVID-19 and beyond (August 2020) - World | ReliefWeb*. (August). Retrieved from <https://reliefweb.int/report/world/policy-brief-education-during-covid-19-and-beyond-august-2020>
- Wang, W. C. (2019). Exploring the Relationship Among Free-Time Management, Leisure Boredom, and Internet Addiction in Undergraduates in Taiwan. *Psychological Reports*, 122(5), 1651–1665. <https://doi.org/10.1177/0033294118789034>
- WHO. (2020). *Mental Health and Psychosocial Considerations During COVID-19 Outbreak*, World Health Organization. 6. Retrieved from <https://apps.who.int/iris/bitstream/handle/10665/331490/WHO-2019-nCoV-MentalHealth-2020.1-eng.pdf>