

Acculturation, Internet Use, and Psychological Well-being Among Chinese International Students

Jia Qi Li (Doctoral Candidate), *Xun Liu* (Doctoral Candidate),
Tianlan Wei (Doctoral Student), and *William Lan* (Chair and Professor)
Department of Educational Psychology and Leadership
Texas Tech University (USA)

Abstract

In this study, the authors examined the relationships of acculturation as measured with two subscales of cultural maintenance and cultural assimilation, Internet use, and psychological well-being among Chinese international students. A total of 170 Chinese international students participated in this study. Bivariate correlation analyses revealed that an individual can identify with two different cultures, minority and dominant culture. Results of multiple regression indicated that cultural assimilation was a significant predictor to psychological well-being, but not cultural maintenance. The study also found that younger Chinese international students (e.g., students pursuing bachelor's degrees) suffered significantly higher levels of stress and depression in the acculturation process as compared to their older counterparts. Implications for counseling and recommendations for future research were discussed.

Keywords: Acculturation; Internet use; Psychological well-being; Chinese international students.

Educational globalization creates international training opportunities for students all over the world (Hallak, 1998). Recently, an increasing number of international students choose to continue their education in the United States higher education institutions. In the 2010-2011 academic year, of 723,277 international students studying on campuses in the United States, 50% were from Asian countries, with China and India representing the two largest portions of students (Institute of International Education, 2011). China was the leading place of origin for international students, with 157,558 students from China studying in the U.S., accounting for more than 21.8% of the total international student population (Institute of International Education, 2011). The longitudinal research revealed that adopting a new cultural environment (acculturation as defined by International Organization for Migration, 2004) has a great social and psychological influence on ethnic minority individuals (Berry, 1997; Bochner, 2006; Ward, Bochner, & Furnham, 2001; Zhou, Jindal-Snape, Topping, & Todman, 2008). Empirical findings indicated that psychological problems such as depression, loneliness, and homesickness are commonly encountered by international students during the acculturation process (Chae & Foley, 2010; Brunette, Lariviere, Schinke, Xing, & Pickard, 2011; Ye, 2005). Further, a review of past research on the relationship

between Internet use and psychological well-being has yielded several mixed findings. Some researchers argued that the Internet has an overall positive effect on well-being (Shaw & Grant, 2002; Wesier, 2001). Others found that Internet use has the negative influence on psychological well-being (Chen & Persson, 2002; Wang & Sun, 2009). A review of literature indicated that no studies have yet been done on the relationships of acculturation, Internet use, and psychological well-being among Chinese international students. As such, the purpose of this research was to (a) examine the relationships of these three variables (i.e., acculturation, Internet use, and psychological well-being), and (b) generate suggestions for future research in this area.

Literature Review

Acculturation

According to Berry, Phinney, Sam, and Vedder (2006), the classic definition of acculturation originated in anthropology and was first proposed by Redfield, Linton, and Herskovists (1936); it focuses on “continuous first-hand contact” between different cultures (p. 149). More than a half-century later, the International Organization for Migration (IOM; 2004) revised the term acculturation as “the progressive adaptation of elements of a foreign culture by persons, groups or classes of a given culture” (p. 5). As a dynamic socialization phenomenon, acculturation was primarily described and interpreted as either unidimensional, in which individuals or groups substitute the dominant cultural identity for their original one (Gordon, 1964; LaFromboise, Coleman & Gerton, 1993; Triandis et al., 1988) or a bidimensional process, in which individuals or groups identify with the dominant culture and in the meantime retain the original identity (Berry, 1980; Zak, 1973). More recently, multi-dimensional approaches to acculturation have emerged to conceptualize ethnic minorities’ cultural adaptation (Abe-Kim, Okazaki, & Goto, 2001; Chae & Foley, 2010). Berry’s (1997) acculturation strategies and the self-identification acculturation research of Suinn and colleagues (Suinn, Khoo, & Ahun, 1992; Suinn, Richard-Figueroa, Lew, & Vigil, 1987) indicated that an individual may typically display one of four acculturation patterns as depicted in the fourfold theory by Rudmin (2003): integration (or bicultural identified), assimilation (or Western identified), separation (or Asian identified), and marginalization (or alienated).

Psychological Well-being

A large body of acculturation research has shown that there are strong relationships between individuals’ acculturation styles and their levels of psychological well-being among ethnic minority immigrants (Berry, 1997; Phinney, Chavira, & Williamson, 1992; Jasinskaja-Lahti & Liebkind, 2007). Using Berry’s model of four acculturation patterns (1997), Abu-Rayya (2007) found that female immigrants who adopted integration and assimilation styles scored higher on self-esteem, marital satisfaction and intimacy than ones living in the separation and marginalization patterns. Moreover, many researchers indicated that the integration or assimilation style is related to high levels of psychological well-being. For instance, assimilated individuals reported high levels of self-esteem (Phinney et al., 1992), high level of satisfaction with life (Brown, 2001; Lieber, Chin, Nihira, & Mink, 2001), high marital satisfaction and intimacy (Abu-Rayya, 2007), low level of stress (Berry, 2003), and low level of depression (Park, 2009). On the other hand, some research findings revealed that acculturation is likely to be inversely related to psychological well-being (Chae & Foley, 2010; Jasinskaja-Lahti & Liebkind, 2007; Sue & Sue, 1971). In the investigation of ethnic identity, acculturation, and psychological functioning among 334 Chinese, Japanese, and Korean American, Chae and Foley (2010) found that their Korean American participants who were more highly assimilated scored lower on psychological well-being. One possible explanation is that highly acculturated individuals are likely to have strong conflicts between their self-identity acculturated to the host culture and their home environment (Sue & Sue, 1971).

Internet Use

Internet use may be considered as a means of accessing resources for dealing with challenges during the acculturation process. The connection between acculturation and Internet use can be traced back to the relationship between acculturation communication and media. Scholars have long accepted that individuals' levels of acculturation are related to both communication and media use (Chen, 2010; Kim, 1980; Ye, 2005). Kim (1980) concluded that communication may be considered as a significant determinant of the acculturation level for individuals in the acculturation process. In 1980, Kim proposed a communication framework based on his finding that ethnic communication within individual's own ethnic group has negative effects on acculturation. Kim (1980) emphasized that ethnic communication limits the opportunity of intercultural communication that has a positive effect on acculturation. Similarly, ethnic media has been found to have negative impacts on acculturation (Beck, 1998; Chen, 2010; Kim, 1977). In recent years, researchers found that the Internet may be considered as a mass medium with the ability to fulfill personal communication and mediated needs (Charney & Greenberg, 2002; Morris & Ogan, 1996; Wang & Sun, 2009). The interactive nature of the Internet can allow users to seek information, pass time, make fun, look for a job, and communicate information (Charney & Greenberg, 2002; Papacharissi & Rubin, 2000). Accordingly, many studies regarding acculturation and Internet use were conducted including motives for Internet use in cross-cultural adaptation (Wang & Sun, 2009), Internet-usage patterns of immigrants (Chen, 2010), acculturative stress and Internet use among East Asian international students (Ye, 2005), and online support networks among Chinese international students (Ye, 2006).

Purpose of the Study

The purpose of this study was to examine the relationships of acculturation, Internet use and psychological well-being among Chinese International students studying in American colleges and universities and whether or not using the Internet was positively related to international students' acculturation and psychological well-being. In accordance with prior research regarding the Asian international students, the authors expected a positive relationship between Internet use and students' acculturation levels and psychological well-being. Further, the authors expected students in assimilation and integration styles to have positive psychological well-being. These students may use the Internet for more intercultural and/or less interethnic communication than those in separation and marginalization styles.

Methods

Participants

All participants were Chinese international students pursuing their undergraduate or graduate degrees in a large southwest research university in the United States. The two criteria for participants in this study were that participants must be both currently enrolled at the time of data collection and from Mainland China. To keep students' email address and personal information confidential, the researchers requested the current president of Chinese Student Association to distribute a recruitment email to all members in the mailing list. A total of 170 students responded to the survey. Table 1 presents the demographic statistics of participants.

Measures

In this study, the questionnaire was designed to measure major variables of interest, including: demographics, acculturation, psychological well-being, and Internet use.

Demographics. A demographic questionnaire was developed specifically for use in this study. Chinese international students who participated in the study were asked to provide information on (a) gender, (b) age, (c) academic level, (d) length of residency in the United States, and (e) GPA.

Table 1
Descriptive Statistics of Participants (N = 170)

Demographics	<i>n</i>	%
<i>Gender</i>		
Male	63	37.1
Female	74	43.5
Missing	33	19.4
<i>Age</i>		
18-23	34	20
24-29	78	45.9
30 and above	23	13.5
Missing	35	20.6
<i>Classification</i>		
Undergraduates	30	17.6
Master's students	53	31.2
Doctoral students	52	30.6
Missing	35	20.6
<i>Length of Stay in US</i>		
Under one year	55	32.4
One to two years	38	22.4
Three to four years	27	15.9
Five years or above	16	9.4
Missing	34	20

Acculturation. *Acculturation Index (AI)* (Ward & Kennedy, 1994; Ward & Rana-Deuba, 1999) was modified and used to measure participants' acculturation strategies in the current study. The original version of AI consists of two sub-scales of cultural maintenance and cultural assimilation with 21 cognitive and behavioral items that assess domains of acculturation (e.g., dressing style, food, friendship network). Participants rated each item on a 5-point Likert scale ranging from *Strongly Disagree* (1) to *Strongly Agree* (5). The scores on the sub-scales of acculturation identification and acculturation assimilation allowed researchers to investigate acculturation from either the bi-dimensional perspective or Berry's four acculturation strategies (Wang & Sun, 2009). Wang and Mallinckrodt (2006) conducted a study on Chinese international students in the U.S. and reported that coefficient alphas for the home and host culture subscales as .95 and .92 separately.

Psychological Well-being. *Depression Happiness Scale (D-HS)*. The D-HS is a 25-item self-report instrument that purports to measure positive and negative affective states (Lewis & Joseph, 1997; McGreal & Joseph, 1993). The D-HS consists of 12 items that measure positive indexes of well-being and 13 items that measure negative thoughts and feelings, such as "I felt cheerful" and "I felt sad." The total score ranges from 0 to 75, and items that measure negative affective states were reverse keyed to reduce acquiescence. Participants are asked to circle the

response that is most applicable to them (e.g., 0 = *never*, 1 = *rarely*, 2 = *sometimes*, 3 = *often*). Internal consistency of the instrument was reported .90 (McGreal & Joseph, 1993).

Internet Use. Papacharissi and Rubin (2000) developed an instrument for measuring amount of Internet use as the total number of hours of Internet use in a day. Respondents were presented with a grid, and asked to answer how many minutes they used each type of Internet function (e.g., reading email, staying chat room, reading news, listening music, playing games, and watching videos) on an average day. A total of Internet use was obtained by adding up different types of use. According to Papacharissi and Rubin (2000), the method has been used successfully to assess the amount of television viewing. Wang and Sun (2009) also adopted it to examine Chinese students' Internet use and cross-cultural adaptation. In this study, Internet use was measured by participants' self-reported time spent on each type of Internet function such as "reading email," "browsing websites," and so on.

Analyses

A power analysis was conducted to determine the number of participants needed in this study (Cohen, 1988). The estimated minimal required sample size for this study was calculated from a priori sample size calculator software. Given an anticipated effect size ($f^2 = .15$), desired statistical power level (.08), number of predictors (3), and probability level (0.05), the software tool yielded a minimal sample size of 76 for the regression analysis. This sample size was also corresponding to the calculated result for an ANOVA analysis based on power of .80 and a large effect size ($f^2 = .40$). All following analyses were performed using SPSS v20 for Windows.

Results

Prior to data analyses, the data were screened for univariate normality and reliability. In order to operationalize the individuals' acculturation styles according to Berry's theory (1997), the two subscales (cultural assimilation and cultural maintenance) of *Acculturation Index* (AI) were examined separately. Likewise, Internet use was split to interethnic Internet use and intercultural Internet use. Reliability for each scale was assessed using the internal consistency method. The reliability coefficients were as follows: cultural maintenance (.88), cultural assimilation (.87), psychological well-being (.86), interethnic Internet use (.89), and Intercultural Internet use (.79). Next, the univariate normality was checked for each variable of interest. According to Field's (2009) criteria of skewness ($|z_{skewness}| > 1.96$), cultural assimilation ($z_{skewness} = -2.74$), interethnic Internet use ($z_{skewness} = 6.34$) and intercultural Internet use ($z_{skewness} = 4.69$) were identified as being significantly skewed. To satisfy the assumption of normality, square root transformations were performed on the cultural assimilation and natural logarithms transformation on intercultural and interethnic Internet use.

Next, bivariate correlations were computed among cultural maintenance, cultural assimilation, psychological well-being, and Internet use. The results of the correlational analyses presented in Table 2 shows that only three of 10 correlations were statistically significant: intercultural Internet use, as expected, was inversely related to cultural maintenance ($r = -.46$, $p < .01$). Likewise, individuals' interethnic Internet use positively correlated with their intercultural Internet use ($r = .45$, $p < .01$). It was worth noting that the correlation between cultural assimilation and cultural maintenance was trivial ($r = .04$, $p = .68$), which supports that individuals can identify with the dominant culture and retain their original identity in a bidimensional process. Finally, cultural assimilation significantly correlated with psychological well-being ($r = .23$, $p < .05$). Both Internet use variables negatively correlated with psychological well-being.

Table 2

Correlations Among Acculturation Patterns, Internet Use, and Psychological Well-being ($N = 170$)

	1	2	3	4	5
1. Cultural Maintenance	--				
2. Cultural Assimilation	.04	--			
3. Intracultural Internet Use	-.08	-.04	--		
4. Intercultural Internet Use	-.46**	.14		--	
5. Psychological Well-being	.17	.23*	.45**	-.18	--
	1	2	3	4	5
1. Cultural Maintenance	--				
2. Cultural Assimilation	.04	--			
3. Intracultural Internet Use	-.08	-.04	--		
4. Intercultural Internet Use	-.46**	.14		--	
5. Psychological Well-being	.17	.23*	.45**	-.18	--

* $p < .05$. ** $p < .01$

Multiple regression analyses were performed for predicting the psychological well-being. First, to determine which demographic variables possibly affect the outcome variable, psychological well-being was regressed on each of coded demographic variables (e.g., gender, age, length of stay, degree being pursued, and GPA). Two of the variables were found to be significant predictors in the respective linear equations: age ($\beta = -.21, p < .05$), and degree being pursued ($\beta = -.25, p < .01$). Given that age and degree being pursued were normally equivalent, especially for younger students, a multiple regression analysis was performed using the stepwise method. The results were significant, $R^2 = .06$, adjusted $R^2 = .05$, $F(1, 108) = 6.65, p < .05$. Degree being pursued remained as the only predictor in the equation, ($\beta = -.29, p < .01$). Next, a multiple regression analysis was performed with degree being pursued, two acculturation variables, and two Internet use variables. To control for the effect of the demographic variable, degree being pursued and the other variables were entered as two ordered sets of predictors to assess whether acculturation levels and Internet exposure predicted psychological well-being over and above degree being pursued. The acculturation variables and Internet exposure accounted for a significant proportion of the psychological well-being variance after controlling for the effect of demographics, $\Delta R^2 = .09, F(4, 102) = 2.75, p < .05$. Table 3 summarizes the regression coefficients of the final multiple regression model. The four predictors altogether accounted for 12% of the variance in psychological well-being. Nevertheless, only degree being pursued ($\beta = -.22, p < .05$) and cultural assimilation ($\beta = .29, p < .01$) were found to be significant predictors. The strength of the relationships was .26 ($p < .01$) between psychological well-being and cultural assimilation and $-.26$ ($p < .01$) between psychological well-being and degree being pursued. Cultural maintenance ($\beta = .04, p = .71$). Interethnic Internet use ($\beta = .04, p = .75$), and intercultural Internet use ($\beta = -.07, p = .56$) did not demonstrate significant predictive power.

Given that cultural assimilation and cultural maintenance were independent of each other, the two indices were used to categorize the participants into four acculturation types. Using a median-split method based on the transformed scores, the individuals' acculturation types were identified as integration, assimilation, separation, and marginalization. Table 4 presented the descriptive statistics of the four acculturation types.

Table 3

Regression Analysis Summary for Variables Predicting Psychological Well-being (N = 170)

Variable	B	SEB	β
Degree Being Pursued	-.10	.05	-.22*
Cultural Maintenance	.03	.07	.04
Cultural Assimilation	.68	.22	.29**
Intracultural Internet Use	-.03	.10	-.04
Intercultural Internet Use	-.07	.11	-.07

$R^2 = .16$, Adjusted $R^2 = .12$, ($N = 170$, $p < .01$). * $p < .05$. ** $p < .01$

Table 4

Descriptive Statistics for Psychological Well-being, Internet Use According to Acculturation Type (N = 115)

Acculturation Type	n (%)	Chinese Internet Use		American Internet Use		Psychological Well-being	
		M	SD	M	SD	M	SD
Integration	33 (28.7)	2.37	0.31	2.24	0.31	2.06	0.39
Assimilation	27 (23.5)	2.61	0.51	2.35	0.40	2.00	0.33
Separation	28 (24.3)	2.41	0.36	1.98	0.34	1.88	0.35
Marginalization	27 (23.5)	2.49	0.43	2.37	0.47	1.90	0.36

To evaluate the group effects of acculturation type on psychological well-being and Internet use, three separate one-way analyses of variance (ANOVA) were performed. The ANOVA with psychological well-being was not significant, $F(3, 108) = 1.61$, $p = .19$, $\eta^2 = .04$, nor was that with Chinese Internet use, $F(3, 106) = 1.89$, $p = .14$, $\eta^2 = .05$. Only the ANOVA with American Internet use was significant, $F(3, 106) = 6.10$, $p < .01$, $\eta^2 = .15$. The strength of relationship ($\eta^2 = .15$) was revealed a large effect size (Cohen, 1977). Follow-up tests were conducted to evaluate pairwise differences among the means using Tukey HSD test. The post hoc comparisons revealed that the separation group spent significantly less time using the American Internet than any of the other three groups.

Discussion

The results of the data analyses partly supported the hypotheses. First, it was consistent with the popular assumption of acculturation research that a person can appreciate and identify with two different cultures independently (Rudmin, 2003). No significant relationship was found between Chinese international students' cultural maintenance and cultural assimilation. Second, among the hypothesized predictors of Chinese students' psychological well-being, only their cultural assimilation (e.g., identification with the U.S. culture) appeared to be a significant predictor. In other words, whether and to what degree Chinese international students maintain their Chinese identification does not have significant effects on their psychological well-being in the United States. The findings of the current study were consistent with Eyou, Adair and Dixon's (2000)

study with adolescent Chinese immigrants in New Zealand, which indicated that strong ethnic identity (e.g., Chinese identification) was not necessarily linked to psychological well-being. Third, while the results of this study did not endorse the effects of Internet use on psychological well-being, the non-significant yet negative regression coefficients suggest a possible negative impact of Internet use on psychological well-being (Morahan-Martin & Schumacher, 2000). The possible explanation is that very few participants spent more than 8 hours on the Internet. This finding adds to the current literature examining the relationship between Internet use and psychological well-being (Chen & Persson, 2002; Huang, 2010). Finally, it is also worth our attention that younger Chinese international students (ages 18-23) suffered significantly higher levels of stress and depression as compared to their older counterparts.

While no significant relationship was found between individuals' acculturation type and psychological well-being, it must be noted that the variances of the two acculturation variables were attenuated in the process of categorization, which has plausibly reduced the statistical power of the analysis. In terms of Internet use, the four acculturation types demonstrated significant differences in their American Internet use, but not Chinese Internet use. The separation group which particularly favored Chinese culture over the U.S. culture had a significantly lower level of exposure to American Internet, and individuals of this group also showed the lowest score of psychological-wellbeing. This finding was consistent with Chen (2010) who reported that Chinese immigrants who communicate via the Internet more frequently with local people were more adapted to the host country. On the other hand, those immigrants who spent more time on home culture via the Internet were less adaptive. Another possible explanation regards Internet use motives (Papacharissi & Rubin, 2000; Wang & Sun, 2009; Ye, 2005). Prior research identified Internet use motives including social involvement, acculturation, life satisfaction, and ethnic maintenance.

Conclusion

The authors concluded the study with the following recommendations. First, to enhance Chinese international students' psychological well-being, the top priority is to facilitate their acculturation process towards the identification with the U.S. culture. For instance, university authorities should help international students learn the U.S. culture so that they can successfully navigate the social, economic, and cultural spheres. Such an acculturation process does not entail the detachment from their Chinese identification. Second, results indicated that individuals with higher levels of cultural maintenance (e.g., Chinese identification) are likely to depend less on the Internet for intercultural and interethnic communication. Nevertheless, such an acculturation pattern does not necessarily lead to the impairment of one's psychological well-being. The integration group, for example, showed a medium level of Internet use but the highest level of psychological well-being among the four acculturation groups. Finally, particular attention needs to be paid to the undergraduate student population given that they suffer substantially higher levels of stress and depression. This issue is critical considering the rapid increase in Chinese undergraduate enrollment in recent years (Fischer, 2009).

Limitations and Implications for Practice

There were several limitations to the current study. First, the sample size ($N = 170$) was limited by a notable proportion (approximately 20%) of missing data. Such a sample size prevented us from performing more sophisticated data analyses. For example, some studies suggested that the relationship between Internet exposure and individuals' well-being is curvilinear, which adds to the complexity of the contribution of Internet use in the present study (Chen, 2010; Wang & Sun, 2009). The curvilinear (quadratic) function, however, can be best examined using structural equation modeling which is made impossible by the sample size. Second, the sample tended to be homogeneous in terms of demographics. The majority of participants were graduate students and

nearly half of them were between 24 and 29 years old. Furthermore, nearly one-third of participants had stayed in the United States for no more than one year. Therefore, the results of the present study might not be generalizable to other populations such as the emerging international undergraduate population. Lastly, although the application of the fourfold theory of assimilation, separation, integration, and marginalization yielded significant results in the present study, the theory itself had met much criticism in the past two decades. Rudmin (2003) summarized the criticism as “the critics . . . argued that it lacks utility and explanatory force” (p. 4). More importantly, a factor-analytic study (Vijver, Helms-Lorenz, & Feltzer, 1999) indicated that the four acculturation types measures only one dimension, not two or four. As a result, the authors recommended future studies investigate the psychometric characteristics of the fourfold theory scales prior to further analyses.

The present review offered two important implications for multicultural practitioners in counseling and psychotherapy. First, although Chinese international students encountered psychological challenges during the acculturation process, the intensity of the challenges was mediated by various factors. This review suggested that cultural assimilation is a significant predictor to Chinese international students’ psychological well-being. It may be helpful for counselors to encourage clients to learn how to adapt themselves to the local culture. For instance, counselors may encourage clients with lower levels of acculturation to participate in social networkings to improve their cultural assimilation. Second, one principle of ACA Multicultural Counseling Competencies (Arredondo et al., 1996) is to help culturally skilled counselor improve his or her knowledge and information about a particular group, particularly for clients who are student sojourners. As noted in the current investigation, acculturation patterns were associated with psychological well-being. These findings may provide implications for the counselors with regards to client’s acculturation pattern during the therapeutic process.

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About the Authors

Jia Qi Li is a doctoral candidate in the Counselor Education Program at Texas Tech University. He anticipates graduating with his PhD in Counselor Education in 2013. His research interests are diversity, multicultural counseling, school counseling, and international students. Jia Qi Li is corresponding author. Email: Jiaqi.li@ttu.edu

Xun Liu is a doctoral candidate in the Educational Psychology Program at Texas Tech University. She anticipates graduating with her PhD in Educational Psychology in 2014. Her interests concentrate on positive psychology, self-regulated learning, and strategy instruction.

Tianlan Wei is a doctoral student in the Educational Psychology Program at Texas Tech University. Her research interests are in gender differences in learning and development.

William Lan is Chair and Professor of Department of Educational Psychology and Leadership at Texas Tech University. He received his PhD from University of Iowa.