

Developing Tailored Messages to Improve Mental Health and Adjustment of Asian International Students

Lan Jin

Purdue University, USA

Lalatendu Acharya

Indiana University – Kokomo, USA

ABSTRACT

The purpose of the study was to develop tailored messages for improving mental health and adjustment of Asian international students (AISs) in the United States. The PEN-3 cultural model was used to contextualize the role of culture in mental health needs of AISs. Applying a mixed method approach, the study developed messages through a multistep participatory process consisting of three focus groups ($n = 15$ participants), 13 individual interviews, one expert consultation, and an online survey ($n = 85$ responses). Data analysis led to the development of seven broad themes with seven tailored messages under each theme, including increasing the awareness of mental health and reducing stigma; motivational quotes; available and accessible resources for AISs to improve mental health; seeking help from social network and developing interpersonal skills; adjusting to American culture and college life; coping strategies to reduce stress and improve mental health and adjustment; and safety issues. The implications for culturally responsive programs are discussed.

Keywords: adjustment, Asian international students, coping, intervention development, mental health, tailored messages

INTRODUCTION

Asian international students (AISs) account for approximately 70% of all international students in the United States, the majority of whom come from China (44%), India (24%), and South Korea (6%; Institute of International Education, 2019). Previous studies have illustrated that AISs may encounter unique stressors and adjustment challenges such as sense of confusion and uncertainty in a new cultural environment, language barriers, academic difficulties, social isolation, ethnic discrimination, legal status, and financial problems (Daga et al., 2020; S. Han et al., 2017; Mikal et al., 2015; Ra & Trusty, 2017). These stressors and challenges may increase the likelihood of psychological distress and mental health problems among AISs (Daga et al., 2020; S. Han et al., 2017) and impact their mental health help-seeking behavior (Wong et al., 2014). For example, X. Han et al. (2013) reported that 55% of Chinese international students had depressive symptoms. The different cultural and social context of the United States and its educational environment creates additional challenges. Acharya et al. (2018) found that 46.94% of their college student sample showed depressive symptoms, and international students reported a significantly higher level of depressive symptoms than domestic students.

Previous research showed that AISs experience more difficulties in culturally adjusting to the American environment than their European international peers (Ma et al., 2020). These difficulties are related to the collectivist cultural norms held by several Asian cultures (Triandis, 1995). Collectivist culture emphasizes interdependence, in which members are embedded into cohesive in-groups (Hofstede, 2011). Many AISs typically value family and friends as primary sources of social support in stressful situations and this is a strength, but not having a support system close by and operating in an individualistic cultural environment creates significant challenges. Further, the deep connections with friends and family have an unintended effect of putting them under internal pressure to perform well at school in order to bring honor to the family (Ma et al., 2020). As a result, AISs are less willing to seek outside help for mental health problems than their counterparts who are from individualist cultures that foster independence (Liu et al., 2020). Also, Asian cultures of emotional self-control and humility may result in depressive symptoms and unwillingness to seek help from mental health professionals (Wong et al., 2014). Despite the importance of this problem, there is limited understanding and exploration of culturally sensitive interventions on mental health and adjustment of AISs. To address these limitations, this study aimed to

develop culturally tailored messages for improving mental health and adjustment of AISs in the United States.

Messaging as a Strategy To Address AIS Mental Health

Messages are persuasive statements that are created to change behavior in a defined context. These messages could offer factual information or address behaviors in a structured stepwise process or offer workable alternatives (Morrison et al., 2005). In this study, messages are designed and tailored through a participatory process in order to address AIS mental health and help-seeking and other adjustment behaviors. Given the mental health imperative among AISs, supportive messages have been a strategy to assist students with mental health problems. Agyapong et al. (2015) found that supportive messages decreased depressive symptoms, compared with people who only used standard care. Gustafson et al. (2014) discovered that patients with substance abuse who received supportive messages reported fewer drinking days than the control group. Wei et al. (2011) reviewed the efficacy of using supportive messages to promote health behavior and found that 10 out of 16 randomized controlled trial (RCT) studies reported that the intervention group had significantly more improvement than the control group.

Tailoring, as a message strategy, provides specific content to the audiences based on their beliefs, traits, or needs (Kreuter & Wray, 2003). Tailored messages attract more attention, are handled more attentively, cover less unneeded words, and are often seen encouragingly by the message receivers, compared with untailored information (Kreuter & Wray, 2003; Lustria et al., 2013; Marcus et al., 2005; Smeets et al., 2006; Williams-Piehotta et al., 2003). When individuals observe information to be relevant to themselves, they are likely to be motivated and persuaded by the messages (Petty & Cacioppo, 1979). Tailored supportive messages have been proven to be effective to improve behavioral outcomes, such as adherence to cancer prevention, mammography screening intentions, and smoking cessation (Jin & Acharya, 2016; Kreuter et al., 2000; Noar et al., 2011; Strecher et al., 1994).

Further, cultural tailoring assumes importance as it may mirror the nuances of language and cultural practices, so that health messages are tailored to the community's spoken language, shared health beliefs, norms, expectations, specific barriers, social practices, and other characteristics (Bramley et al., 2005; Dobson et al., 2017; Nimmon et al., 2012). Cultural tailoring is a focused strategy to improve the outcomes of minority populations by using their cultural practices, philosophies, and preferences

as means to facilitate the behavior change (Fisher et al., 2007). Fisher et al. (2007) suggested that increased use of culturally tailored interventions would be likely to eliminate disparities, providing more value and cost-effectivity than untailored interventions. Therefore, this study focused on designing culturally tailored messages for AISs studying in the United States (Griner & Smith, 2006).

Difficulties and Challenges in Adjustment for AISs

AISs have encountered various challenges such as reluctance to seek help, low awareness of mental health and resources, stigmas, and difficulties in cultural adjustment (Daga et al., 2020; Johnson et al., 2018; Ma et al., 2020; Ruzek et al., 2011). Along with low intention to seek help, they are less likely to utilize professional mental health services, exhibit a high rate of premature dropout, and are underserved with psychological counseling (Chen et al., 2020; Liu et al., 2020). This underutilization of mental health services is caused by stigma toward mental illness, mistrust, lack of culturally appropriate service for Asians, limited English proficiency, and lack of culturally tailored messaging, etc. (Daga et al., 2020; Liu et al., 2020).

Another challenge AISs have faced is that they have limited access to their informal support systems in home countries because of geographic distance, time differences, and financial barriers (Ra & Trusty, 2017). Besides, losing face due to social stigma affects their help-seeking behavior regarding mental health (Ma et al., 2020). Ruzek et al. (2011) suggested that AISs with lower adherence to Western cultural values experienced more mental health problems, had lower help-seeking intentions, and underutilized professional mental health services. Their study explored these aspects through the PEN-3 model. AISs are often constructed as a monolith and are also grouped under the larger umbrella of international students. It is important to recognize the cultural and ethnic diversity among them and the complex nature of behaviors they display. However, the Asians as a cultural group also share a number of cultural norms, such as collectivism (e.g., pursuit of common interest), saving face, less self-disclosure than American culture, and value of family honor (Daga et al., 2020; Ma et al., 2020). The goal of this study was to take note of this diversity in AISs and focus the scope to the mental health help-seeking behaviors of AISs and their adjustment to American culture and college life. Therefore, the study put Asian culture at the center of message design and development, with the goal of improving mental health and adjustment of AISs. To facilitate this, we chose the PEN-3

model of health behavior as the theoretical framework, which centralizes culture in health interventions.

Theoretical Framework

The PEN-3 model puts culture at the core of intervention development and implementation (Airhihenbuwa, 1990). It is based on the idea that health behavior is rooted in culture, and that consideration of cultural factors can facilitate the development of successful programs. The model places a health problem within a cultural context in order to guide the intervention development among AIs (Airhihenbuwa, 1995; Airhihenbuwa & Webster, 2004). This model has been widely applied to develop culturally adapted interventions for target populations (Airhihenbuwa et al., 2009; Cowdery et al., 2010; Iwelunmor et al., 2014; Yick & Oomen-Early, 2009). In addition, the PEN-3 model centralizes culture as a frame while identifying health problems, organizing cultural components, and developing the solutions to ensure that the intervention is culturally specific (Airhihenbuwa, 1995).

Previous studies on mental health among minority populations have argued for the need to utilize culturally relevant models in planning for tailored interventions. As outlined in the literature, cultural, structural, and individual factors shape individuals' cultural perceptions about mental illness, beliefs about seeking help, actual help-seeking behavior, who services are targeted to, and what interventions are developed (Iwelunmor et al., 2014; Liu et al., 2020). Given the importance of these cultural forces, the PEN-3 model is a relevant model to guide culturally adapted interventions. The model includes three interrelated and interdependent primary domains, each with three components exploring the concerned culture:

1. Cultural identity, with the components of person, extended family, and neighborhood (PEN), recognizes that health interventions can occur at the person, extended family, and neighborhood levels.
2. Relationships and expectations, with perceptions, enablers, and nurturers (PEN), emphasizes the aspects that affect the person, family, and/or community behaviors.
3. Cultural empowerment, with positive, existential, and negative (PEN) influences, emphasizes the central role of cultural appropriateness in health promotion programs. This domain illustrates the full range of the influences of culture, from positive to negative (Iwelunmor et al., 2014).

The study employed the PEN-3 model, centralizing culture in the core of appropriate intervention, to design the tailored messages to promote mental health among AISs.

METHOD

The study used a mixed method approach to develop the tailored messages through a multistep participatory process consisting of three focus groups ($n = 15$ participants), 13 individual interviews, one expert consultation, and finally an online survey ($n = 85$ responses). A mixed methods approach enables the researchers to collect both qualitative and quantitative data thereby capitalizing on the strengths of both methods. True to the mixed methods, this study purposefully integrated both qualitative and quantitative data in collection, analysis, and interpretation stages of designing the messages.

Participants

The participants included 113 undergraduate AISs, recruited through convenience sampling at Purdue University. The eligibility criteria included: (a) ages 18 years and older; (b) full-time undergraduate students; and (c) international students identifying themselves as Asian and holding a F-1 visa. The criteria were assessed through yes/no answers. The participants self-identified as Asian and also noted their country of origin. They also self-identified their gender. As noted earlier, all participants were grouped together as AISs for the purpose of data analysis and message development. Flyers on campus were distributed for recruitment. The study was approved by the Institutional Review Board of Purdue University.

Procedure

In the first step of data collection, we conducted focus groups to understand the preferred content of messages by AISs and the cultural context. After designing tailored messages based on the participants' input, we requested feedback from an Asian therapist from the Counseling and Psychological Center at the university in terms of appropriateness of the messages. Afterward, we conducted individual interviews with further Asian participants to refine the initial messages. Then, we evaluated the degree of helpfulness of the messages through an online survey. Last, we picked 49 tailored messages for use in a subsequent intervention study.

Step 1: Determining Topics of Messages Through Focus Groups

We conducted three focus groups with AISs ($n = 15$ participants) to help create the topics, content, context, and length of tailored messages. We asked participants to complete a demographic survey and then attend a focus group with the researchers. The questions in the focus group included “What topics and contents of messages would you like to receive via email for improving your mental health and adjustment?”; “How long should the messages be, and how often would you like to receive them?”; and “What would motivate you to read these messages”? Each participant received \$10 for incentive. The focus groups yielded 50 pages of data, which we thematically analyzed using constant comparative methods (borrowed from grounded theory) within the PEN-3 framework resulting in seven broad themes. The PEN-3 framework provided the larger categories under which we coded the data was (the process of data analysis is described below).

Step 2: Designing Content of Tailored Messages

Within each theme, we designed 10 tailored messages (total 70) guided by the PEN-3 model and literature (see Table 1; Sue et al., 2012; Updegraff et al., 2007). Each message contained a 100- to 200-word text or an image.

Step 3: Receiving Inputs from an Asian Psychotherapist

An experienced Asian psychotherapist from the university counseling and psychological services center examined the 70 messages under the seven broad themes and gave inputs. The psychotherapist was invited for the purpose of ensuring that the designed messages were appropriate and sensitive to Asian cultures, and did no harm to students’ emotional well-being. She had extensive experience working with AISs, and was capable of providing feedback on how to make the messages more appropriate for AISs. For example, the psychotherapist suggested adding content about “perfection” into the messages, which were found to commonly cause stress among AISs; removing a few quotes (e.g., “Pain is real. But so is hope” and “My dark days made me strong”) that were viewed as unhelpful or discouraging. The researchers further modified the messages based on the psychotherapist’s suggestions.

Step 4: Getting Feedback from Individual Interviews to Refine Messages

A sample of 13 AISs reviewed the modified 70 messages and were interviewed for their feedback. The questions for the participants included “What do you think about these messages you just read?” and “How would you suggest to improve these messages to make it appropriate and helpful for Asian international students’ mental health and adjustment?” We further refined and tailored these 70 messages from the interview responses. For example, they added information about on-campus resources suggested by the participants (e.g., student organizations, discrimination resources, and wellness resources); included more examples for clarity (e.g., “For example, International Friendship Program connects...”); and changed the wording (e.g., from “simply realize what is happening to you” to “develop understanding of the changes you are experiencing”; from “depression” to “concerns and troubles”). Each participant received \$10 as incentive.

Step 5: Testing Helpfulness of Messages in Online Survey

We tested the 70 refined messages through an online survey among AISs ($N = 85$ respondents) on a research participation system, which could be accessed by all undergraduate students. Each AIS respondent was randomly exposed to four themes (40 messages in total, in a random order), and was asked to evaluate the helpfulness of messages in each topic (1 to 5 Likert scale with 1 indicating *extremely unhelpful* to 5 indicating *extremely helpful*; the question was “how helpful is this message to improve your mental health and adjustment?”). The participants received 0.5 course credit on survey completion.

Step 6: Finalizing Tailored Messages

We analyzed the evaluation of helpfulness of messages, ranked them according to their mean score of helpfulness, and picked the most helpful messages. We finalized a total of 49 messages under the seven themes.

Data Analysis

We used a constant comparative method (CCM) borrowed from grounded theory in analyzing the data from the focus groups and developing the messages and themes guided by the PEN-3 framework (Glaser & Strauss, 1967; Strauss & Corbin, 1998). We identified descriptive categories as soon as the focus group data collection had begun, through a process of

constant comparison and comparing codes applicable to each category under development (Glaser, 1992).

Table 1
Cultural Identity Dimension of the PEN-3 Model

Dimension	Cultural Identity		
Components	Person	Extended family	Neighborhood
Cultural elements	Asian international students	Family support	Faculty
		Friend support	Cultural organizations

Table 2
Relationships and Expectations Dimension of the PEN-3 Model

Dimension	Relationships and expectations		
Components	Perceptions (Attitudes, views, or knowledge about mental health or seeking help)	Enablers (Factors that are facilitators or barriers to mental health and help-seeking)	Nurturers (Important social network who provides support)
	(Attitudes, views, or knowledge about mental health or seeking help)	(Factors that are facilitators or barriers to mental health and help-seeking)	(Important social network who provides support)
Cultural elements	Stigma attached to mental illness	Social support system	Family
	Need for mental health information	Language barriers	Friends
	Belief that people should rely on self to manage mental health	Available resources	Cultural organizations
	Cultural differences	Cultural differences	
	Interdependence in Asian family		

These categories influenced the development of the following focus groups, so that the emerging concepts might be explored more thoroughly, answering questions that had been raised from the analysis of previous data (Boeije, 2002; Guba & Lincoln, 1994).

We transcribed the recorded focus groups' responses verbatim and analyzed them line by line, using open coding to code as many categories as possible from the data (Strauss & Corbin, 1998). Starting with open coding (e.g., "Stigma attached to mental illness"; "Need for mental health information"), the analysis attempted to identify discrete concepts that could be sorted first (Glaser, 1978). We examined the data sentence by sentence to develop the concepts (Denzin & Lincoln, 2011). Next, we grouped together the discrete concepts that related to the same categories. Subsequently, we used axial coding to formulate relationships within and among the categories. Lastly, we used selective coding to integrate these categories and come up with the central themes (Strauss & Corbin, 1998).

Table 3

Cultural Empowerment Dimension of the PEN-3 Model

Dimension	Cultural Empowerment		
Components	Positive	Existential	Negative
Cultural elements	Available and accessible resources	Knowledge about cultural differences	Stigma
	Social network support	Self-control strategies	Difficulties in adjustment and building social network in the US
	Family support	Campus safety and laws	
	Friends support	Family expectations	

The PEN-3 model guided this process of data analysis. Specifically, we used the PEN-3 model to shape the cultural elements in messages for AISs. During selective coding, we put the codes into the components of the three PEN-3 domains. Afterwards, we created a 3'3 matrix to produce nine cells by crossing the components of the domain of cultural empowerment with the domain of relationships and expectations, based on cultural identity. Then, we developed the central themes and placed them

into the appropriate cells within the matrix (see Table 1 to Table 4). We maintained rigor through constant discussions and reflections and coming to an agreement on each point of difference in coding the data.

Further, we showed a sample of the analysis to some participants for their feedback, thus ensuring rigor and quality. The consultation with the Asian psychotherapist also strengthened the process.

RESULTS

Table 5 summarizes the participants' demographic profiles. Over half of the participants identified as females (51.3 %) and 48.7% identified as males. The mean age of the participants was 20 years and they were distributed across 12 countries in Asia with one reporting from the Middle East and seven choosing the "Other" option. Nearly 40% of the participants identified China as their country of origin, 13% India, and 11% South Korea, thus reflecting the actual top three countries from which international students come to study in the United States. The number of years that the participants had studied in the United States ranged from 1 to 7 years ($M = 2.57$; $SD = 1.6$). The helpfulness analysis yielded 49 top ranked (most helpful) messages from the 70 messages, unevenly distributed among the seven themes (see Appendix A for sample of the messages). We identified the top 49 helpful messages for a later intervention. The themes of the messages were: increasing mental health awareness and reducing stigma ($n = 7$); motivational quotes ($n = 10$); available and accessible resources for AISs to improve mental health and adjustment ($n = 6$); seeking help from social network and developing interpersonal skills ($n = 7$); adjusting to American culture and college life ($n = 6$); coping strategies to improve mental health and adjustment ($n = 10$); and safety issues ($n = 3$). The mean score of the helpfulness of the 49 tailored messages was 3.88 out of 5 (ranging from 3.54 to 4.24; 1 indicating *extremely unhelpful* to 5 indicating *extremely helpful*), indicating that the participants perceived the tailored messages as helpful in general.

Emerging Themes on Topics of Messages

The following section describes the seven themes that emerged from the analysis of focus groups guided by the PEN-3 framework, which formed the topics of designed messages.

Increasing Mental Health Awareness and Reducing Stigma

The participants indicated that many AISs were not familiar with mental health issues, or had low awareness of mental illness symptoms. Sometimes the students did not realize that they were at risk of mental illness. For example, Participant (P) 15 described, "You should provide

Table 4. 3 '3 Matrix for Designing Tailored Messages for Asian International Students

Domains	Cultural Empowerment		
Relationships and expectations	Perceptions	Positive	Existential
		Negative	
Enablers	Theme 1: Information to increase awareness of mental health and reduce stigma in Asian students (need for mental health information)	Theme 5: Adjusting to American culture and college life (transition into American colleges, understand cultural differences, deal with sense of uncertainty, get involved on campus)	Theme 1: Information to increase awareness of mental health and reduce stigma in Asian students (stigma attached to mental illness)
	Theme 2: Motivational quote	Theme 6: Self-control strategies to reduce stress and manage anxiety (physical activities; calmness; keep a stable mind; physical health; entertainment; time-management skills)	
	Theme 3: Available and accessible resources for Asian students to improve mental health (mental health services, language skills, communication, academic help, cultural organizations, career consultation)	Theme 7: Campus safety for Asian students	-
Nurturers	Theme 4: Building relationships with American peers and faculty (social network support is important)	Theme 4: Communication strategies in Asian family for seeking help (expectations of family)	Theme 4: Building relationships with American peers and faculty (hard to make friends with Americans; do not want to bother others)
	Theme 4: Communication strategies in Asian family for seeking help (family is a primary source of support; interdependence)		

Table 5
Demographics (N = 113)

Characteristics	<i>n</i>	%
Sex		
Female	58	51.3
Male	55	48.7
Year in school		
Freshman	36	31.9
Sophomores	27	23.9
Juniors	26	23.0
Seniors	23	21.2
Region of origin		
China	52	46.0
India	17	15.0
South Korea	15	13.3
Taiwan	6	5.3
Indonesia	4	3.5
Malaysia	4	3.5
Singapore	2	1.8
Japan	1	0.9
Philippines	1	0.9
Thailand	1	0.9
Vietnam	1	0.9
United Arab Emirates	1	0.9
Bangladesh	1	0.9
Other	7	6.2
Age (<i>M, SD</i>)	20.2	2.13

some information about the symptoms of mental health problems...” P7 stated, “I would like some statistics about what is going on like how many students have depression problem, so that I will feel that I am not the only person who feels depressed.” P3 indicated, “The first section can be how to increase awareness of symptoms of depression or risk factors, anxiety—they are increasing awareness about mental health.”

Motivational Quotes

The participants pointed out that they would like to read motivational and positive quotes about mental health. The messages in this theme included short motivational statements/quotes and Asian proverbs. For example, P5 mentioned, “I will read if the messages contain motivational statements. I like reading poems—some statements that are short and meaningful; something that I can digest. I like inspiring statements that urge me to overcome the difficulties.” Similarly, P19 described,

These are motivational quotes and also relatable for students because at times they will face a lot of difficulty in their personal life or academics. I feel like these are inspirational and reading them reminds me that I can overcome any kind of hardship.

Available and Accessible Resources for AISs to Improve Mental Health and Adjustment

The participants emphasized that they wanted information about accessible and available resources such as mental health services, academic assistance, physical activity groups, the Asian cultural center, student organizations, and international student resources. For example, P14 said, "I think the messages should contain information about what help we can get from which resources, and when they can help me with solving the problems in these areas..." P17 stated, "I hope that international students can take advantage of the programs and resources on campus. I think it would be great if you could list all the resources."

Seeking Help from Social Network and Developing Interpersonal Skills

The participants described that when they encountered emotional or psychological problems, sometimes they were not willing to seek help or did not know how to seek help from family and friends, due to stereotypes or a tendency to solve problems on their own. This theme closely resonated with the first theme of "stigma" as it prevented participants from seeking help regarding their mental health issues. P1 stated,

I think maybe stereotypes also play a role [in my help-seeking behavior]. Everyone expects Asians to be smart, and that does not apply to me, because I am bad at math. Sometimes I hesitate getting help, because I feel like other people assume that I am intelligent.

P6 noted,

When there is some problem, most of us try to deal with it on our own and we rarely ask for help. So, I feel like whenever there is a problem, they should definitely go and seek help from maybe their friends, or academic advisor, or anyone.

Additionally, the participants were not sure how to build a good relationship with American peers or how to interact with faculty. The participants offered several suggestions, such as getting involved in a program, making friends with both American and international students, engaging in online interaction, and being active. P25 indicated that "it is hard to cross that barrier if you build it so fast and so strong. So, I would suggest that Asian students make efforts to interact with peers from other cultures from the beginning". P14 said, "You can make friends with the

dorm RA or your classmates. Start with a familiar person. You do not have to force yourself to make friends with a stranger.”

Difficulty in interacting with instructors/faculty was an additional issue that AISs needed guidance on. Although the participants desired to have a good relationship with the instructors/faculty, they did not know the appropriate approach to interact, saying, “I would like to receive messages about establishing a positive relationship with faculty”; “I am still not sure how to build a good relationship with the American faculty. I would expect to interact with the faculty like friends and to have a stable and long-standing relationship with the faculty.”

Adjusting to American Culture and College Life

The participants responded that when they came to the United States, they were struggling with a sense of confusion and unfamiliarity, and did not know how to better adjust to American college and culture. The participants pointed out that attending programs on the campus was a great way to know about the university culture, get along with diverse students, enjoy various activities, and become comfortable with the unfamiliar environment. For example, P19 suggested,

There is an organization called “UR Global,” which is for international students. I attended their activities in my first semester, and then as a volunteer and peer educator. There is also an organization “CRU” in the church. They have an international brunch; whose staff and volunteers are Americans. I learned a lot about culture and getting involved in local activities from them.

P22 mentioned,

You can also talk about the organizations that celebrate similar things. With Chinese New Year coming up, there is the Chinese association and the Malaysian association to celebrate with food and snacks. There are people out there that celebrate the same things as you do and understand.

American Classroom Norms. The participants perceived that there were great differences between the Asian classroom and the American classroom, which made the process of engaging more difficult for them. For example, P6 narrated,

It is very different between the US and China. In China, the teacher often calls your name in the class; but in the US, the students always have their hand up, asking or answering questions. They do not care if they are wrong or right. But in China it is different, because before you put your hand up, you have to

think about if your answer is right or not. Sometimes nobody answers, because the students are afraid that they are wrong.

Cultural Differences. Large differences between Asian and American culture were another issue that hindered the progress of cultural adjustment of AISs. For example, P1 stated, “American culture is so different from ours. I am not used to American culture, like they have a lot of parties, they play balls on the roadside, and say hi to you even if you are a stranger.” The participants believed that there were many aspects in American culture that are different from Asian culture, while the prior is more open and active and the latter is more introverted.

Coping Strategies To Improve Mental Health and Adjustment

The participants required specific strategies that they can use to improve mental health and adjustment, such as positive thinking, problem-solving skills, time management tips, healthy eating, coping with stress, and physical exercise. P18 stated,

There was a lecture about mental health, telling you how to transform negative thoughts. Shift your thoughts. I think it is a good skill to have. You can also include some strategies about problem-solving skills. For example, first figure out what causes your distress and look for ways to solve it.

P6 mentioned,

I would like to receive practical messages that contain specific strategies to reduce stress and eat healthy food. I like to do some exercises, like playing soccer or basketball, to help reduce pressure. Purdue University fitness center offers classes like swimming, dancing, Zumba, yoga, and Pilates - all that kind of stuff.

Safety Issues for AISs

The participants implied that as AISs, they were not familiar with the safety issues in the United States, which caused pressure. For example, one participant emphasized the need of increasing safety awareness and knowledge:

Safety is another critical issue. Lafayette is a safe place, but there are some aspects you need to be aware of, such as sexual harassment. It is not a topic that is discussed at the incoming student orientation. So, you might offend others unintentionally, or get harassed by others; we need to know how to deal with safety issues.

Therefore, this theme introduced what the students should do to keep safe, and if they have safety problems, where they could go for help. This theme also contains updated information about campus events for Asian students.

Other Features

From the focus groups, the participants also emphasized some desirable features of the messages they liked, such as text that was short, concise, funny, inspiring, specific, or attractive, which was taken into account in developing the messages. For example, P16 described that “I would like to get known the tips to reduce anxiety or manage stress are helpful. More specific they are, the more useful to me. For example, walking, or riding a bike –something you can do easily.”

Application of the PEN-3 Model in Developing the Message Content

After determining the topics of messages through focus groups, we designed the tailored messages content using the PEN-3 cultural framework, centralizing culture at the core of the health seeking behavior of the AISs. Application of the PEN-3 model occurred in three steps. In each step, we explored a domain of the model and the cultural inputs incorporated into the message.

Persons, Extended Family, and Neighborhoods

First, we studied the available literature on the mental health and adjustment needs of AISs studying in the United States.

Perceptions, Enablers, and Nurturers

Second, we determined perceptions and enablers (systemic factors) that may restrict or promote mental health and adjustment of AISs, and the degree to which their family and community (nurturers) shaped their cultural values around mental health. We adapted the messages to increase acceptance and potential benefits based on identified perceptions, enabling and nurturing cultural factors. The tailored messages delivered substantial information about mental health and adjustment, improving the awareness of AISs and reducing stigma toward mental illness and help seeking (perceptions). We also developed tailored messages to reflect the specific barriers and protective factors experienced by AISs. These messages featured Asian culture and family contexts including idioms and other cultural elements, such as interdependent relationship with social groups, perseverance, and filial piety (perceptions and enablers). Additionally, the messages contained the information about available local resources for

AIS populations, as well as interpersonal communication strategies with people from diverse cultures (enablers and nurturers).

Positive, Existential, and Negative

Third, we identified cultural norms, practices, and behaviors that play a good role, no role, or harmful role in promoting mental health and adjustment in AISs. We conducted literature review, focus groups, and interviews to address knowledge deficits and benefits of cultural norms regarding mental illnesses. For example, positive components included values emphasizing collectivism in enlisting family and social networks for assistance, values focusing on harmony, and garnering support from other AISs in cultural networks. Existential components were, for example, the Chinese conceptualization of illnesses, which is rooted in the principles of yin-yang and the concept of qi (Taylor & Willies-Jacobo, 2003). Negative components included pressure to maintain harmony, conflict-free relationships, and shame (Yick, et al., 2009). Taking these components into account, we incorporated motivational messages about the benefits of mental health, education on depression, learning about coping skills, and building resilience into the tailored messages.

DISCUSSION

Overall, the tailored messages developed through the participants' inputs reflected Asian cultural norms and AISs' specific needs, which helps AISs address their challenges in the United States (e.g., weak social support, lack of awareness of mental health and available resources, and struggle in asking for help from family and peers). The research enriches prior studies in highlighting the importance of culturally tailored interventions (Dobson et al., 2017; Fisher et al., 2007). The study reinforces that tailored messages attract more attention, are handled more attentively, cover fewer unneeded words, and are often seen encouragingly by the message receivers (Lustria et al., 2013; Marcus et al., 2005; Smeets et al., 2006). Such cultural tailoring functions through raising the personal relevance of messages, which motivates and persuades individuals to change behaviors (Hawkins et al., 2008). Therefore, cultural tailoring may facilitate building of a comfortable and ideal environment in programs that focus on minority populations' needs (Hawkins et al., 2008; Rimer & Kreuter, 2006). The study calls for more culturally tailored interventions that incorporate cultural elements and address needs of underserved groups. Future research could embed the tailored messages into interventions, such as virtual training programs, and investigate the effectiveness of such tailoring in promoting mental health and adjustment of AISs or beyond.

IMPLICATIONS

Tailoring increases the persuasive effectiveness of a message (Kreuter et al., 2000). This study indicated that cultural tailoring could be a practical avenue for advancing culturally responsive interventions. For example, the messages could be used in items such as bookmarks and distributed in incoming student orientation, and pamphlets could be made using the messages as content, designed with images. Apart from that, the tailored messages have the potential to be applied in culturally adapted interventions with other treatments among the AIS population, and improve mental health and adjustment effectively.

The study offered recommendations from the PEN-3 perspective to develop culturally appropriate interventions among AISs. Harnessing Asian value systems (e.g., emphasis on collectivism and social support, saving face, and emotional management) was essential to the development of culturally sensitive interventions (Wong et al., 2014). For example, interventions that promote AISs' interpersonal skills with diverse people can help them build a stronger social support network in the United States. Overall, using the PEN-3 cultural model as the theoretical framework enabled us to identify the intervention entry point as well as promote the perceptions, enablers, or nurturers that are positive, acknowledge those that are existential, and notice the negative. In other words, effective culturally adapted intervention for AISs is as much about stimulating these positive values as it is acknowledging negative values.

Each of the three PEN-3 model dimensions can be used to direct mental health promotion and tailored interventions among AISs. Discussed here are some suggestions for application of these three dimensions in culturally sensitive programs. First, as many Asian communities are collectivist and get their cultural identity from their extended family, neighborhood, and community, those elements should be at the forefront of intervention planning and implementation. Collaborating with members of the community (e.g., peers, faculty, resident assistant, and physicians, etc.) during all stages of the culturally responsive intervention is essential—for example, from designing the tailored messages based on local context to disseminating and utilizing the messages during interactions with AISs. Second, empowering AISs to communicate with families, peers, and other community members (e.g., instructors, faculty, and psychological counselors) can motivate AISs to seek mental health support. For example, improving AISs' understanding of differences in interpersonal relationships and communication styles between the American culture and their own culture may help them

effectively interact with people in the university. In addition, tailored messages can include communication strategies used in Asian families for seeking help, such as high-context communication that focuses on underlying context and tone, or use of different means of communication (e.g., written communication). Third, identifying positive cultural norms, such as collectivistic values, family and peer support, and/or traditional festivals hosted by student organizations, can strengthen the cultural relevance of tailored messages. For example, the study suggests that culturally sensitive programs emphasize the message that AIS should view their family, friends, and faculty as a source of support and seek help when facing psychological stress, rather than concealing the problems to save face; AISs should seek proximity to family support emotionally (e.g., “my parents always trust me”) or physically (e.g., video chatting) to overcome the challenge of geographic distance and promote adjustment into U.S. college (S. Han et al., 2017).

Limitations and Strengths

The study has several limitations. First, the research did not measure the mental health status of the participants. Therefore, the results may not be generalized to student populations who have major mental health problems. Despite this, the focus of the study is to develop tailored messages that meet needs of AISs and help build their resilience in general, regardless of their current mental health status. Second, a further investigation on the impact of the designed messages would provide an insight on whether these messages can promote the mental health of the participants significantly. Third, the study examined AISs as a broad group to maintain statistical power. Further research on within-group differences in AISs who are composed of diverse cultural backgrounds might reveal differential needs on message tailoring and reactions to the messages.

However, the study has a number of strengths. The research applied a mixed method approach to collect data and develop the messages, including focus groups, individual interviews, and a survey. The mixed methods approach allowed us to acquire in-depth data guiding the design and development of helpful and appropriate messages for AISs. In addition, this study adds to the literature on developing culturally competent programs for the AIS population in the United States (Johnson et al., 2018). The study used the PEN-3 model to centralize culture, integrate culturally relevant factors in the design of culturally tailored messages, and promote mental health and adjustment of AISs through a cultural lens. Research investigating the application of the PEN-3 model on mental health among AISs is missing from the field of culturally sensitive programs, and this research fills that theoretical gap. The results

of the study have great potential to be used in practice in international student programming, such as by university administrators, counselors, physicians, staff, faculty, mentors, and peers.

CONCLUSION

In summary, the study developed tailored messages for improving AISs' mental health and adjustment through the PEN-3 cultural framework. We tailored the messages to AISs' difficulties and concerns, including challenges with adjusting to American culture, unwillingness to seek help, social interaction difficulties, and inadequate awareness of mental health and available resources. These messages reflected Asian cultural norms related to mental health, such as collectivism, interdependence, the stigma attached to mental illness and help-seeking, the value of self-management, etc. The study underlined the importance of cultural tailoring as a strategy for intervention in higher education, which may facilitate building an inclusive climate on campus (Hawkins et al., 2008; Rimer & Kreuter, 2006). Future studies could evaluate the effects of tailored messages compared with untailored messages. In addition, future research may test the effectiveness of tailored messages delivered in different formats (e.g., text, image, and video).

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Author Biographics

LAN JIN, PhD, is an intercultural research specialist in the Center for Intercultural Learning, Mentorship, Assessment and Research (CILMAR) at Purdue University. Her major research interests lie in the area of intercultural competence development, program design and evaluation, and mental health of international students. Email: jin124@purdue.edu

LALATENDU ACHARYA, PhD, is an assistant professor in the Department of Allied Health Science at Indiana University Kokomo. His research examines the different pathways to influence health behavior and address disparities through participatory health communication, health promotion and marketing interventions. Under this thematic area, he works on addressing health behavioral issues and disparity outcomes in the fields of mental health and environmental health, especially in adolescents, college students, and vulnerable communities. Email: lacharya@iu.edu