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Factors that Influence IT Students' Cyberchondria: Perspectives from the Philippines

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Abstract: Strides in bridging the digital divide along with wider affordable Internet ushered in a society that is highly dependent on online information. Diverse users with varying interests have used the Internet as a source of information to fulfill their needs such as individuals in the technology, healthcare and government sectors. While these benefits have been widely applauded, this thirst for knowledge online led to the birth of a problem called cyberchondria or the excessive search for medical information that may cause negative effects on an individual's well-being. Information Technology students have been found to demonstrate a high level of computer self-efficacy allowing them to search for medical information online with ease making them more susceptible to cyberchondria. We approached 187 university students enrolled in an Information Technology program to answer a validated scale incorporating factors that have been found to be strong determinants of cyberchondria. Results were analyzed using PLS-SEM and we found that a high degree of neuroticism and computer self-efficacy can lead to cyberchondria. While a low level of self-esteem, has a positive influence on cyberchondria, this cannot be supported at a significant level. Finally, interventions and literacy programs would be valuable preventive systems in curbing the harmful effects of cyberchondria.

Keywords: Cyberchondria, self-esteem, neuroticism, computer self-efficacy, online deviant behavior

1. Introduction

Internet usage across the globe have increased tremendously. According to Statista (Johnson, 2021) there are 4.66 billion active Internet users and 4.32 active mobile Internet users worldwide which are about 60% and 55.6% of the total population. These users participate in various forms of activities such as socializing, education and entertainment (Costales, 2021; Chan & Suarez, 2017; Fabito, 2017; Fabito & Yabut, 2019). These users are further categorized as socializers, gamers, shoppers, downloaders, and searchers who engage in various activities such as learning, commerce and entertainment (Hozhyi & Lamiroy, 2017, Catedrilla, 2018). Furthermore, among these searchers are those people who seek to access health or medical information (Wang et al., 2012).

Cyberchondria is a disorder referring to a person's excessive or repeated searches for health-related information from the Internet. It entails undue anxiety concerning health. However, due to widespread Internet use specially during this time of pandemic it is believed to affect more people. Unlike in the past, where hypochondriacs tend to get information about their health from physicians or libraries, it is now possible to gain access to vast amount of information from the World Wide Web. In education, learners are faced with accomplishing academic requirements in addition to different personal concerns of adolescent life and health. Access to health information online has potential benefits insofar as educating people about the nature, cause, prevention and treatment of specific health conditions. Nevertheless, it also creates a false impression that access to information becomes a personal understanding of the material (Fisher et al., 2015) and an excessive or repeated online searches for these information leads to cyberchondria (Mcmullan et al., 2019).

Self-esteem is used to describe a person's overall subjective sense of personal worth or value. In other words, self-esteem may be defined as how much you appreciate and like yourself regardless of the circumstances (Cherry, 2021). Neuroticism on the other hand is a long-term tendency to be in a negative or anxious emotional state. It is not a medical condition but a personality trait which is in the similar class as anxiety disorder. Research has linked cyberchondria with self-esteem (Bajcar & Babiak, 2019; Mamun et al., 2020) and neuroticism (Bajcar & Babiak, 2020; Bressington et al., 2020). In this research, we added the factor of computer self-efficacy (CSE) that influences cyberchondria. Computer self-efficacy is defined as a judgment of one's capability to use a computer.

2. Related Literature and Theoretical Foundations

For many individuals, the Internet has become a main source of health or medical information (Ahmad & Khan, 2017; Khazaal et al., 2021). However, studies show that excessive contact and interaction with online medical materials may increase anxiety (White & Horvitz, 2012) which will eventually lead to cyberchondria (Aiken & Kirwan, 2012). Self-esteem is defined as the subjective assessment of self-worth (Rosenberg, 2015). People with low self-esteem perceive themselves as less appealing, incompetent, dull, and less worthy than others (Bajcar & Babiak, 2019). Low self-esteem leads to higher cyberchondria as a specific health related problematic internet use (PIU) (Dolan & Fergus, 2014; Fergus & Spada, 2017).

In psychology and development, neuroticism is a personality trait demonstrating the degree to which a person experiences the world as distressing, threatening, and unsafe. In the studies conducted by Bajcar & Babiak (2020), they were able to show that among the Five Factor Model (FFM) of personality traits, or Big Five, neuroticism has been identified as positively related to cyberchondria. Computer self-efficacy is defined as an individual's ability to apply his or her computer skills to a wider range of computer related tasks (Compeau & Higgins, 2017). It represents an individual's perception of his abilities to use computers to perform a task. It was also proven to be a predictor for computer anxiety based on the prior studies (Awofala et al., 2017; Sultan & Kanwal, 2017). Given that prior studies have shown that a Low Self-Esteem, Neuroticism and Computer Self-Efficacy are predictors of deviant behaviors online such as Cyberchondria, our study proposes three hypotheses as shown in Figure 1.

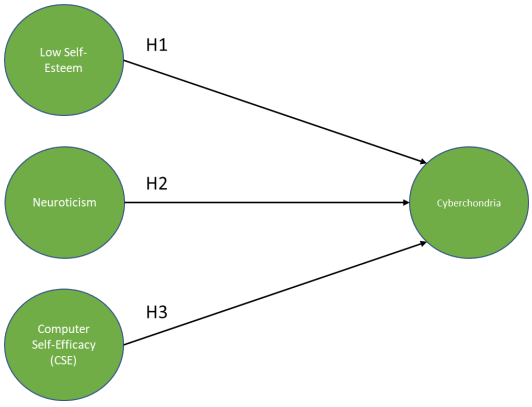

Figure 1. Theoretical Framework.

3. Methodology

3.1 Participants and Procedure

In this study we used the cross-sectional method (Levin, 2006) to investigate the relationship of a person's personality trait (neuroticism), level of confidence (self-esteem), perception to his computing ability (computer self-efficacy) and cyberchondria or anxiety-amplifying effects of online health-related searches (Starcevic, 2017). College students taking up Information Technology from

two universities in the Philippines were invited to participate in the survey. Different sections of the instrument and data privacy procedures were explicitly stated at the start of the survey process. In addition, ethical standards are upheld through informed consent from the students who are at least 18 years of age. A total of 187 responses were collected and analyzed for construct validation and testing of hypotheses.

The respondents' demographic profile revealed that majority of the respondents are male (64.2%) with the female accounting for 32.6% and remaining 3.1% prefer not to say. For the Year Level, 45.5% are juniors, 27.3% are freshmen, 19.8% are sophomores and the remaining 7.5% are seniors. A total of 91.4% of the respondents are fulltime students. As they engage with technology, 77% or more are using either smartphones or laptops/PCs. Some additional valuable information that was gathered from the respondents were based on their Internet experience and Usage per Day. It was noticeable that even if they are into information technology, 18.2% responded that they have less than 2 years of Internet experience while their Usage per Day accounts for 63.1% of more than 6 hours.

3.2 Measures

The Rosenberg Self-Esteem Scale (RSES) is a 10-item measure of self-esteem (e.g., "On the whole, I feel satisfied with life") with a 4-point scale ranging from 1 (strongly disagree) to 4 (strongly agree) with higher scores indicate higher self-esteem. For uniformity in the instrument, we used a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). For Computer Self-Efficacy (CSE), we adopted the instrument used by Joshi & Kuhn (2011) which was used as an instrument in measuring the interest of an individual towards an Information Systems career. Neuroticism is one of the FFM personality traits or more commonly known as Big 5. For this study, we adopted the instrument used by Ramírez-Correa (2017) which was used in an empirical study in a Chilean university. The Cyberchondria Severity Scale (Mcelroy et al., 2019) is a brief, reliable, and valid measure of worry/anxiety attributable to excessive online health research.

To test the reliability and validity of the instrument, the researchers tested the instrument in two phases using the PLS algorithm of the SmartPLS (Hair Jr et al., 2017). This quantitative analysis technique has been applied in various information systems or IS research investigations using theoretical frameworks as basis for hypothetical testing (Limpin, 2018; Catedrilla et al 2019; Trapero et al, 2019). The initial instrument was composed of 28 questions/indicators. These were validated through an initial presentation with 4 respondents (2 male and 2 female) and Factor Analysis using the Partial Least Square (PLS) algorithm. The initial indicators were presented to the students in a way that the questions will have no or limited level of vagueness when presented to future respondents. For construct reliability and validity of the instrument, 59 respondents were chosen. After validation of the final instrument, 27 indicators remained with only one indicator from the Computer Self-Efficacy Scale removed.

For construct reliability and validity with a Cronbach Alpha (0.7), Composite Reliability (0.7) and Average Variance Extracted (0.5), one of the CSE indicators was discarded due low factor loading. Another iteration of PLS algorithm was applied which resulted to a scale of 27 indicators with acceptable reliability and convergent validity as shown in Table 1.

Table 1. *Construct Reliability and Validity*

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
CSE	0.755	0.890	0.802
Cyberchondria	0.929	0.937	0.558
Neuroticism	0.896	0.932	0.820
Self-Esteem	0.903	0.913	0.521

4. Results and Discussion

To test the structural model, we performed a multiple regression analysis using the bootstrapping application of SmartPLS (Hair Jr et al., 2017). The approach was also used by Ramírez-Correa (2017)

as they investigated the relationship of personality traits and deviant behavior in a structural model to accept or reject their study's hypotheses as well as previous quantitative inquiries in information systems research (Catedrilla et al., 2019; Limpin, 2018; Trapero et al., 2019) . Using SmartPLS 3.0, the results of the survey was analyzed, and the results are presented in Table 2.

Table 2. *Results*

Hypothesis	Statement	T-Statistics	Decision
H1	Low Self-esteem positively influence cyberchondria	0.732	Reject
H2	Neuroticism positively influence cyberchondria	4.609	Accept
H3	Computer self-efficacy positively influence cyberchondria	2.270	Accept

Based on the T-Statistics, neuroticism and computer self-efficacy are positively related or influence cyberchondria. The values of 4.609 (neuroticism) and 2.270 (computer self-efficacy) area above the acceptable values of 1.96 resulting to positive relationship to cyberchondria. On the other hand, low self-esteem negatively influences cyberchondria with a T-statistics of 0.732. We infer that neuroticism and computer self-efficacy have a considerable impact on the escalation of individual health anxiety through excessive Internet search for health information. This finding is consistent with a study that finds that a high level of neuroticism can lead to online deviant behavior (Ramírez-Correa, 2017). As for computer self-efficacy, it was shown by that there is a direct relationship between CSE and computer anxiety (Awofala et al., 2017; Sultan & Kanwal, 2017), which can be construed to relate CSE to cyberchondria. In the case of the first hypothesis, the results contradict with that of the findings of (Bajcar & Babiak, 2019;Vismara et al., 2020). This shows that the respondents present a high level of self-esteem. The findings can then be attributed to the following: (1) the respondents, which are adolescents, has a maturing level of self-esteem as proven by Gove (1989), and Roberts & Shiner (2005); (2) the students show cognitive alternatives after being in self-academic isolation for two semesters. Cognitive alternatives, or a high value of it, improves self-esteem based on the study by Zhang et al. (2013); and (3) Life skills programs improve the students' self-esteem (Mcvey et al., 2004). Life skills programs are usually initiated by the Student Development or Guidance offices of the universities to which the students are enrolled.

5. Conclusions and Recommendations

While this study attempts to identify the relationship of self-esteem, neuroticism and computer self-efficacy to cyberchondria, the findings are limited by the number and type of respondents as well as the sampling technique used by the researchers. The rejection of H1 can be highly attributed to the respondents' computer self-efficacy. Being in the field IT, the students' high computer self-efficacy lead to their high self-esteem similar to the findings of Hatzigianni & Margetts (2012) and Nikolopoulou & Gialamas (2017). For H2, schools must be aware of how to handle students with high neuroticism. Finally for H3, the Guidance Office and/or Student Development Office may conduct seminars or webinars related to the responsible use of the Internet, especially those information that are medical related. This will educate students to critically appraise the information they gather (O'Mathúna, 2018).

These limitations experienced during the execution of this research created opportunities for future research. First, there is a need to enrich the collection of data to cover other college degrees/programs for better representation. Therefore, the authors recommend replication of the study with larger samples to better demonstrate the relationship stated in the hypothesis. Second, a thorough study of the different age groups involving other stakeholders of the academe that will fit the respondent criteria will capture various factors regarding Internet user behavior and cyberchondria. Lastly, to complement and further improve the general lack of adequate survey methods that allow researchers to make strong and reliable inferences, future research should apply other methodologies such as qualitative interviews, content analysis or other emerging techniques to discover the most commonly recurring types of individual online behaviors in relation to their health issues.

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