How does Nomophobia Exert Impact on Life Satisfaction? Exploring the Mediating Effect of Psychological Wellbeing and Academic Performance

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Abstract: Several studies have highlighted the adverse consequences of information system (IS) overuse. To expand the knowledge on this heated topic, this paper aims among the first to explore the association between nomophobia, a manifestation of smartphone excessive use, and life satisfaction mediated by psychological wellbeing, as well as academic performance. On the other hand, this paper also targets the reverse procedure, namely if life satisfaction mediated by both psychological wellbeing and academic performance prompts nomophobia. To empirically test the established model, a big-scale systematic random sampling over 10 thousand responses is plan to implement. The survey questionnaire collected demographic information and actual grade-point average (GPAs), as well as responses to scales including the nomophobia, psychological wellbeing (consisted of perceived stress, depression, and loneliness), and life satisfaction.

Keywords: smartphone usage, nomophobia, psychological wellbeing, life satisfaction, academic performance

1. INTRODUCTION

Smartphone, considering as the latest IS evolution, has not only taken the place of cellular phone, but to some degree has also substituted other mobile devices by right of its property of mobility and integration, having been becoming an indispensable component of human beings [1]-[2]. For example, the latest data from China Internet Network Information Center presents that as of June 30, 2018, the number of Internet users in China has been 802 million, with a penetration rate of 57.7%. More importantly, among them, the number of mobile Internet users was 788 million, accounting for 98.3% of the Internet users (CNNIC, 2018). Meanwhile, smartphone ownership among Chinese users increased by 4.7% compared to that of 2017 (CNNIC, 2018). In addition, in terms of online time, the average weekly online time of Chinese netizens was 27.7 hours, 0.7 hours higher than that at the end of 2017 (CNNIC, 2018).

The usage of IS innovations, including smartphone overuse, have exerted a series of adverse effects on individual psychological wellbeing [3]-[4], such as technostress, anxiety, fatigue and distress, loneliness and depression; as well as academic performance [1], [5], such as distractibility, decreasing GPAs, lower class scores, and less learning time. Furthermore, one of the profoundly negative consequences of smartphone overuse posits addiction [6]-[7], also dubbed nomophobia, which is derived from "no mobile phobia" [8]-[9], considering as a psychiatric disorder involving new-tech (King et al., 2013). Nomophobia was defined as "a situational phobia related to agoraphobia and includes the fear of becoming ill and not receiving immediate assistance" [8, p. 28]. Additionally, a hand of scholars have explored the associations between Internet addiction and video game dependency, as well as relative implications [11]. Also, the work of predecessors have so far manifested that compulsive use of smartphones enable make psychological disorders happen [12]-[13].

A number of studies on the dark side of smartphone usage are available, many of which focus on the relationship between smartphone usage and physical & psychological wellbeing [3]-[4],[14]-[15], or between smartphone usage and academic performance[1], [5]. On the other hand, many scholars explored the relationships

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between psychological wellbeing and life satisfaction [16], as well as academic performance and life satisfaction [17]. Also, there exists some studies considering the associations between smartphone usage and life satisfaction [5]. Even though, several studies explored how nomophobia was triggered [6], to the best of our knowledge, there is a lack of research that considers nomophobia instead of smartphone usage, associated with other three factors simultaneously in one integrated conceptual framework. For instance, although psychological wellbeing and academic performance are of importance in affecting individual life satisfaction, will nomophobia actually exert impact on people's psychological wellbeing and academic performance? Even though individual who excessively uses smartphone has been identified by their resulting lower life satisfaction, is the effect of nomophobia mediated by psychological wellbeing and academic performance? What about the reverse? Our study aims to answer these questions. Specifically, it explores how nomophobia, which is triggered by smartphone excessive use, shape life by applying psychological wellbeing (including perceived stress, depression and loneliness) and academic performance as key mediators.

2. THEORETICAL HYPOTHESES

2.1 Nomophobia

Excessive use of smartphone is in all possibility indicative for problematic smartphone usage or the forerunner for nomophobia [6], [18]. Nomophobia was viewed as a manifestation of IS excessive use [6], [10], [18], deemed as the equivalence of smartphone addiction [19]. Furthermore, frequently using mobile phone positively affected the occurrence of cellular phone addiction [20], which was verified by Geng et al. [21]'s idea that long duration of mobile phone usage would trigger individual fatigue, in turn self-control decline or loss, thus elevating the possibility of mental dependency on mobile phone.

Furthermore, smartphone is playing an integral role among student communities even in class or other learning-orientation occasions [1]. According to the work of Kuroki et al. [22] conducted among college students, approximately one-third of them suffer from nomophobia. Also, Çakir et al. [23] investigated the prevalence of nomophobia among college students and found that their nomophobia levels are above moderate level, based on average score. In another work, Yildirim et al. [24]'s findings manifested the high level for nomophobia prevalence among young adults. Nomophobia behaviors enable to alter people's day-to-day habits, and especially those who have been experiencing nomophobia may undergo adverseness in their academic achievement [23], [25].

There is literally blank in IS literature studying the association between nomophobia and psychological factors, stress, depression and loneliness for example. However, there are a number of relative studies in the past two decades. Specifically, sampled 387 college students, Chiu [26] has proved that such predictive constructs as social self-efficacy, family pressure and emotional stress positively contribute to the likelihood of being caught in smartphone addiction. Similarly, compulsive smartphone usage exerts positive impact on technostress, which derived from information & communication overload [27]. Lee et al. [13] found the evidence that both compulsive usage of smartphone and technostress are positively associated with psychological traits covering locus of control, social interaction anxiety, materialism and the need for touch.

2.2 The dark side of smartphone usage on psychological wellbeing and academic performance

Many studies have concluded the adverse consequences of smartphone usage on people's psychological wellbeing. Nevertheless, research investigating nomophobia and psychological wellbeing is limited. There is evidence of a positive relationship between problematic cell phone use and psychological problems. For

example, high levels of Internet use have been associated with anxiety [28]-[30]. Additionally, Problematic cell phone use has been described as an addiction-like behavior leading individuals to use the cell phone compulsively [31]. compulsive mobile-phone usage has found to result in psychological wellbeing symptoms including depression and somnipathy [14], [32]. For the retired older group, there existed a positive contribution of Internet use to mental wellbeing, where Internet use decreased the probability of a depression state by one third [33]. What is more, through a longitude study, Kraut et al. [34] suggested that Internet excessive use was related to the increase of users' loneliness and depression, as it would reduce duration and communication between individuals and family members, as well as their social circle, thereby debasing psychological wellbeing.

Several studies have found evidence of the negative effects of smartphone usage on students' academic performance [1], [35]. For instance, Rosen et al. [36] identified the negative impacts of smartphone multitasking on students' academic performance. Jacobsen and Forste [37] found that using electronic media including cell phone negatively affected the self-reported GPAs among freshmen.

Given the diverse functions of smartphone, scholars have been increasingly exploring the behavioral influences of specific smartphone usage on academic performance, such as Facebook, Internet surfing, and video games. For instance, Karpinski et al. [35] found the negative association of social networking sites (SNS) and grade point average (GPA), while smartphone multitasking played the moderator role in the association. Similarly, Junco & Cotten [38] found that using social media (such as Facebook), as well as text messaging, in the occasions of learning-related activities resulted in lower GPAs. Additionally, low levels of Internet use have been associated with improved academic performance [39]. Playing video game has been proved associated with lower GPAs [40][41]. On the contrary, Chen and Tzeng [42]'s findings presented that female users with high level of Internet engaging in information seeking and chatting got better academic performance than those of low level, however felt more depressed than those of low level.

Based on previous studies[36]-[38], [43]-[44], multi-tasking can be considered as an explanation for the negative association between smartphone usage and academic performance. As reported by Jacobsen and Forste [37], over two-thirds of college students use electronic media while conducting study-related activities. Similarly, Junco & Cotten [43][38] found that messages texting and social media (Facebook) checking were general in studying occasions, which interfered with schoolwork [43], and negatively impacted overall GPAs [38]. The work of Wood et al. [44] manifested that multi-tasking with any of the technologies examined exerted negative impacts on learning. More specifically, aiming to explore the influence of multitasking, the study findings of Rosen, Carrier et al. [36] shown that respondents typically got distracted by electronic media including Facebook and texting in less than six minutes after initiating a studying session. Obviously, smartphone is such an integrated gadget commonly accessed with all of functions associated with augment in multi-tasking while decline in academic performance.

2.3 Impacts of academic performance and psychological wellbeing on life satisfaction

Life satisfaction was described as "a judgmental process in which individuals assess the quality of their lives on the basis of their own unique set of criteria" [45, p. 164], which was deemed as prediction of multitudinous life outcomes covering physical and psychological wellbeing, marital satisfaction, social capital and so on [46]-[47]. Life satisfaction has so far been found associations with smartphone usage [5]. Also, Dienlin et al. [48]'s work indicated that conversing via SNSs, as well as instant messengers (IMs), has a mainly reinforcing effect, while communicating via SNSs enables to increase life satisfaction several months later, appearing to be plausible as SNSs have been viewed as the perfection of attaining informational support [49].

Moreover, for the point of this study, it is suggested that judgments of life satisfaction are affected by success or failure in life domains of importance. Considering the community of college students, academic

performance has been viewed as one eventful domain of life which acts influentially in judgments of life satisfaction [17], [45].

Besides, many scholars found the influence of specific psychological factors on people's life satisfaction [16]. For example, from a cross-culture study, Matheny et al. [50] confirmed the negative association of perceived stress and life satisfaction. Similarly, Extremera, Durán, & Rey [51] suggested that individual in with lower level of perceived stress was also found to occupy higher level of life satisfaction. Another study [52] reported that without considering academic success or failure, students perceived positive stress have positive relation to their life satisfaction. Among the individuals with spinal cord injury, there were significant negative actor impacts of loneliness and positive actor impacts of relationship quality on life satisfaction, while loneliness demonstrated reciprocal relationships with life satisfaction over time [53].

To the best of our knowledge, there almost leaves a blank of research to explore the possible association between nomophobia and individual life satisfaction. However, nomophobia is triggered by problematic phone use. To some extent, if smartphone usage has negative effect on academic performance while has positive on psychological factors, such as stress and anxiety, then nomophobia may exert an indirect, negative impact on life satisfaction.

Based on the aforementioned research findings, this study is going to catch two targets. One is to explore the association between nomophobia and psychological wellbeing, which in turn affects life satisfaction. The other is to explore the association between academic performance, which is influenced by nomophobia, and life satisfaction. Accordingly, a theoretical framework was established, among which psychological wellbeing is measured by three second-order formative factors, as shown in Figure 1. Therefore, we postulate:

Hypothesis 1: Smartphone usage positively triggers the development of nomophobia.

Hypothesis 2: psychological wellbeing mediates the relationship between nomophobia and life satisfaction.

Hypothesis 3: Academic performance mediates the relationship between nomophobia and life satisfaction.

Hypothesis 4: There was a zero order correlation between nomophobia and life satisfaction.
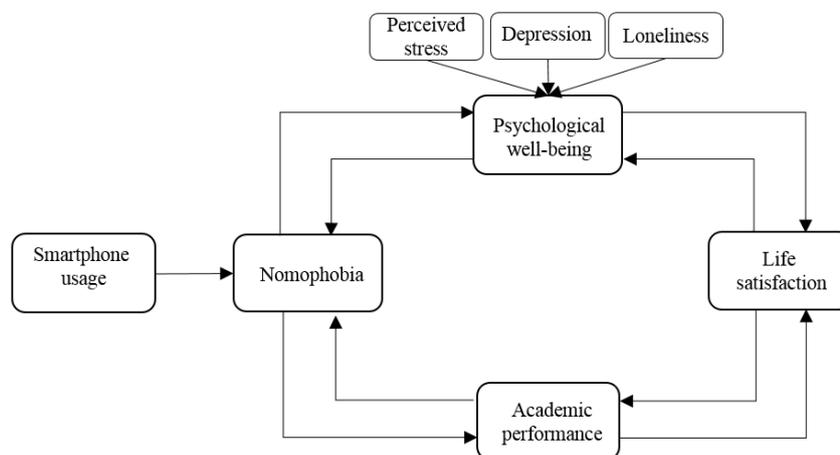
Figure 1. Theoretical framework

3. PROPOSED METHODOLOGY

We plan to conduct a big-scale survey more than 10 thousand responses to validate these hypothesized associations, in order to maximize the robustness of the research results. The questionnaire is composed of six separate sections, including one for demographic information, another for academic performance, and four separate research instruments, encompassing the smartphone usage scale, the nomophobia scale, the psychological wellbeing scale (including three formative constructs of perceived stress, depression and

loneliness) [54] and life satisfaction scale. Measurement items are adapted and developed based on previous studies [47], [55]-[60]. For data analysis, we will opt for Structural Equation Model (SEM) analysis to validate measurement model, as well as structural model.

4. EXPECTED CONTRIBUTION

Responding to call for the mediating effects of psychological wellbeing and academic performance to interpret the black-box mechanism between nomophobia and life satisfaction, this study contributes to human-machine relationships by embracing the dark side of smartphone usage. This study is among the first to uniquely address how nomophobia triggered by smartphone overuse affects life satisfaction of individuals, as well as how the mediating mechanism of multidimensional psychological wellbeing and academic performance in the association of nomophobia and life satisfaction. The pattern in our study yield new insights on the relationship with the perspective of life satisfaction which is a uniquely novel contribution in IS literature. Practically, this study could offer educational institutions guidelines about the interaction of IS use, psychological wellbeing, academic performance and life satisfaction.

REFERENCES

[1]   Judd, Terry. (2014). Making sense of multitasking: the role of facebook. Computers & Education, 70, 194-202.

[2]   Lepp, A. , Li, J. , Barkley, J. E. , & Salehi-Esfahani, S. (2015). Exploring the relationships between college students' cell phone use, personality and leisure. Computers in Human Behavior, 43, 210-219.

[3]   Agogo, D. , Hess, T. J. (2017). 'Yin and Yang': Integrating the Bright Side into Dark Side Research in IS. *Twenty-third Am. Conf. Inf. Syst.*, 39, 12-15.

[4]   Ioannou, A., Papazafeiropoulou, A. (2017). Using IT mindfulness to mitigate the negative consequences of technostress. *23rd Americas Conference on Information Systems*, 1–10.

[5]   Lepp, A. , Barkley, J. E. , & Karpinski, A. C. (2014). The relationship between cell phone use, academic performance, anxiety, and satisfaction with life in college students. Computers in Human Behavior, 31, 343-350.

[6]   Joël Billieux, Maurage, P. , Lopez-Fernandez, O. , Kuss, D. , & Griffiths, M. (2015). Can disordered mobile phone use be considered a behavioral addiction? an update on current evidence and a comprehensive model for future research. Current Addiction Reports, 2(2), 156-162.

[7]   Lee, J. , Cho, B. , Kim, Y. , & Noh, J. (2015). Smartphone addiction in university students and its implication for learning.

[8]   Nardi, Antonio Egídio, Silva, A. C. O. D. , Sancassiani, F. , King, A. L. S. , Machado, S. , & Valença, Alexandre Martins. (2014). "nomophobia": impact of cell phone use interfering with symptoms and emotions of individuals with panic disorder compared with a control group. Clinical Practice & Epidemiology in Mental Health,10(1), 28-35.

[9]   Yildirim, C. , & Correia, A. P. (2015). Exploring the dimensions of nomophobia: development and validation of a self-reported questionnaire. Computers in Human Behavior, 49, 130-137.

[10]   King, A. L. S. , A.M. Valença, Silva, A. C. O. , Baczynski, T. , Carvalho, M. R. , & Nardi, A. E. (2013). Nomophobia: dependency on virtual environments or social phobia?. Computers in Human Behavior, 29(1), 140-144.

[11]   Hawi, N. S., Blachnio, A., & Przepiorka, A. (2013). Polish validation of the internet addiction test. Cyberpsychology Behavior & Social Networking,16(3), 200-204.

[12]   Hawi, N. S. , & Rupert, M. S. (2015). Impact of e-discipline on children\"s screen time. Cyberpsychology, Behavior, and Social Networking, 18(6), 337-342.

[13]   Lee, Y. K. , Chang, C. T. , Lin, Y. , & Cheng, Z. H. (2014). The dark side of smartphone usage: psychological traits, compulsive behavior and technostress. Computers in Human Behavior, 31, 373-383.

[14]   Thomée, S., Härenstam, A., Hagberg, M. (2011). Mobile phone use and stress, sleep disturbances, and symptoms of

depression among young adults - A prospective cohort study. *BMC Public Health*, 11(66), 1–11.

[15]   Barkley, J. E., Lepp, A., Salehi-Esfahani, S. (2016). College students' mobile telephone use is positively associated with sedentary behavior. *Am. J. Lifestyle Med.*, 10(6), 437–441.

[16]   Rupert, M. S. , & Hawi, N. S. (2016). Relationships among smartphone addiction, stress, academic performance, and satisfaction with life. Computers in Human Behavior, 57, 321-325.

[17]   Schimmack, U. , Diener, E. , & Oishi, S. (2010). Life-satisfaction is a momentary judgment and a stable personality characteristic: the use of chronically accessible and stable sources. Journal of Personality, 70(3), 345-384.

[18]   *Jo ël Billieux, Linden, M. V. D. , & Rochat, L. (2010). The role of impulsivity in actual and problematic use of the mobile phone. Applied Cognitive Psychology, 22(9), 1195-1210.*

[19]   Nicola, B. , & Giovanni, D. P. (2014). A proposal for including nomophobia in the new dsm-v. Psychology Research and Behavior Management, 7, 155-160.

[20]   .Şahin Gökçearslan, Filiz Kuşkaya Mumcu, Tülin Haşlaman, & Yasemin Demiraslan Çevik. (2016). Modelling smartphone addiction: the role of smartphone usage, selfregulation, general self-efficacy and cyberloafing in university students. Computers in Human Behavior, 63(2016), 639-649.

[21]   Geng, J. , Han, L. , Gao, F. , Jou, M. , & Huang, C. C. (2018). Internet addiction and procrastination among chinese young adults: a moderated mediation model. Computers in Human Behavior, 84, 320-333.

[22]   Tavolacci, M., Meyrignac, G., Richard, L., Dechelotte, P., & Ladner, J. (2015). Problematic use of mobile phone and nomophobia among french college studentsmarie-pierre tavolacci. European Journal of Public Health, 25(suppl_3).

[23]   Çakir Balta, Ö., Barış HORZUM, M. (2016). A Modern Phobia: Prevalence of Nomophobia among College Students. *J. Fac. Educ. Sci.*, 49(1), 141–158.

[24]   Yildirim, C. , Sumuer, E. , Adnan, M. , & Yildirim, S. (2015). A growing fear: prevalence of nomophobia among turkish college students. Information Development, 32(5), 1322-1331.

[25]   Gezgin, D. M. , Özlem Çakır, & Yildirim, S. (2018). The relationship between levels of nomophobia prevalence and internet addiction among high school students: the factors influencing nomophobia. International Journal of Research in Education & Science, 4(1), 215-225.

[26]   Chiu, & Shao-I. (2014). The relationship between life stress and smartphone addiction on taiwanese university student: a mediation model of learning self-efficacy and social self-efficacy. Computers in Human Behavior, 34, 49-57.

[27]   Ragu-Nathan, T. S., Tarafdar, M., Ragu-nathan, B. S. (2008). The Consequences of Technostress for End Users in Organizations : Conceptual Development and Empirical Validation. *Inf. Syst. Res.*, 19(4), 417–433.

[28]   Beranuy, M. , Oberst, U. , Carbonell, X. , & Chamarro, A. (2009). Problematic internet and mobile phone use and clinical symptoms in college students: the role of emotional intelligence. Computers in Human Behavior, 25(5), 1182-1187.

[29]   Jenaro, C. , Flores, N. , Mar ía G ómez-Vela, Francisca Gonz ález-Gil, & Caballo, C. (2007). Problematic internet and cell-phone use: psychological, behavioral, and health correlates. Addiction Research, 15(3), 309-320.

[30]   Lu, X. , Watanabe, J. , Liu, Q. , Uji, M. , Shono, M. , & Kitamura, T. (2011). Internet and mobile phone text-messaging dependency. Computers in Human Behavior, 27(5), 1702-1709.

[31]   Takao, M. , Takahashi, S. , & Kitamura, M. (2009). Addictive personality and problematic mobile phone use. CyberPsychology & Behavior, 12(5), 501-507.

[32]   Sara Thom ée, Ekl?F, M. , Gustafsson, E. , Nilsson, R. , & Hagberg, M. (2007). Prevalence of perceived stress, symptoms of depression and sleep disturbances in relation to information and communication technology (ict) use among young adults – an explorative prospective study. Computers in Human Behavior,23(3), 1300-1321.

[33]   Cotten, S. R. , Ford, G. , Ford, S. , & Hale, T. M. (2014). Internet use and depression among retired older adults in the united states: a longitudinal analysis. The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 69(5), 763-771.

[34]   Kraut, R. , Patterson, M. , Lundmark, V. , Kiesler, S. , Mukophadhyay, T. , & Scherlis, W. (1998). Internet paradox: a social technology that reduces social involvement and psychological wellbeing?. Am Psychol, 53(9), 1017-1031.

[35]   Karpinski, A. C. , Kirschner, P. A. , Ozer, I. , Mellott, J. A. , & Ochwo, P. (2013). An exploration of social networking site use, multitasking, and academic performance among united states and european university students. Computers in Human Behavior, 29(3), 1182-1192.

[36]   Rosen, L. D. , Carrier, L. M. , & Cheever, N. A. (2013). Facebook and texting made me do it: media-induced task-switching while studying. Computers in Human Behavior, 29(3), 948-958.

[37]   Jacobsen, W. C. , & Forste, R. (2011). The wired generation: academic and social outcomes of electronic media use among university students. CyberPsychology, Behavior & Social Networking, 14(5), 275-280.

[38]   Junco, R. , & Cotten, S. R. (2012). No a 4 u: the relationship between multitasking and academic performance. Computers & Education, 59(2), 0-514.

[39]   Chen, Y. F. , & Peng, S. S. (2008). "University students" internet use and its relationships with academic performance, interpersonal relationships, psychosocial adjustment, and self-evaluation. CyberPsychology & Behavior, 11(4), 467-469.

[40]   Jackson, L. A. , Eye, A. V. , Fitzgerald, H. E. , Witt, E. A. , & Zhao, Y. (2011). Internet use, videogame playing and cell phone use as predictors of children's body mass index (bmi), body weight, academic performance, and social and overall self-esteem. Computers in Human Behavior, 27(1), 599-604.

[41]   Jackson, L. A. , Eye, A. V. , Witt, E. A. , Zhao, Y. , & Fitzgerald, H. E. (2011). A longitudinal study of the effects of internet use and videogame playing on academic performance and the roles of gender, race and income in these relationships. Computers in Human Behavior, 27(1), 228-239.

[42]   Chen, S. Y. , & Tzeng, J. Y. (2010). College female and male heavy internet users' profiles of practices and their academic grades and psychosocial adjustment. Cyberpsychology Behavior & Social Networking, 13(3), 257-262.

[43]   Junco, R. , & Cotten, S. R. (2011). Perceived academic effects of instant messaging use. Computers and Education, 56(2), 370-378.

[44]   Wood, E. , Zivcakova, L. , Gentile, P. , Archer, K. , Pasquale, D. D. , & Nosko, A. (2012). Examining the impact of off-task multi-tasking with technology on real-time classroom learning. Computers & Education, 58(1), 0-374.

[45]   Wu, J., Hu, B., Yang, X. (2016). Deformable registration of 4D-CT lung image using landmark tracking. *Biomed. Res.*, 27(3), 801–811.

[46]   Pavot, W. , & Diener, E. (1993). Review of the satisfaction with life scale. Psychological Assessment, 5(2), 164-172.

[47]   Pavot, W. , & Diener, E. (2008). The satisfaction with life scale and the emerging construct of life satisfaction. Journal of Positive Psychology, 3(2), 137-152.

[48]   Dienlin, T. , Masur, P. K. , & Trepte, S. (2017). Reinforcement or displacement? the reciprocity of ftf, im, and sns communication and their effects on loneliness and life satisfaction. Journal of Computer-Mediated Communication, 22(2), 71-87.

[49]   Trepte, S. , Dienlin, T. , & Reinecke, L. (2015). Influence of social support received in online and offline contexts on satisfaction with social support and satisfaction with life: a longitudinal study. Media Psychology, 18(1), 74-105.

[50]   Matheny, K. B. , Tovar, B. E. R. , & Curlette, W. L. (2008). Perceived stress, coping resources, and life satisfaction among us and mexican college students: a cross-cultural study. *An. Psicol.*, 24(1), 49–57.

[51]   Extremera, N. , Auxiliadora Durán, & Rey, L. (2009). The moderating effect of trait meta-mood and perceived stress on life satisfaction. Personality & Individual Differences, 47(2), 116-121.

[52]   *Abolghasemi, A. , & Varaniyab, S. T. (2010). Resilience and perceived stress: predictors of life satisfaction in the students of success and failure. Procedia - Social and Behavioral Sciences,5(none), 748-752.*

[53]   Tough, H. , Brinkhof, M. W. G. , Siegrist, J. , & Fekete, C. (2018). The impact of loneliness and relationship quality on life satisfaction: a longitudinal dyadic analysis in persons with physical disabilities and their partners. Journal of

Psychosomatic Research, 110, 61-67.

[54]   Kraut, R. , Patterson, M. , Lundmark, V. , Kiesler, S. , Mukophadhyay, T. , & Scherlis, W. (1998). Internet paradox: a social technology that reduces social involvement and psychological wellbeing?. Am Psychol, 53(9), 1017-1031.

[55]   Young, K. S. (2009). Internet addiction: the emergence of a new clinical disorder. Cyberpsychology & Behavior, 1(3), 237-244.

[56]   *Toda, M. , Monden, K. , Kubo, K. , & Morimoto, K. (2006). Mobile phone dependence and health-related lifestyle of university students. Social Behavior and Personality: an international journal,34(10), 1277-1284.*

[57]   Bianchi, A. , & Phillips, J. G. . (2005). Psychological predictors of problem mobile phone use. CyberPsychology & Behavior, 8(1), 39-51.

[58]   Cohen, S., Kamarck, T., Mermelstein, R. (1983). A Global Measure of Perceived Stress. *J. Heal. Soc. Bhavior*, vol. 24(4), 385–396.

[59]   Radloff, & L., S. (1977). The ces-d scale: a self-report depression scale for research in the general population. Applied Psychological Measurement, 1(3), 385-401.

[60]   Russell, D. , Peplau, L. A. , & Cutrona, C. E. (1980). 'the revised ucla loneliness scale: concurrent and discriminant validity evidence'. Journal of Personality & Social Psychology, 39(3), 472-480.