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Internet Addiction and Acculturative Stress Among International College Students in the United States

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ABSTRACT

While Internet use plays an increasingly important role in individuals' lives, many college students have found themselves totally unconsciously plunged into Internet addiction (IA). Guided by the acculturative stress theory, we examined the relationships between acculturative stress, gender, age, length of stay, and IA among international college students. Data were collected from 111 international undergraduate and graduate students studying in the United States. Hierarchical multiple regression analyses reported that acculturative stress and gender significantly predict IA among international college students. In this sample, neither age nor length of stay predicted IA. Our findings paint a picture of the potential influence of acculturative stress on IA. We offer suggestions for future research on Internet addiction and acculturative stress, particularly for international college students.

Keywords: acculturative stress, college counselor, international college students, Internet addiction

Over the past decades, Internet addiction (IA) has become a campus health issue that cannot be ignored in the United Stated and other countries in the world (Anderson, 2001; Cardak, 2013; Carlisle et al., 2016; Kandell, 2009). Estimates indicate that 71% of 18–24 year olds would qualify as being addicted to the

Internet, and prevalence rates of IA are as high as 8.2% in the general population (Gaille, 2017; Weinstein & Lejoyeux, 2010). To date, IA on college campuses is a growing concern as more and more studies are revealing (Chai et al., 2012; Ostovar et al., 2016). Research has indicated that college students with IA are likely to experience depression (Ineme et al., 2017; Ostovar et al., 2016), anxiety (Ostovar et al., 2016), loneliness (Zeliha, 2019), and poor physical health such as vision problems and weight gain or loss (Gregory, 2019). Of college students, international students appear to be more at risk of IA because their acculturation experiences entail adjustment difficulties and stress, which are related to excessive Internet use (Chai et al., 2012; Hirai et al., 2015; Ye, 2005). Research has shown that acculturative stress may contribute to IA (Jin & Berge, 2016; Ye, 2005). International students use the Internet as a means to cope with unpleasant feelings (e.g., perceived discrimination, cultural shock) during the process of acculturation (Ye, 2005). Despite the attention to IA, a limited number of studies on international students with IA have been reported. Given the prevalence and complexities of IA among international students, it is imperative to identify the factors implicated in IA so that counselors can more effectively target intervention to reduce the likelihood of IA. In the current study, we therefore examined the relationships between acculturative stress, gender, age, and length of stay among international college students in the United States. The findings from this study are intended to expand the existing literature on IA of international college students and its correlating factors.

BACKGROUND

IA was first proposed by Young (1998) and referred to as problematic Internet use, computer addiction, Internet use disorder, or excessive Internet use (Caplan, 2002; Van Rooij & Prause, 2014; Young, 1996). Conceptualizations of IA have adhered to two distinct explanations: (a) it is a broad term that covers a wide variety of behavioral and impulse-control problems (Young, 1999), and (b) "many of these excessive users are not 'Internet addicts' but just use the Internet excessively as a medium to fuel other addictions" (Griffiths, 2000, p. 416). Although IA has not been included in the spectrum of addictive disorders in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (*DSM*-5) or the *International Classification of Diseases Tenth Edition* (*ICD*-10), concern is rapidly increasing with respect to its risk factors (Choi et al., 2015; Hyun et al., 2015). For example, research has identified several risk factors that are closely related to IA of college students, including psychological well-being (e.g., stress and loneliness; Ostovar et al., 2016), social contexts (e.g., lack of family support, poor academic performance; Cheng & Hong, 2017; Jun & Choi, 2015), coping strategies (Chou et al., 2015), and personal habits (e.g., poor control of Internet use; Lam, 2014). These risk factors are often presented individually, coexist and interact with one another, and increase the likelihood of getting college students addicted to the Internet (Choi et al., 2015).

International College Students

Over the last years (2009–2010 to 2019–2020), the number of international students seeking degrees in the United States has increased substantially, from nearly 202,970 to 267,712 (Institute of International Education, 2020). The transition to college life, and to a potentially more diverse and more multicultural environment on the university campus, always brings new demands and challenges to international students (Ruberman, 2014). These demands and challenges are especially acute for racial and cultural minority international students from Asian countries (Ching et al., 2017). For example, Sherry et al. (2010) found that Asian international students often feel culturally misunderstood and socially isolated in the university community. These students appear to be more at risk of addiction during this process of cultural change (Blanco et al., 2008; Lonner et al., 2007). In an investigation of 110 Chinese international students studying in Korea, Kim et al. (2015) found that 40% of their participants were at-risk smartphone users; smartphone addiction may also have an adverse impact on physical health in the process of cross-cultural adaptation.

Acculturative Stress

The transition to the university environment often creates considerable stress in the lives of students and shapes how they perceive and respond to these kinds of life changes in the future (Besser & Zeigler-Hill, 2014). In this study, I refer to *acculturative stress* as the stress associated with adjustment to a different culture and "a response by people to life events that are rooted in intercultural contact" (Berry, 2005, p. 43). This term includes two major theoretical perspectives: (a) psychological difficulty associated with cultural contact (e.g., from African American neighborhoods to low-diversity, White-dominant neighborhoods; or from Eastern cultures to Western cultures), or how individuals handle negative, stressful experiences during their adaption to the new environment; and (b) the sources of the negative experiences (e.g., perceived discrimination, loneliness) existing in the interaction between cultures (Bachman et al., 2011; Brown & Aktas, 2011; Lazarus & Folkman, 1984). According to Berry (2005), acculturative stress is a phenomenon that may have a negative impact on the health of individuals.

Research has noted several factors associated with acculturative stress. The most salient of these factors include gender (Livingston et al., 2007), ethnic identity (Walker et al., 2008), racial identity (Thompson et al., 2000), language proficiency (Li et al., 2016), perceived discrimination (Utsey et al., 2000), homesickness (Poyrazli & Lopez, 2007), hate and rejection (Henson et al., 2013; Schmitt et al., 2003), fear (Brown & Aktas, 2011; Chao et al., 2014), social support (Ra & Trusty, 2016), and cultural shock (Lombard, 2014; Torres, 2009; Winkelman, 1994). Moreover, longitudinal studies have indicated that acculturative stress is positively associated with depression (Du et al., 2015), homesickness (Tartakovsky, 2007), and substance abuse (Lorenzo-Blanco & Unger, 2015) among international students and immigrants. Likewise, Jin and

Berge (2016) reported that an individual's levels of acculturative stress predict their levels of IA. In the investigation of 115 East Asian international students in the United States, Ye (2005) found that acculturative stress is associated with motives for Internet use. For example, fear and perceived discrimination are significant predictors of social utility motivation among international students (Ye, 2005).

Purpose of the Present Study

International college students represent a group that could be more prone to IA because they are using the Internet at high rates (Doring et al., 2015). The transition to a culturally different college life might become a major turning point that affects international college students' habit of Internet use, making them more vulnerable to IA. In addition, prior research has primarily focused on homogeneity in effect sizes of IA among college students but is limited by a lack of racially and culturally diverse samples, or without considering acculturative stress.

In this pilot study, we therefore explored the relationship between acculturative stress, gender, age, length of stay, and IA in a sample of international college students using a multiple regression model. Specially, we were interested in the associations of acculturative stress with IA. Previous studies have shown that acculturative stress has been widely linked to addictive behaviors and psychological well-being among international college students (Conn et al., 2017; Jin & Berge, 2015; Li et al., 2013). Thus, I hypothesized that acculturative stress would significantly predict IA while individual-level variables (i.e., age, gender, and length of stay) were held constant.

METHOD

Participants

A random sample of 300 international college students was invited to participate in a web-based survey that took 15–20 min to complete. These participants first reviewed the informed consent approved by the university's institutional review board. As part of the consent form, participants were informed that they could also stop participating at any time and that choosing to discontinue participating would not affect their academic performance. Of 111 responses, 93 fully completed the survey and were included in my final data analysis. Therefore, I received a 31% response rate.

Of the 93 participants, 63 (67.7%) were male, 28 (30.1%) were female, and two (2.2%) were unidentified. Ages ranged from 22 to 40 years old ($M = 28.62$, $SD = 3.69$). Regarding race/ethnicity, eight (8.6%) were Caucasian, five (5.4%) were African American, 63 (67.7%) were Asian, and 12 (12.9%) were biracial. Thirty-eight (40.9%) were undergraduate and 55 (59.1%) were master's students. Participants were from 27 countries. The top three countries were India ($n = 21$), China ($n = 9$), and Sri Lanka ($n = 6$).

Procedure

Institutional review board approval was obtained prior to beginning the study. Participants were international students pursuing baccalaureate or graduate degrees in a large Midwestern research institution in the United States. I selected participants for the current study on the basis of specific criteria: (a) current enrollment in the target university; (b) possession of a valid student visa; (c) literate in English; and (d) between the ages of 18 and 70 years. Participants were recruited through a university research laboratory. A convenience sample was used based on who voluntarily responded. The research laboratory sent a recruitment email to 300 students studying in the university. The email included a brief introduction to the study as well as an anonymous link, which took potential participants to an online survey portal in Qualtrics. After participants provided online assent, they responded to the survey questions, which consisted of the IA test, acculturative stress questionnaire, and a brief demographic questionnaire. Two reminder emails were sent at 2-week intervals to those who had not yet completed the survey. An incentive, four $25 Amazon gift cards, was offered with 1:75 odds.

Measures

Demographic Questionnaire

I developed a demographic questionnaire for this study using the tailored design method (Dillman et al., 2014). Participants were asked to self-report their racial and ethnic background, birthplace, age, gender, length of time in the United States, and educational history.

Internet Addiction Test

The Internet Addiction Test (IAT; Young, 1998) is a 20-item scale that measures the presence and severity of Internet dependency among adults. The IAT views IA as an impulse-control disorder and the term *Internet* refers to all types of online activity (Young, 1998). The 20-item questionnaire measures characteristics and behaviors associated with use of the Internet that include compulsivity, escapism, and dependency. Questions also assess problems related to addictive use in personal, occupational, and social functioning. Questions are randomized, and each statement is weighted along a Likert-scale continuum that ranges from 0 (*less extreme behavior*) to 5 (*most extreme behavior*) for each item.

Studies have found that the IAT is a reliable measure that covers the key characteristics of problematic Internet use (Boysan et al., 2017; Young, 1998). The assessment measures the extent of a respondent's involvement with the Internet and classifies the addictive behavior in terms of mild, moderate, or severe impairment. The IAT is a worldwide accepted and validated testing instrument and is the most widely used IA scale. The test has been translated into several languages including English, Chinese, French, Italian, Turkish, and Korean.

Cronbach's alpha coefficient was .93 in Noh and Kim's study (2016) and .91 in the current study, showing that the IAT is highly reliable.

Acculturative Stress Scale

Acculturative stress was assessed with the 36-item Acculturative Stress Scale for International Students (ASSIS; Sandhu & Asrabadi, 1994). Items were rated on a 5-point Likert-type scale from 1 (*strongly disagree*) to 5 (*strongly agree*), with higher scores indicating greater level of acculturative stress, such as "I feel that my people are discriminated against" or "I am treated differently because of my color." It consisted of seven subscales, including perceived discrimination (eight items), homesickness (four items), perceived hate/rejection (five items), fear (four items), stress due to change/culture shock (three items), guilt (two items), and nonspecific concerns (10 items). For this study, five nonspecific concerns were taken from the ASSIS scale. Several studies reported high internal consistency reliability of the ASSIS ranging from .87 to .93 (Bai, 2016; Constantine et al., 2004). Internal consistency reliabilities in this sample were as follows: total scale: .91; perceived discrimination, .83; homesickness, .75; perceived hate, .84; fear, .83; culture shock, .59; guilt, .66; and nonspecific concerns, .61.

Data Analysis

I conducted a preliminary analysis to determine whether a relationship existed between age, gender, length of stay, and acculturative stress. The presence of a relationship would warrant further exploration of the relationship between IA and acculturative stress. I assessed normality across study variables by examining skewness, kurtosis, and quantile-quantile plots. According to George and Mallery (2005), skewness and kurtosis for all predictor variables fell within normal ranges (-1 to $+1$). Therefore, I determined no transformation of the data was needed. No apparent multicollinearity issues occurred among predictor variables. Several instances of missing or discrepant data found on the demographic questionnaire were addressed by using pairwise deletion.

RESULTS

I used SPSS (Version 24) to conduct statistical analyses. I conducted multiple regression analyses to examine how the individual-level variables (age, gender, length of stay) and seven subscales of the acculturative stress (discrimination, homesickness, hate, fear, cultural shock, guilt, and nonspecific concerns) predicted IA among international college students. Table 1 summarizes the descriptive statistics of the acculturative stress and IA.

Table 1: Descriptive Statistics of Acculturative Stress and Internet Addiction

	Min	Max	*M*	*SD*
Internet addiction	22	80	37.82	12.93
Discrimination	8	35	20.95	6.38
Homesickness	4	20	10.96	3.50
Hate	5	22	10.72	4.19
Fear	4	18	8.58	3.72
Cultural Shock	3	15	7.65	2.87
Guilt	2	10	4.63	2.17
Nonspecific	5	21	13.84	4.04

To address our hypothesis, two clusters of variables were entered sequentially to complete hierarchical multiple regression analyses. First, individual-level variables (age, gender, and length of stay) were included in Model 1, explaining 42.9% of variance in IA, $F(3,66) = 4.97$, $p = .004$. Second, in Model 2, seven subscales of the acculturative stress were added into Model 1. The total variance in Model 2 was 58.6%, $F(10,59) = 3.09$, $p = .003$. The seven subscales explained an additional 15.7% of the variance in Model 2, after controlling age, gender, and length of stay.

Table 2: Generalized Linear Modeling Predicting Internet Addiction

Predictors	Model 1 (β)	Model 2 (β)
Age	−.17	−.22
Gender	.39**	.33**
Length of stay	.18	.20
Discrimination		−.07
Homesick		.03
Hate		.16
Fear		.14
Cultural shock		.34*
Guilt		.03
Nonspecific concerns		−.18
R^2	.18	.34

*Note. *$*p < .05$, $**p < .01$; $***p < .001$

As can be seen in Table 2, gender is the variable significantly predicting IA in both Models 1 and 2. Male students apparently were more likely than female students to show symptoms of IA. Model 2 indicates that only cultural shock (β $= .34$, $p = .02$) significantly predicted IA, after controlling for the individual-level variables. Therefore, our hypothesis was supported.

DISCUSSION

The main purpose of this study was to investigate acculturative stress in relation to IA among a random sample of international college students studying in a large

Midwestern research institution in the United States. Given the acculturative stress theory provided by Berry (1977, 2005), which postulates that contextual factors impact the level of acculturative stress, this study yields a few important findings about the relationships between acculturative stress and IA in a diverse college student sample. Notably, acculturative stress was a statistically significant variable in Model 2 and may be a warning sign for international college students who might use the Internet to meet their cultural and social-emotional needs while moving from a familiar culture to one that is unfamiliar. Our findings are consistent with a large body of research suggesting that perceived discrimination, homesickness, and cultural shock are still prevalent in international students living in the United States (Chai et al., 2012; Chao et al., 2014; Henson et al., 2013; Li et al., 2013; Poyrazli & Lopez, 2007), and that acculturative stress in particular plays a significant role in contributing to mental health (Ran et al., 2016; Thompson et al., 2000; Torres et al., 2012). Thus, student service personnel and college counselors need to be concerned with psychological changes of international students who have experienced discrimination and cultural shock. Universities should deliver culturally responsive education to this population and help them deal with stress associated with race- and culture-based discrimination.

Acculturative stress, including its subscales such as cultural shock, may be considered as a predictor of IA in our study. Our finding might be regarded as an extension of previous studies in the literature regarding perceived stress that is related to addictive behaviors (Cheng & Hong, 2017; Gil et al., 2015; Sinha & Jastreoboff, 2013). The similarity of the findings may be explained by the prevalence of the sense of insecurity and the stress associated with acculturation in unfamiliar surroundings among international college students. However, although literature has indicated there might be a possible causal relationship between these psychological symptoms (i.e., stress) and IA, some scholars argue that this association needs further investigation (Ostovar et al., 2016). Our results assume that international college students become addicted to the Internet as a means of relieving their psychological distress caused by life changes. Thus, a culturally responsive counselor should begin with examining recent life experience and coping strategies of college students before addressing their addictive problems.

Another significant finding of the present study was that gender moderated the relationship between acculturative stress and IA. This finding is consistent with previous research (Khan et al., 2017; Livingston et al., 2007) and Berry's acculturative stress theory (1997, 2005), which indicate that gender is a significant moderating factor for acculturative stress (Berry, 1977, 2005; Dawson & Panchanadeswaran, 2010). Our finding is also in line with previous studies examining the effect of gender difference on problematic Internet use (Gupta et al., 2018; Ioannidis et al., 2018). In particular, male students apparently show a higher level of IA than female students when they are of a similar age. The current study highlights the need for researchers and college counselors to thoroughly weigh the gender factor in terms of international students' vulnerability to IA. Given that much research has focused on cause, diagnosis, and treatment of IA in college students, additional research is needed that incorporates a more nuanced

view of these demographic factors (e.g., marital status, ethnicity/racial identity, socioeconomic status) for IA in international college student populations.

Limitations and Future Research

Although our findings contribute to the acculturative stress and IA research pertaining to international college students, several limitations must be considered. First, although expected, these small sample sizes may have resulted in statistical power being lower than desired. Future research could pool a larger sample to examine relationships between IA and acculturative stress among international college students. Second, because of the lack of prior research on acculturative stress and IA, we developed our research questions based on the available acculturation research (Chai et al., 2012; Chao et al., 2014; Henson et al., 2013; Li et al., 2013; Poyrazli & Lopez, 2007). Some other important variables (e.g., acculturation strategies, personality) potentially should have been included in our study. In addition, we tested individual-level variables (e.g., gender, age, length of stay) in the current study and future researchers could supply knowledge on acculturative stress and IA by exploring moderating factors of acculturation (e.g., social support, societal attitudes, coping strategies) as well as additional demographic factors (e.g., socioeconomic status, racial/ethnicity identity, marital status). Third, the measures used in the web-based survey were not mandatory, which may account for the incompleteness.

Implications for College Counselors

This study was innovative in examining the influence of acculturative stress on IA among international college students. Two key findings from this study were that (a) acculturative stress has a positive influence on IA; and (b) gender and cultural shock may have unique contributions to IA among international college students. With the established research linking acculturative stress and IA, some clinical implications for college counselors emerge from this study. College counselors should consider how acculturative stress might be exacerbating addictive Internet use. Previous research linking multicultural counseling competences suggests that (a) multicultural counselors should be aware of self, client, and potential barriers in the counseling process when working with international and minority students; (b) discussions with students around confidentiality should be initiated beforehand to help ward off fear or culture-related stress that may occur, particularly when working with international students; and (c) college counselors should focus on a more directive approach to counseling this population (Mau & Jepsen, 1988; Yau et al., 1992; Yakunina et al., 2013). Likewise, when dealing with international students who are addicted to the Internet, college counselors are encouraged to review contemporary literature regarding IA associated with different psychological symptoms. As the findings reported, cultural sensitivity should be used to interpret perceived discrimination, homesickness, hate, and cultural shock and empathy should be shown for students from diverse cultural backgrounds. A college counselor should

pay particular attention to these issues that may lead to unintended harm on students.

CONCLUSION

Given the prevalence of IA in U.S. colleges and universities, the factors that contribute to this addictive behavior are increasingly important to understand. Using acculturative stress theory that accounts for a sociocultural transition and examining moderating factors that influence the transition can help college counselors understand needs of international students. Furthermore, the findings from this study also shift our current understanding of the relationship between acculturative stress and IA. Male students' higher acculturative stress apparently has a significant influence on IA. Hopefully, this study contributes to the growing literature on IA from a perspective of cultural transition. Findings from this study also present additional research questions that warrant further consideration in future research.

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