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Attitudes Toward Complementary And Alternative Medicine In College Students As A Function Of Nationality, Familiarity, And Personality Traits

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ABSTRACT

Personal and cultural forces leading to health care choices that deviate from conventional medicine have been minimally investigated. Success with treatment of illnesses is reliant on an adequate understanding of factors that influence attitudes and beliefs about medicine. The purpose of this study was to examine the relationship between attitudes toward complementary and alternative medicine (CAM) among college students as a function of American or Asian nationality, Familiarity/Exposure to CAM, and the personality construct of Openness to Experience. A web-based survey instrument was administered to 72 Asian international and 76 American college students at Indiana State University. No significant differences were found between attitudes of Asian students and American students. Within the total sample, positive attitudes toward CAM were found to be related to older age, more Familiarity/Exposure to CAM, and higher levels of Openness to Experience. After controlling for age, Familiarity/Exposure to CAM was found to be a significant predictor of positive attitudes in Asian students and Openness to Experience was found to be a significant predictor of positive attitudes in American students as initially hypothesized. Results are discussed in terms of their implications for health care professionals in addressing young adults' needs for effective and culturally sensitive treatment and a better understanding of predictors of CAM use.

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CHAPTER 1

INTRODUCTION

Overview

Use of complementary and alternative medicine (CAM) has been on the rise in the United States. The use of CAM therapies such as acupuncture, meditation, yoga, deep breathing, massage therapy, and naturopathy have increased in recent years (Barnes, Bloom, & Nahin, 2008), with Americans spending almost $35 billion each year on alternative therapies that insurance plans do not cover (Szabo, 2009). CAM is becoming increasingly recognized by health institutions as effective and as a useful addition to traditional medicine. There has been over a 50% increase in visits to alternative health care practitioners from 1990 to 1998 (Eisenberg et al., 1998) and according to the Centers for Disease Control and Prevention and the National Institutes of Health, in the past 10 years alternative therapy use has grown by over 25% (Szabo, 2009). For example, in 2007 alone, approximately 40% of American adults utilized CAM (Barnes et al., 2008).

Beliefs and values associated with culture and health are significant factors in predicting health care behaviors and choices. A randomized double-blinded trial that recruited student volunteers from the ages of 18-30 indicated that positive attitudes toward CAM can predict an individual's use of CAM (Brien, 2004). The Attitudes towards Alternative Medicine Scale (AAMS) was developed by Finnigan (1991) as a response to the lack of research about the

increase in alternative medicine use, in that the development of such a scale would allow for quantification of commitment or interest to alternative medicine. The AAMS is utilized in this study to measure attitudes toward CAM.

Mixed results have been found regarding the ability of positive attitudes to accurately predict treatment results (Lewith, Hyland, & Shaw, 2002). However, the literature has suggested that positive attitudes toward CAM impacts not just frequency or intensity of CAM use, but it may also affect treatment outcomes. In terms of subjective health ratings, individuals who endorsed Openness to Experience reported better physical functioning and overall health, suggesting that this personality trait is of particular interest for this study.

The types of diseases and illnesses that are affecting people are increasingly of a chronic nature compared to infectious diseases that were common in the past (Autoimmunity Research Foundation, 2012). In order to effectively combat this emergence of chronic disease, the field of health care needs to respond by developing new strategies involving holistically oriented health care and innovative methods of treating illness that can be integrated into both health care practice settings and educational curriculum (Burke, 2009). Including perspectives of CAM into training programs, universities, hospitals, and other health care facilities may contribute to the potential health promotion in the United States over time. Acquiring a better understanding of the relationships and patterns between CAM and conventional health care practices and behaviors will help us to effectively accomplish this.

The purpose of this study was to examine attitudes toward CAM in young adults, and specifically how familiarity with CAM and the personality construct of Openness to Experience are associated with attitudes in American students, in contrast to students who identify as Asian

international students. It will also expand on how nationality, with the implication of cultural identity, and Openness to Experience may be related.

In general, Asian Americans maintain good health better, with generally lower morbidity rates compared to other minorities, and utilize health resources much less (Kronenberg, Cushman, Wade, Kalmuss, & Chao, 2006). Asian international students may be more familiar with culture-specific CAM compared to American students. The Asian international population is a specific group of interest because of the unique sources of CAM that come from Asian roots. CAM then may be a strong resource for minority health, especially with an Asian immigrant or international population. Individuals who have recently moved from Asian countries may be more likely to practice health care or traditions that are from their specific countries. In fact, Kronenberg et al. (2006) found that the practices associated with traditions from Asian individuals' home countries are frequently used.

Differences in use of health care and types of health, and even health practices are important to understand, especially with increasing diversity within the United States and in areas increasingly catering to multiple minority groups. There has been very limited research on CAM use among different minority groups. Differences in health between ethnic groups may also reflect these observations, with conventional methods of health care being unable to perhaps fully cater to individuals who use culturally relevant CAM for health care. Physicians and other health care professionals may not be well educated about types and methods of CAM. Physicians' understanding about CAM and their patients' possibly concurrent use of CAM with conventional medicine could be very important for assessing treatment and problems that are culturally appropriate and take attitudes, values, and traditions into consideration. Minority populations may be less likely to discuss their CAM use with their doctors due to lack of physician

sensitivity or knowledge about CAM. Communication between patients and physicians would potentially increase with increased education and knowledge about CAM.

Research in the medical field has mostly been carried out on conventional forms of medicine and medical systems based on those developed in the United States. Increased knowledge about patterns of CAM, attitudes and beliefs associated with different groups and modalities of CAM, as well as personality traits associated with different groups, would allow health care providers to begin to systematically understand and incorporate this into medical models of conceptualizing health and comprehensive systems of care with all cultural groups in the United States.

The following section will consist of an introduction on the definition and classifications of CAM, CAM use for physical and mental health, other relevant factors related to CAM use and the topic of integrative medicine. Additionally, Asian origins and influence on CAM will be discussed, in addition to general influences of an individual's environment on health values and beliefs. Following this is a section on prevalence of Asian and American CAM use. The AAMS will then be introduced. Research on personality traits and health practices, as well as CAM use will be reviewed and the choices of college students as a sample will be discussed. A brief rationale for using Internet surveys and their limitations will then be addressed. Finally, a review of the purpose, hypotheses and implications of the study will conclude the Introduction.

Definition and Classifications of CAM

Established in 1998 as part of the National Institutes of Health (NIH), the National Center for Complementary and Alternative Medicine (NCCAM; n.d.) is an example of the increasing relevance of CAM. What exactly makes up complementary and alternative medicine? NCCAM (2007) defined CAM as "A group of diverse medical and health care systems, practices, and

products that are not presently considered to be part of conventional medicine" (Caldwell & Winek, 2006, p.102). CAM consists of four domains, including mind-body medicine, biologically based practices, manipulative and body-based practices, as well as energy medicine. As more and more approaches are included and integrated into traditional or conventional methods of health care, this definition is modified. The definition of CAM has intentionally been narrowed here so as to achieve a degree of specificity needed for the purposes of this paper.

CAM whole medical systems have developed separately from conventional medical systems in the United States and are qualitatively different. Following the classification of therapies used by the National Health Statistics Reports, acupuncture, homeopathic treatment, naturopathy and traditional healers are included under alternative medical systems. In the medical system of homeopathy, disease is treated by drugs in small amounts, and in naturopathy, noninvasive methods (no surgery or synthetic drugs) of treating illness are used to help with the natural healing process (NCCAM, 2007).

Included in this study are categories of biologically based therapy, mind-body therapy, manipulative and body-based therapy and energy therapy. Biologically based therapies involve natural substances and include the use of herbal products. Such use is considered part of "cultural practices passed down from generation to generation" (NCCAM, 2007). The section on mind-body therapies include yoga, meditation, *qi gong*, and *reiki,* also known as energy healing therapy. Mind-body therapies also include *taichi* (meditative, controlled and slow exercise movements carried out for balance and relaxation originating in China). Energy therapies will be classified under this section, following the organization of the National Health Statistics Reports, including *reiki*, literally "universal energy life force" in Japanese which involves massage therapy and relaxation, and *qi gong*, "energy cultivation" from China, involving breathing, and

concentration of movement and meditation to improve *qi* (energy). Massage, although found to be endorsed by over 50% of college students, is an integral part of some CAM whole medical systems such as *Ayurveda* or traditional Chinese medicine and is therefore included in this study. For the purposes of this paper, certain treatments have been excluded for various reasons, for example being very commonly endorsed, being well-understood, empirically supported techniques, or having the most definitions, such as prayer, deep breathing, chiropractic, and progressive relaxation. CAM for the purposes of this paper is defined as non-Western influenced healing techniques that are potentially useful. Chelation therapy (a chemical process in which molecules are bonded and held tightly so as to be able to remove toxic or excess metals from the body) will also be included, due to its very infrequent use, as a validity detector (Barnes et al., 2008).

Patterns and Prevalence of CAM Use

As mentioned in the overview, approximately 40% of adults in the United States endorse CAM use and about 12% of children do as well (NCCAM, n.d.). CAM utility has been prevalent particularly for medical conditions in which course and prognosis are not easily predicted, in which a cure is not known, or with conditions whereby the patient deals with pain or side effects associated with use of medication (NCCAM, n.d.). The most common conditions CAM is utilized for according to the NCCAM are back pain, menopause, gynecology, pregnancy related illnesses, rheumatology, gastroenterological diseases, rhinsinusitis, attention/hyperactivity problems, psychiatric/neurological problems, cancer, HIV/AIDS, asthma and disabilities. Jones, Maloney, Boneva, Jones, and Reeves (2007) surveyed 440 fatigued and 444 nonfatigued people, and found that CAM use was found to be commonly utilized by those with already underlying physical and mental health conditions. Using information from the National Health Interview

Survey, Okoro, Zhao, Li, and Balluz (2012) found that individuals with functional limitations used CAM more than those without, 48.7% compared with 35.4%. Prevention and wellness were cited by individuals as the main reasons for using CAM, with mind-body therapies having the highest use at 27.4%. Female gender and higher levels of education/income are associated with greater CAM use. While prevalence of CAM use was found to be equal across all races, the NCCAM noted that modality differed with each racial group. Relevant to the present study, it was found that Asians were more likely to use CAM compared to both African Americans and Caucasians when prayer and megavitamins were excluded. Across adults, natural products (nonvitamin/mineral) are most common.

CAM Use for Physical Health

Studies have been carried out on CAM use for physical difficulties. For example, in surveying attitudes and use of CAM therapies for temporomandibular disorders, psychosocial functioning, physical health, and health behavior, DeBar, Vuckovic, Schneider, and Ritenbaugh (2003) found that out of 192 participants, about 63% reported using CAM, with massage being the most frequent and the most satisfactory. Out of these 63%, almost all reported using CAM along with conventional medicine or health care. DeBar et al. found that participants who reported CAM use had more medical problems, were older, and reported more positive psychological functioning. These findings support the hypothesis of lack of satisfaction with conventional treatments, referring to individuals with more experience with medical difficulties, and who have tried multiple methods of health care. These individuals may have greater experience with conventional health care across their lives, and may be more inclined to be CAM users with positive attitudes toward CAM as a consequence. Other hypothesized reasons for CAM use include wellness, health awareness, and increased participation in decision-making. It

has been found that lifetime use of CAM increases progressively with age, across all age cohorts, suggesting a lasting and stable impact on health care behaviors (NCCAM, n.d.). Rates, type, and intensity of CAM use among HIV infected men have been examined by Burg, Uphold, Finley, and Reid (2005). The study found that CAM use was related to certain health and psychosocial variables, but not most demographic factors, indicating that perhaps demographic factors play less of a role in predicting attitudes toward CAM or CAM use.

Dorn et al. (2007) were interested in understanding and estimating the magnitude of placebo response rate in CAM for irritable bowel syndrome (IBS) patients. They conducted a systematic review and meta-analysis of randomized placebo controlled clinical trials of CAM therapies for from 1970-2006. IBS patients are known to commonly use CAM and Dorn et al. found that the rate of placebo response for CAM was comparable to placebo response in trials for conventional medicine in treating IBS. Horneber et al. (2011) reviewed studies from 18 countries and over 65,000 cancer patients and found that current use of CAM across studies was approximately 40%. Their meta-analysis noted a continuing rise in CAM use from 25% in the 1970s and 1980s to about 49% after 2000 in cancer patients.

CAM Use for Mental Health

Unützer et al. (2000) conducted a telephone survey named The Healthcare for Communities that assessed for CAM use employing specific examples, and elicited information on whether participants used CAM either through a practitioner or on their own. They assessed demographic factors; mental health, drug and medication use; utilization of health services; daily activities; and presence of insurance coverage. They were particularly interested in primary health care visits that had to do with mental health. Unützer et al. (2000) found that 15% of those who endorsed that they used alternative medicine were utilizing it for substance abuse or mental

problems. Kessler et al. (2001) also found that depression, chronic pain, fatigue, anxiety and insomnia were cited as problems that CAM was most commonly used with – that it is more popular among individuals who have psychiatric problems compared to the general population. Additionally, Moss, Monti, and Newberg (2011) noted that individuals with mood disorders are increasingly turning to CAM, in particular, herbal remedies, acupuncture, and meditation. Libby, Pilver and Desai (2012) conducted a study on people with posttraumatic stress disorder and found that 39% of 599 individuals reported using CAM (most frequently mind-body treatments) for psychological problems within the past year. CAM was used at about the same rate as was conventional mental health. Eighteen percent of these individuals used CAM to complement conventional mental health treatment, and 20% used CAM as an alternative to conventional mental health treatment.

Attention deficit hyperactivity disorder **(**ADHD**)** is a recent area in which CAM use has been considered part of treatment, Pellow, Solomon, and Barnard (2011) found that biologically based treatments (to include herbal products, nutritional supplements, and changes in diet) and homeopathy were most commonly used to treat ADHD. Findings in a randomized double-blind, placebo-controlled cross-trial that used CAM in 62 participants over a period of 6 weeks showed that ADHD symptoms were be reduced overall when compared to a placebo group. That reduction included progress made in academic, social, and emotional behaviors. CAM has also been used with children with autism spectrum disorders (Wong, 2009).

CAM Integration With Conventional Medicine: Development of Integrative Medicine

The recent increase in the integration of CAM and conventional medicine, and observation of this trend on a macro level, allows us to follow its professional evolution as a social movement. Initially, CAM was isolated and shunned in the medical field, and currently, it

is being reassessed and integrated with what we understand as conventional medicine. Perhaps eventually, an end stage of assimilation or amalgamation with conventional medicine will result (Stratton & McGivern-Snofsky, 2008). There are multiple factors that contribute to the acceptance, and integration of CAM, including values and a shift to include medical practices that do not come from Western origins alone. CAM is increasingly seen as an alternative or counterpart to Western medicine instead of being perceived as mere superstition or as unscientific. Some medical schools are in the process of changing their curricula to better reflect these changes by adding CAM components and electives. The New Ageism movement beginning in the 1950s, and more recently, in the 1970s, the development of the holistic health movement, further fueled CAM being absorbed into conventional medicine (Baer & Coutler, 2008). Type of lifestyle and availability or accessibility of CAM resources also contribute to the growing acceptance of CAM. Structural change relating to budget or finance increases toward exploring or investing in CAM also influence this accessibility through pharmacies, hospitals, and clinics now offering CAM.

With the integrative medicine model, knowledge about CAM as well as referrals to CAM practitioners, are conveyed to patients by clinicians. Clinicians may also use specific CAM with their practice or be involved with multidisciplinary integrative groups of practitioners where conventional and complementary and alternative therapies are incorporated (Baer & Coutler, 2008). Providers from various disciplines may also see patients together in the same setting, examples being integrative care at a hospital or at an academic medical center. The experience of CAM may also make available an interaction of patient-provider experience that is more positive and personalized (Burke, Wong & Clayson, 2003).

In integrative medicine, each individual is perceived as having unique health care challenges in a holistic way with physical, mental, spiritual and emotional components all contributing to health or disease. These components are then used as focus points for healing, with treatment recommendations ideally incorporating all four parts. Mykelbust et al. (2008) gave the example of a patient with diabetes and hypertension who was struggling with obesity. For addressing the mind, relaxation practices such as meditation or deep breathing would be recommended for stress reduction, as stress is known to be a trigger for both blood sugar elevations and blood pressure. For addressing the body, improved nutrition should include multiple servings of fruit and vegetables daily, providing options for physical fitness, supplements, as well as conventional diabetes medication. To address the spirit, daily spiritual practice could be recommended to increase life purpose and create meaning for challenges. To address emotion, cognitive behavioral therapy, which has shown to help with new lifestyles and weight loss, could be recommended. Besides these four main components, other important aspects are also taken into consideration—economic limitations and access to health care, cultural background, how severe the illness or condition may be, and interdisciplinary communication among all relevant parties.

Knowledge about how CAM works relates to a potential increase in health literacy that can be utilized as an intervention (Long, 2009). A concrete example of this: If it is discovered that there is evidence of the importance of advice-giving within a CAM therapy through a trusted practitioner which leads to positive or enhanced health behavior, this information can be applied to other avenues with a provider-patient relationship. Increased behavioral health occurs from simply providing information, to developing skills through that patient-provider relationship, and then with individuals taking these skills for more control of their health, better decision making

with self care and so on. Research has shown that the role of complex factors in the success of healing therapies (for example, intention in the use of *qigong*) has been important, with results related to a practitioner's conscious efforts and affect, pointing to the complex relationship between human biology and human consciousness, and again to the holistic nature of many CAM therapies, addressing and utilizing both body and mind in healing (Shao, Zhang, Chen, Zhang, & Chen, 2009).

Integrative medicine and care ideally have specific inherent elements of being patient centered. An emphasis on wellness, the individualistic process of healing, as well as the interaction of the mind, body and spirit in health, encouragement of personal responsibility for health care are aspects of integrative medicine. Coordination and collaboration among interdisciplinary areas and providers are part of the supporting structure of a patient's health care experience. An emphasis on evidence-based thinking during integration of conventional medical treatments and CAM therapies focus on CAM therapies that are known to be efficacious and safe. Benefits to such an end resulting in the evolution of health care would include the combination and growth of new health philosophies and skills. The individual patient would possess increased choices, be able to focus more on his or her health difficulty, along with reduced attention on reimbursement issues.

Currently, multiple systems and areas are undergoing change due to rapid transformations and instability globally, including social, financial, political systems, and the health care system is likewise affected, with the potential for a revolution, or evolution with modifications to the structure and identity of health care as we know it (Jobst, 2009). The integration of the best parts of biomedicine and CAM does not refer simply to the availability of alternative therapies in mainstream health care, but may require a new plan and vision that approaches both systems and

the potential implications in a realistic and holistic manner. This era of change may result in a deeper understanding of health and practitioners who draw on the art of healing and science for best practice. Caspi and Baranovitch (2009) pointed out that true integration requires a not just a policy-based change, but a conceptual one, of collaboration between conventional medicine and CAM. The concept of evidence-based medicine involves not just evidence from clinical trials but also the individualized consideration of patient beliefs as well as internal factors like resources and personality traits.

Asian Origins and Influences on CAM

With the increased awareness and popularity of the mind-body connection and a more holistic perspective of health and wellness, the use and acceptance of CAM has generally increased. Physicians who are trained in Western medicine were found to have greater beliefs in "mind-body dualism", while those trained in Oriental medicine had greater beliefs in a "health-disease continuum," holding beliefs based more toward a healing process that is natural and holistic, with psychology impacting health (Lee, Khang, Lee, & Kang, 2002). They also noted that the "socialization process" during medical education between Western-based medical physicians and Oriental-based medical physicians may also contribute to the differences. Many CAM techniques originate in Asia, particularly in Chinese and Indian cultures. Therefore, it makes sense that individuals of Asian origin would use CAM more, and be more knowledgeable about it due to a similar socialization process. According to Emad (2006), criticism regarding Americans who study and practice CAM; for example exists; it is implied that without knowledge of the Chinese language, acupuncture cannot be accurately practiced. An "ignorance of the words with which that knowledge has been created and preserved" results in inaccurate

knowledge, with the conclusion that "a profession that cannot assert mastery of its source knowledge cannot claim control of its field" (Emad, 2006, p. 411).

The use of CAM also includes cultural factors that involve a high degree of acceptance in facilitating health or healing methods that are not conventional or mainstream. Additionally, in groups of people who originate from non-Western cultures, Western medicine may not be perceived to apply to certain illnesses that exist in those cultures. There may not be conceptualizations of certain diseases or afflictions, for example, the imbalance of *qi* in the body, and, thus, there are no appropriate cures. It also should be noted that individuals from minority language and ethnic groups may also experience institutionalized or internalized racism when receiving health care or interacting with health care providers. As a result, this may increase their acceptance and positive attitudes towards CAM in comparison to conventional medicine (Garrett, Dickson & Whelan, 2008).

Rössler et al. (2007) hypothesized that CAM use is actually contingent on values and beliefs that have been longstanding in an individual's life. This refers to the values and beliefs that an individual holds from youth or young adulthood and stem from his or her socio-cultural background. Results supported the relationship between values and CAM use in a longitudinal survey study involving six waves of interviews at 21, 23, 28, 35, 39 and 41 years of age with 591 participants. Participants were first interviewed at age 21 and were a representative sample of youth from the decade period of the 1970s. Results indicated that values and beliefs that had been expressed in younger years predicted future CAM use. The study's findings showed that attitudes that have been held since youth are good predictors of CAM use. This is applicable to immigrants or international students who have mainly been raised in home environments that reflect their culture before moving the United States.

Influences of the Environment on Health Values and Beliefs

The influences of an individual's environment can impact health care behaviors, and thus their use of and attitudes toward CAM. Bindler and Ball (2007) introduced the Bindler-Ball health care model, suggesting that in order for the promotion of health care in children, one has to recognize the influences of the family, culture, and community. Health care in this sense involves health promotion (not simply the maintenance of health), and acute and chronic care. This can be extended beyond the health care of children, to adolescents, as well as adults.

Culture, community and family in the understanding of health and health care. Bindler and Ball (2007) pointed to the roles that the family plays in child development with communicating culturally based traditions and knowledge through the process of nurturance and education of the child. The community part of the paradigm, according to Bindler and Ball, influences a child's self-concept and understanding of health care. It also serves as support for particular practices or methods of health care, as well as general support for spiritual, physiological, and mental health. Culture encompasses and interacts with both these factors, influencing the family and society in terms of beliefs, norms and goals related to health. Cultural background influences how an individual perceives cause of illness or injury, health and child rearing. Furthermore, cultural values and ways of life influence type and quality of health care. For example, the authors indicated that health practices to do with reducing stress and eating are often culturally linked.

Social and cognitive aspects of developing attitudes and values. Further supporting these findings, Nowak and Dorman (2008) found that knowing others who use CAM is a significant predictor of CAM use, supporting the influences of these three factors. Modeling through imitation of family members, and exposure to CAM within a cultural or community

context supports social learning and the development and maintenance of attitudes regarding CAM. Attitudes about CAM thus have relationships with cognitive and behavioral factors. Attitudes about CAM were examined in this study as a function of national/cultural identity through exposure from culture, family and community.

Attitudes about CAM in young adult sample. Since attitudes and beliefs formed in youth or young adulthood may have a long lasting effect on individuals, in this study the population of focus are young adults – so as to acquire an accurate and initial snapshot of their attitudes towards CAM in relation to cultural identity through nationality. Values and beliefs about health care are transmitted from a young age through the family, culture and community and this study identified who was more likely to have positive attitudes about CAM, as well as if this was consistent with the health beliefs in their background. This study investigated the extent that previous relationships and predictions of attitudes about CAM were still applicable so as to acquire a better understanding of the influences and interactions of family on positive attitudes and use of CAM. Because this study was carried out with a university population, results may not generalize to individuals who have not participated in higher education.

Asian and American CAM Use

According to the 2007 National Health Statistics Reports, 43.1 % of Caucasian American adults utilize CAM, with the highest modality being biologically based therapies, by 22.7% of Caucasian Americans. 39.9% of Asian Americans were found to utilize CAM, with mind-body therapies being used most by 23.3% of Asian Americans (Barnes et al., 2008). It is important to note that the Asian American population, while having many similarities with an Asian immigrant or international population, will also have many differences. Kronenberg et al. (2006) found that while Caucasian women are most likely to use CAM compared to other racial groups,

a wide variety of CAM, and use CAM in conjunction with conventional medicine, research has shown that ethnic minorities are the highest users of culturally relevant CAM. Frye, Sierpina, Boisaubin, and Bulk (2006) studied medical students and found that among them, minority and economically disadvantaged students were more likely to use CAM compared to majority students. An-Fu (2006) hypothesized that individuals with better education, a higher perception of need, with less accessibility to conventional health care, and with particular beliefs about health are more likely to use CAM than is associated with an ethnic background. Ethnic identification comprises a multitude of possible background factors and beliefs that a person may associate with or feel connected to—inclusive of but not limited to religious, racial, national, ritual, and attitudinal group identification. Values and beliefs, customs and traditions, lifestyles and personality types are also possibly factors that define or relate to identification with a specific ethnic group. For example, it was found that about one sixth of Asian Americans utilized traditional Chinese medicine or acupuncture. It was also found that a lower level of proficiency in English was also associated with Asian individuals who utilized CAM that was ethnic-specific. This is likely related to accessibility, comfort, and acculturation levels, which may influence acceptance of conventional medicine. An-Fu also linked data of the California Health Interview Survey (CHIS) of 2001 with the CHIS of CAM, inclusive in five languages. Asian Americans were found to use traditional Chinese medicine, and in general Asians endorsed a higher rate of CAM use overall that was related to their cultural background. For example, CAM has found to be used for children with autism spectrum disorders with higher frequency among Chinese parents compared to Western parents (Wong, 2009), with the type of CAM use in Western culture being mainly biological-based therapies, and acupuncture being most commonly used among Chinese parents.

However, it should be noted that results of research are still mixed on racial prevalence of CAM use. There have been some studies that have indicated that overall CAM use on part of Asian Americans is not significantly different from CAM use in Caucasian Americans. Of 19 studies reviewed documenting use of CAM among racial and ethnic minorities; seven studies showed that CAM is not used more among ethnic groups than among Caucasian populations (Struthers & Nicholas, 2004).

Disclosure of CAM use to conventional medical providers may be helpful indicators of patterns of use. From the 2002 National Health Interview Survey, Chao, Wade, and Kronenberg (2008) found that Caucasians had the highest rate of CAM disclosure (41%) and Asian Americans, the lowest (27%). In addition to relaxation therapies, low-disclosure types of CAM included *yoga, tai chi* and *qi gong,* all of which have Asian origins, suggesting ethnically relevant CAM use, and at the same time, suggesting a low endorsement rate of CAM use by Asians.

Understanding cultural issues and values behind health care choices and practices may be useful to health care providers, as well as for creating policies and programs about health care in the United States (Kronenberg et al., 2006). In order to understand patterns in certain subgroups of college samples, the complexity of background and other factors that influence attitudes toward CAM is important to examine. Assessing if and how attitudes toward CAM and use of CAM vary between groups can benefit health care providers and researchers in understanding patterns and trends.

Attitudes Toward Alternative Medicine Scale for Assessing Attitudes and Use

The Attitudes toward Alternative Medicine Scale (AAMS; Finnigan, 1991) consists of 14 positive or negative statements about CAM practices, how CAM works, and beliefs and values

about health. The AAMS was created and validated in response to the lack of a scale that could measure an individual's commitment to or interest in CAM. After initial feature elicitation was used to create the statements and studies conducted to generate responses, correlation and factor analysis was used to condense and refine statements of the scale. Adequate discriminative power was found to exist for the 14 statements, with a high score indicating a rejection of CAM and negative attitudes toward CAM. Seven main factors were included. Factor 1 is a general concept of the advantages of CAM, particularly in contrast to negative effects from conventional medications. Factor 2 is related more to acceptance in relation to how available CAM was and its practicality. Factor 3 is a deeper construct of commitment to a core philosophy about CAM, beyond simple acceptance, and involving belief about the basis of which CAM works. Factor 4 is about uses of CAM and results of using CAM. Factor 5 is a belief about CAM being an impediment to conventional medicine. Factor 6 is about attacking facets or features of conventional medicine, and Factor 7 contains major problems related to conventional medicine.

Lewith et al. (2002) carried out a randomized double-blind, placebo-controlled study with asthmatic patients to assess the validity of the AAMS. Lewith et al. explored whether patients improved due to a placebo effect related to using CAM. The AAMS revealed acceptable test-retest reliability but was somewhat lacking in terms of validity. There was no evidence found for a placebo effect. Specifically, positive attitudes about CAM were not associated with any positive or negative affect, functioning in their respiratory systems, or quality of life. White (2003) conducted a clinical trial of 63 subjects randomly assigned to placebo and actual treatment of acupuncture for chronic neck pain. The AAMS was administered before and after a course of treatment. No significant differences in attitudes between groups at baseline were found. Similar to Lewith's findings, White found that attitudes toward CAM did not have any

bearing on treatment outcome, however, it was noted that scores on the AAMS increased significantly following a course of treatment. The AAMS has also been used to evaluate attitudes on CAM in 2,875 United Kingdom physicians, with generally positive attitudes found (Lewith, Hyland & Gray, 2001).

An 11-item scale, the Holistic Complementary and Alternative Medicine Questionnaire (HCAMQ; Hyland, Lewith, & Shaw, 2002) was a potential option for assessing attitudes or beliefs toward CAM, with six of the questions assessing beliefs about CAM's scientific validity, and the other five assessing beliefs about holistic health. The HCAMQ has good test-retest reliability and was shown to measure distinct constructs in both sections with good internal validity; however, as the HCAMQ is a relatively new scale, external validity has not yet been established. Araz and Harlak (2006) developed the Scale for Attitudes towards Complementary and Alternative Medicine (SACAM) and surveyed 291 individuals in Turkey. It was found to be valid and reliable following psychometric testing. They found that individuals who used alternative, in addition to conventional medicine, had significantly higher scores than those who only used conventional medicine. However, due to sample limitations of high educational level and Turkish location, further research is needed for generalizability and predictive validity. The AAMS was ultimately chosen as the best option for assessing attitudes toward CAM.

The Five-Factor Model of Personality

Developed by Digman in 1990, the five factor model refers to the structure of personality, consisting of five categories that are enduring and relatively independent of each other: Extraversion, Neuroticism, Agreeableness, Conscientiousness and Openness to Experience. The five-factor model is frequently used for evaluating relationships between health and personality (Goodwin & Friedman, 2006; Marshall, Wortman, Vickers, Kusulas & Hervig, 1994; Taylor et

al., 2009; Terraciano & Costa, 2004; Tolea et al., 2012). The NEO-PI-R, BFQ-2, and the HPI are examples of different measures of the five-factor model (Vecchione, Alessandri, & Barbaranelli, 2012). Prior to the solidification of research about personality structure, previous personality instruments did not assess for all factors (e.g., the Eysenck Personality Questionnaire). The NEO-PI-R was developed to specifically operationalize the five-factor model (Costa, McCrae & Kay, 1995).

The NEO-PI-R. The NEO-PI-R is a personality inventory based on the five-factor model of personality (Costa & McCrae, 1992), including traits of extraversion, neuroticism, agreeableness, conscientiousness and openness to experience, with 30 eight-item facet scales, six for each of the five basic personalities. The NEO PI-R has been used to look at associations between ratings of both mental and physical health in older adults, and personality traits. The NEO PI-R has high factorial validity in representing the five-factor model of personality. A factor analysis of the facets of the NEO PI-R was carried out on a sample of 500 men and 500 women. Each facet had the highest loading on the anticipated factors, and secondary loadings were found to be appropriate and meaningful (Costa, 1996), confirming that the internal structure of the NEO PI-R is consistent with the model. These same findings appeared in peer ratings and self-reports, in younger, as well as older adults, in both men and women, in Caucasian and non-Caucasian samples, and in clinical and nonclinical samples, indicating validity and suitability of the inventory in measuring personality. The NEO-PI-R has also been found to have high internal consistency being used for multiple purposes (e.g., perfectionism, eating disorders, with Openness to Experience in particular at a .87 level; McCrae & Costa, 1989). The NEO-PI-R is available in both pencil and paper and computer forms and has also been translated and validated

into different languages and with different cultures, having high internal consistency, making it an appropriate scale for the student population of this study.

Costa and McCrae (1997) used data from six translations of the NEO PI-R (German, Portuguese, Hebrew, Chinese, Korean and Japanese samples) to assess the cross-cultural generalizability of the five-factor model. The sample had over 7,000 participants and all showed similar structures after varimax rotation of five factors. When targeted rotations were used, the American-factor structure was closely reproduced, even at the level of secondary loadings. The NEO PI-R has also been translated into many other languages, such as French and Tagalog and used in approximately 50 cultures (McCrae, Costa, Del Pilar, Rolland, & Parker, 1998). Because the samples studied represented highly diverse cultures with languages from five distinct language families, these data strongly suggest that the personality trait structure is universal, and that the NEO PI-R can be utilized for interpretation in an accurate manner across cultures as it appears to be universally biologically based (Yang et al., 2002). Findings about personality traits using the NEO PI-R are then able to be generalized across multiple settings.

Bagby et al. (1999) administered the NEO PI-R to 176 psychiatric patients and compared the factor structures to normative data. They were found to be almost identical, with all five factors of Neuroticism, Agreeableness, Extraversion, Openness to Experience and Conscientiousness having significant congruence. The NEO PI-R has been used in a variety of settings and populations. It has been administered to participants with anxiety problems (e.g., social phobia, panic disorder) and in the Baltimore Epidemiologic Catchment Area Follow-up Study carried out by Bienvenu et al. (2001) to examine the personality traits associated with major depressive disorders. Obsessive compulsive disorder, general anxiety disorder, and major depressive disorder were found to be associated with high scores on Neuroticism. For example,

low Extraversion was associated with social phobia, dysthymia, and agoraphobia. Pathological gamblers have found to be higher scorers on impulsivity and lower scorers on the facets of deliberation and self-discipline (Bagby et al., 2007). The NEO PI-R has also been used across 26 cultures and replicated across both college student ages and adult samples. Costa, Terracciano and McCrae (2001) found that there are gender differences, which reflect women scoring higher in Neuroticism, Warmth, Agreeableness, and Openness to Feelings, and men scoring higher in Assertiveness and Openness to Ideas, with variation in gender varying across cultures. It was also found, surprisingly, that these gender differences were strongest in Western cultures (including European and American) compared to more traditional cultures.

The subscale of Openness to Experience of the NEO-PI-R (Costa & McCrae, 1992) includes six aspects of Openness to Experience, including feelings (being open to emotions and valuing emotional experience), values (willingness to examine values), actions (an inclination to do carry out new activities), fantasy (having a bright imagination), aesthetics (ability to appreciate arts) and ideas (enthusiasm for new ideas). The facets of Openness to Experience have yielded high test-retest reliability, and the following validity coefficients: 0.58 (fantasy), 0.73 (aesthetics), 0.50 (feelings), 0.57 (actions), 0.75 (ideas) and 0.49 (values).

Openness to Experience: A Core Dimension of Personality

During adolescence, Openness to Experience was found to increase in both boys and girls, while other traits were mostly unchanged (McCrae et al., 2002). This indicates that college-aged students (over 18) are at a point in their personality development where Openness to Experience is relevant. Additionally, when the domains were examined for stability, Openness to Experience was found to have the highest gender-equal stability. Also, it was found that the stability of the personality trait of Openness to Experience actually increased slightly over time

(Rantanen, Metsapelto, Feldt, Rulkkinen, & Kokko, 2007). These findings have important implications for the strength and constancy of Openness to Experience in individuals, indicating that even over time and across genders, the trait of Openness to Experience is likely to continue to be a steady influence and constant presence in peoples' lives, maintaining in affecting their decisions and choices about health care over time. This finding indicates the importance of personality traits and behaviors associated in identifying individuals who are more at risk and encouraging engagement of self and health behaviors that promote a better course of health within long-term diseases.

Research on Personality Traits and Health Practices

Research has been carried out on the relationship of personality traits to beliefs about intelligence, prejudice, marital satisfaction, attitudes about change, self-efficacy, self-direction, suicidal ideation, and so on (Enns, Cox & Inayatulla, 2003; Ekehammar & Akram, 2007; Gaunt, 2006; Higgins, Peterson, Pihl, & Lee, 2007; Roccas, Sagiv, Schwartz, Knafo, 2002; Tay, Ang, & Van Dyne, 2006). There has been a modest amount of research done on the associations between personality and health practices and behaviors, as well as health itself. Results of studies have related dimensions of personality to smoking (Terracciano & Costa, 2004) and profiles of drugs users (Terracciano, Lockenhoff, Crum, Bienvenu & Costa, 2008), both of which involved engagement in unhealthy behaviors. For example, the personality trait of Neuroticism may contribute to impulse control issues and more dangerous behavior choices that can directly and indirectly influence health (Lockenhoff, Sutin, Ferucci & Costa, 2008). Negative feelings and pessimism, which is often associated with Neuroticism, also tend to be related to negative ideas of a person's health. Individuals who have been found to have high scores on Neuroticism tend

to also report more physical symptoms of illness (Lockenhoff et al., 2008). On the other hand, Extraversion is associated with positive health practices and emotional stability (Milligan, 2004).

The Big Five personality factors have also been associated with subjective well-being. For example, McCann (2011) carried out a study across multiple states using phone interviews with a representative sample, and found all core factors except Neuroticism were related to happiness, suggesting important connections of personality to mental and physical health. Personality traits have been found to have an influence on health ratings (e.g., low Openness to Experience was associated with low health ratings in 1683 participants; Lockenhoff, Terracciano, Ferrucci & Costa, 2012). Physical health outcomes such as disabilities and limitations in mobility, as well as physical function, for example, muscle strength, have also been found to be associated with personality (Tolea, Terracciano, Simonsick, Metter & Costa, 2012).

Openness to experience and health behaviors. Specific to health behaviors, Korotkov (2008) hypothesized that personality moderates the stress and health behavior relationship. From a sample of 706, Korotkov found that those who score high on Openness to Experience were found to engage in more health practices than those who scored lower at low distress levels. Studies have also found that Openness to Experience is positively associated with healthier patterns of diet (Brummett et al., 2006) and higher participation in mass health checkups (Iwasa et al., 2009). In HIV positive patients, Openness to Experience, in particular the facets of ideas and aesthetics, was a domain that was found to be significantly associated with slower progression of disease over a 4 year period. In particular, individuals with low Openness to Experience and low Extraversion were associated with significantly faster progression of disease (Ironson, O'Cleirigh, Weiss, Schneiderman, & Costa, 2008). Lockenhoff et al. (2008) found that Openness to Experience was negatively correlated with depression. In terms of subjective health

ratings, individuals who endorsed Openness to Experience reported better physical functioning and overall health.

Research on Personality Traits and CAM Attitudes/Use

Little research has been conducted on personality traits and the tendency to utilize CAM. Research has indicated that individuals who utilize CAM consider themselves creative, unconventional and more experimental when compared with others. Individuals who use CAM also consider themselves more as risk takers when compared to the average person. Individuals who have chosen to use CAM have been found to be more open to new experiences when compared with others and to perceive CAM treatments to be more consistent with their way of life. Sirois and Gick (2002) investigated factors that were associated with CAM use by studying 199 participants who were classified into groups of new, established and infrequent CAM users. They looked at how personality factors of Neuroticism, Extraversion, Openness to Experience, Agreeableness and Conscientiousness had an influence on individual's likelihood to choose to use CAM. Only Openness to Experience was found to be significantly related to CAM use, particularly with the initial exploration of using CAM. Additionally, when contrasted with clients of conventional medicine, significant differences in Openness to Experience were found in the groups of new and infrequent CAM clients, with conventional medicine clients having lower scores on Openness to Experience. Openness to Experience was also found to be associated holistic and proactive health care behaviors, as well as with trying a variety of CAM providers (Sirois & Purc-Stephenson, 2008).Individuals who score higher on Openness to Experience may then engage in health behaviors or attitudes that are beneficial toward good health, including CAM therapies.

CAM Use and College Students: Issues of Age and Choice of Sample

A telephone survey and diagnostic screening interviews were administered to 9,585 individuals between 1997 and 1998 to examine CAM use and mental disorders by Unützer et al. (2000). Individuals with panic disorder and major depression were more likely to use CAM than others. Unützer et al.'s study indicated that higher education was associated with higher use of CAM, in addition to of female gender, being middle aged, a higher level of illness, and residence in Western areas of the United States, which is consistent with previous research.

Synovitz, Gillan, Wood, Nordness and Kelly (2006) conducted a study that examined college students' use of CAM, and found that older students used CAM more and were more knowledgeable about it. Life experience may then be an important factor for older individuals. Throughout life, individuals may have more exposure and experience with using health care and acquiring information on health, including alternative health practices. They may also have more experience with health problems of a larger variety as compared to younger individuals, and thus have more opportunity to seek out CAM treatments (Synovitz et al., 2006).

However, research has been mixed regarding whether younger or older people have more positive attitudes toward CAM. It has also been found that younger people tend to endorse more positive attitudes toward CAM therapies, which can be interpreted into a higher level of intention or interest in use of CAM (Nowak & Dorman, 2008). This collected demographic information helps in understanding if this is true in the population studied.

There has been limited research on use of CAM among college students, yet college students are an interesting and relevant population for multiple reasons. First, they tend to use CAM at higher rates compared to the general population; second, the majority of college students are in an age group where they are becoming independent and personally responsible for

their health and lifestyle choices. Amount and frequency of CAM use, as well as the predictors of CAM use in college students, are not well known. However, Nowak and Dorman (2008) cited multiple studies of CAM use in which higher education is consistently found to be a significant predictor of CAM use. At the same time, college students generally represent a young adult age group that is associated with engagement in a disproportionate amount of unhealthy behaviors compared to other age groups, thus making college students a special population of interest. Investigators looking at predicting personality in adulthood from college MMPI scores found that approximately half the variance of personality remains stable from college to middle adulthood (Siegler et al., 1990). The age at which students are attending college is a useful period for research as it reflects change, yet stability in personality. Therefore, results from examining this age group may be quite relevant in understanding how personality and beliefs affect health care choices.

The 1996 Medical Expenditure Panel Survey (a nationally representative pediatric sample) provided data on CAM provider visits for 7,371 subjects who were 21 years of age or younger. Parental CAM use was the most predictive factor for CAM use (Yussman, Ryan, Auinger, & Weitzman, 2004), indicating that influence from family, community and culture has a strong part to play in childhood exposure to CAM. This occurs through beliefs and corresponding actions a family or community system may encourage about medicine and medical treatments. For example, if herbal products are considered to be the solution for minor illnesses, a child growing up with frequent colds may have no experience with visits to the doctor but may be very accustomed to and most comfortable with being fed various types of foods and supplements by parents and relatives.

Utility of Internet Surveys

This study utilized the Internet to administer the survey instrument to college students. Hundreds of Internet surveys have been carried out on a range of populations and types of studies, including with women, international students, college students, clinical patients, physicians, drug users, business customers, smokers, sexual minorities etc. Internet surveys have also been used to assess and collect information on multiple phenomena, including coping, self-harm, nicotine addiction, sensitivity, emotional regulation, personality traits, relationships, and so on. Benefits of using Internet surveys and subjective rating scales include that they allow for speed in administration compared to paper and pencil methods and are relatively straightforward (Lockenhoff et al., 2008). Using the Internet and an online survey program, the data were able to be downloaded straight into a data file. Unlike a paper and pencil method, the data do not need to be manually entered, and there is less human error on both the part of the participant, and the researcher in submitting, collecting, and organizing the data.

Methodological issues and response bias with web-based instrument. There are some limitations that are involved with using web-based or Internet instruments to collect data. The participants are anonymous and came with a self-selection bias in responding to requests to complete the survey instrument. Generalizability is thus limited because of this. Students who may have been contacted through e-mail or other online methods may have perceived requests as junk mail. Mailboxes that were full or e-mail addresses that were no longer in use may have bounced the request back and the request was then unable to reach that potential participant.

Limitations in Interpretation of Findings

Certain limitations in researching the Asian international student population involve the diversity within Asians—inclusive of different backgrounds, cultures, and languages. The extent

of assimilation and acculturation to U.S. culture results in a range of experiences that is dependent on time and exposure, and thus can influence endorsement of Openness to Experience, familiarity with types of CAM versus conventional medicine, extent of social and media exposure, and so on. As mentioned previously, because this study was carried out with a university population, the results may only be applicable to individuals who are in higher education.

Review of Purpose, Hypotheses and Implications

The purpose of this study was to examine the relationships between attitudes toward and use of CAM, nationality-cultural identity, and the personality construct of Openness to Experience among college students at Indiana State University, both American, and international Asian students. Many CAM therapies have their roots in Asian culture and medical systems developed in Asia, specifically of Chinese and Indian origins, making Asians who are recent immigrants or international students a special population of interest for comparison with other students. These hypotheses were informed in part by the Bindler-Ball health care model and other studies, emphasizing the influence of family, and values and attitudes developed in youth based on familiarity and exposure to CAM. They were also based on the fact that multiple origins of CAM developed in non-Western/non-White cultures and areas of the world that tend to emphasize a more holistic and spiritually-related, rather than a dualist approach to health care. It was thus hypothesized that Asian students would have more positive attitudes toward CAM when compared to American students. Individuals of Asian origin have been found to be more likely to use ethnically-relevant CAM. Thus, a second related hypothesis was that positive attitudes toward CAM would be associated with higher scores of familiarity/exposure to CAM for Asian students.

A third hypothesis was that positive attitudes toward CAM would be associated with high scores of Openness to Experience for American students. This was informed by studies reported elsewhere of Openness to Experience being positively related to CAM use and an enthusiasm or willingness to try new health care practices or therapies. Other demographic factors were also analyzed to investigate if results from previous studies are applicable among this group of college students (e.g., women using CAM, or older or younger individuals using CAM).

The fields of health care and health education can be informed through this study with an increased understanding of psychosocial predictors of CAM use. Health care professionals and educators may benefit and utilize results of the study to address issues related to CAM use—patients' needs may be addressed in a more effective manner, which may result in better compliance with treatment. Results have implications for health care professionals effectively addressing young adults' needs for treatment, and the rise of CAM use—for health care professionals to be aware of and to be able to implement culturally sensitive and appropriate techniques of dealing with and recommending health care. Understanding the nature of CAM and in-depth factors may hence be an important piece of health literacy. In neither literature about CAM nor literature on health promotion has this been researched much (Long, 2009). Examining CAM and its increasing role in integrative medicine could provide insight into a more effective system of health care delivery for overall increased population health.

CHAPTER 2

METHODS

Design

This was a correlational two-group study in which attitudes towards and use of CAM, and Openness to Experience was assessed in American college students, and in international college students of Asian origin. A cross-sectional multivariate design was used to analyze data. The criterion variable was attitudes toward alternative medicine. The predictor variables were nationality, with associated factors of familiarity/exposure to CAM, and the personality trait of Openness to Experience, with the hypothesis that international students of Asian origin would have more positive attitudes toward CAM, with familiarity with CAM being positively associated with attitudes toward CAM. With American students, it was hypothesized that Openness to Experience would be more salient an associated variable for positive attitudes toward CAM. The study employed a web-based survey instrument to assess for attitudes toward CAM, the personality trait of Openness to Experience, familiarity/exposure to CAM and demographic information.

Participants

A power analysis indicated that a sample size of 144 would be sufficient for a medium effect size of 0.25, an alpha of 0.05, and a power of 0.8 for subsequent analyses. To be included in the study, participants needed to be enrolled as students in the university, and had to be over

18 years of age. They also needed to give informed consent to participate. Students were recruited so that approximately half of the students were American citizens, while the other half held status as nonresident international students who were of Asian origin. Nonresident international student status was verified through the International Programs and Services department at the University. Due to the distribution of Asian students in this particular university, most of the Asian international students were of Chinese and Indian origin. This contributes to the study as most CAM therapies developed from Asian groups' cultures and locations. Exclusion criteria included being over 35 years of age, and Asian-American identification, so as not to confound American nationality with Asian ethnic influences through family and culture.

The sample consisted for 148 participants in total, ages 18-35 years, with 58 males and 90 females. Approximately half of them were Asian (n = 72, 31 male and 41 female) and the other half American (n = 76, 27 male and 49 female). Table 1 presents demographics of the total sample. In term of nationality, Indian (37.5%) and Chinese (25%, Taiwanese—22.2%, mainland Chinese – 2.8%) participants had the largest numbers, with Korean, Japanese, Singaporean, Thai, Vietnamese, Malaysian and Indonesian participants in smaller numbers. All Asian students had lived in the United States for fewer than 15 years, with the majority (78%) having spent 0–5 years in the U.S. Mandarin and Telugu (reflecting the largest numbers of Taiwanese and Indian students in the Asian group) were the most common first languages endorsed by the Asian students. In terms of religion, Hinduism was the modal response for Asian participants at 36%, (reflecting the Indian portion of the sample), with endorsement of no religion, Christianity, and Buddhism being represented at approximately 29%, 15% and 15% respectively. A majority of the international Asian participants were graduate students (72%), while the American sample

was more diverse regarding participants' year in school. The American sample consisted of 100% Caucasians, all of whom identified English as their native language. In the American sample, all participants spent over 15 years of their lives in the U.S., a majority of whom identified Christianity as their religion (65%). Table 2 presents means and standard deviations of age and number of years in the U.S. Asian students were found to be significantly older than American students, and American students were found to have lived in the U.S. for significantly longer than Asian students.

Table 1

*Descriptive Statistics for Demographic Variables (*N = *148)*

Demographic	% Asian (*n* = 72)	% American (*n* = 76)
Age		
18 – 25	63.9	77.6
26 – 35	36.1	22.4
Gender		
Male	43.1	35.5
Female	56.9	64.5
Ethnicity		
Indian	37.5	
Chinese	25.0	
Other	37.5	
Caucasian		100.0
N of years in U.S.		
0 – 5	77.8	
6 – 10	18.0	
11 – 15	4.2	
15+		100.0
Religion		
Christianity	15.3	64.5
Hinduism	36.1	
Buddhism	15.3	1.3
None	29.2	17.1
Other	4.1	17.1
Native language		
English	9.7	100.0
Telugu	25.0	
Mandarin	23.6	
Other	41.7	
Year in school		
Freshman	6.9	23.7
Sophomore	6.9	15.8
Junior	6.9	23.7
Senior	6.9	5.3
Graduate	72.2	31.6

Table 2

*Means and Standard Deviations for Age and Number of Years in the U.S. (*N = *148)*

	Asian (*n* = 72)		American (*n* = 76)		
Variable	Mean	*SD*	Mean	*SD*	*p*
Age	24.54	3.09	22.74	2.95	.007
N of yrs in U. S.	3.72	2.95	22.63	4.47	.000

Recruitment

The author submitted appropriate forms to the Institutional Review Board to review for approval of the study. After approval had been given, faculty of selected classes at the university were contacted and given a detailed explanation of the study, as well an attached link to the survey instrument. The author sought permission to distribute information about the study and the link to students of these classes online through instructors. To ensure a large enough number of Asian international students, personnel in charge of the International Programs and Services at the university were contacted with a detailed explanation of the study and a link to the survey instrument to send to Asian international students. Leaders of international student organizations were also contacted in the same way.

Potential participants were contacted through e-mail or directed to the website with the survey instrument. Students were given the link of the website, which will lead to a screening page describing the study. Voluntary participation was requested, along with informed consent (see Appendix D) and the 18 year old age requirement. Students were able to indicate willingness to participate before continuing to the survey section. The data were sent directly to an online storage database after they had completed the survey, and then downloaded into a data file.

As a large percentage of Asian international students are enrolled in graduate studies and tend to be slightly older than the average college student, the author took steps to contact faculty of advanced undergraduate classes and graduate classes to acquire a sample of American college students that were as much as possible of comparable age and/or educational level.

Scales and Measures

Attitudes toward Alternative Medicine Scale (AAMS). The AAMS (see Appendix A) was utilized to assess attitudes toward CAM. This measure was developed and published by Finnigan in 1991. The scale consists of 14 items. It is scored on a 6-point Likert scale, from *strongly agree* to *strongly disagree*, with lower scores indicating more positive attitudes (Finnigan, 1991). The AAMS contains statements such as "Alternative medicine should only be used as a last resort, when conventional treatment has nothing to offer," and "Alternative medicine works to restore the body's own balance." Possible scores on the AAMS range from 14 to 84. The AAMS was found to have good construct-related validity, objectivity, and statistical power (Finnigan, 1991). However, criterion-related validity, having correlations with other measures able to have similar predictive utility, and content-related validity, if the items address all aspects of what is said to be measured (dependent on the initial feature elicitation procedure), were areas that potentially can be improved upon.

Familiarity/exposure to CAM. A survey was developed (see Appendix B) to assess use and familiarity with different CAM techniques. The survey was constructed, edited and refined by this author and committee members. The survey lists multiple practices of CAM and the participants were asked to indicate on a scale ranging from 1- 5, familiarity/knowledge with that particular CAM therapy, personal use, and perceived helpfulness. Purpose and reason for use was also assessed. The list included biologically based therapies, manipulative and body-based

therapies, energy therapies and mind-body therapies, following National Health Statistics Reports (2008): acupuncture, homeopathic treatment, naturopathy, traditional healers, herbal products, massage, meditation, *yoga, taichi, qigong* and *reiki*. Chelation therapy, a chemical process to rid the body of excess or toxic metals, was added as a control therapy, as it was expected to be of low familiarity or use for all participants. Definitions were provided for each therapy, as well as relevant examples. Successive survey drafts were reviewed for phrasing and content with committee members.

For the purposes of this paper, some treatments have been excluded, as they are the most common therapies endorsed and have the most liberal definitions. Their endorsement may result in a less accurate understanding of attitudes toward CAM and CAM use. For example, prayer will not be included in the definition of CAM. Prayer is excluded from the survey as it has been found to be endorsed by over 80% of college students (Nowak & Dorman, 2008). Even though many Americans use prayer as part of religious and spiritual beliefs, prayer may not appropriately fit into the categories of treatment or medical practices. Chinese American women, as an example of an Asian minority subgroup, indicated very little use of prayer (Kronenberg, 2006). If this aspect of religion and spirituality was to be included and designated as CAM, use of CAM would become overstated, and likely skew results. The survey also did not include certain mind-body practices that were well-known to be empirically supported psychosocial or behavioral techniques (e.g., deep-breathing, progressive relaxation).

Four psychology fourth-year doctoral students completed and critiqued the survey before a pilot test administration of 12 students (American and Asian) was carried out for assessing whether the survey instrument was easily understood and could be completed within 30 minutes by most people. If problems or confusion arose with the content or wording of the assessment

packet, as well as any negative effects, they were addressed. The responses, as well as the type of CAM practice, were examined.

Openness to Experience Subscale of the Revised NEO Personality Inventory (NEO-PI-R). The subscale of Openness to Experience from the self-report form of the NEO-PI-R contains 48 items, with statements such as "have a vivid imagination," "avoid philosophical discussions" (-) and "am not interested in abstract ideas" (-) with participants responding from "strongly disagree to strongly agree" on a five point scale. Scales have been balanced to control for yea-saying, and missing items, random response patterns and honesty/accuracy of responses are part of validity checks (Costa & McCrae, 1992). Costa et al. (1995) found that the NEO PI-R had high multimethod validity for personality assessment in college students. In terms of reliability, Openness to Experience in particular was found to maintain a .83 test-retest reliability over 6 years, indicating long-term stability of this trait (Costa, 1996). However, it also should be noted that test-retest reliability has been found to be lower among younger adults compared to older age groups (Lockenhoff et al., 2008).

Demographic information. Demographic information (see Appendix C) on age, sex, nationality, hometown, ethnic/racial background, current educational level, number of years in the country, and religion was collected. Number of years an international student has spent in the United States can be an indicator of exposure to American values about health and adjustment to conventional Western medical systems.

Procedures

Participants were informed about anonymity and confidentiality of their responses on the website before they were able to access the assessment packet (see Appendix D). Benefits and possible negative effects were also mentioned, as well as the voluntary nature of participation,

and that participants could withdraw without penalties at any time. Contact information of the researcher was also provided at this time, as well as after the completion of the assessment packet. They were also informed that in order to preserve the legitimacy of the study results, information about the survey should not be shared with other students. After the participant had given his or her informed consent, demographic information was requested first, then information about their knowledge and use of CAM, the AAMS, and then the Openness to Experience subscale. After completing the assessment packet, participants were thanked.

Practical Constraints on Conducting the Study

One practical constraint with conducting the study was the recruitment of Asian international student participants because there are not many international students at the Indiana State University. Therefore, several waves of data collection had to occur, mostly dependent on times of the year that new international students enroll. Another difficulty encountered was the need for students of similar ages, as differences in American and Asian international students could be compounded by difference in educational level and age/maturity. Steps in aggressively contacting faculty of advanced classes and graduate classes were taken to reduce this.

CHAPTER 3

RESULTS

Differences in Variables of Interest Between Asian and American Students

In Table 3, means and standard deviations of scores on the AAMS, Openness to Experience subscale, and the survey on CAM Familiarity/Exposure are presented. Means of attitudes toward alternative medicine on the AAMS for Asian and American students respectively are 49.33 and 50.54, with a standard deviation of 9.93 and 9.25, indicating minimal differences between the two groups. Means of Familiarity/Exposure were 2.74 and 2.35 for Asian and American students respectively, indicating a significantly higher amount of familiarity and exposure to CAM in Asian students compared to American students. Means of Openness to Experience are 118.11 and 117.96 with standard deviations of 15.95 and 22.15 for Asian and American students, respectively. While there is a larger range in scores for American students, Openness to Experience scores are similar between Asian and American students.

Table 3

Familiarity/Exposure, Openness to Experience and AAMS Scores in Asian and American Groups

	Asian (n = 72)		American (n = 76)			
Variable	*M*	*SD*	*M*	*SD*	*F*	*p*
Familiarity/exposure	2.74	.49	2.35	.50	22.65	.000
Openness to exp	118.11	15.95	117.96	22.15	.002	.962
AAMS	49.33	9.93	50.54	9.25	.586	.445

As age was found to be significantly correlated with three variables of interest, an ANCOVA was carried out to control for age with AAMS as the dependent variable. An ANCOVA revealed a main effect of age F (1, 145) = 5.04, p = .026, $\eta p2$ = .034 (see Table 4). The ANCOVA also revealed nationality did not have a main effect on AAMS scores.

Table 4

Analysis of Covariance for Attitudes Toward Alternative Medicine, With Age as Covariate

Source	*Df*	Mean square	*F*	*Sig.*	*Partial Eta Sqd*
Age	1	450.05	5.04	.026	.034
Nationality	1	140.27	1.57	.212	.011
Error	145	89.36			

In order to further explore the first hypothesis that Asian students would have more positive attitudes toward CAM than American students, the bivariate correlation between demographic variables and the variables of interest (attitudes toward alternative medicine, familiarity/exposure and Openness to Experience) were examined. It was determined from the bivariate correlations that none of the demographic variables except age were related to the variables of interest (see Table 5). There was a significant positive correlation between familiarity/exposure and age (r = .49, p <.001). There was also a significant positive correlation between Openness to Experience and age (r = .19, p = .020), and familiarity/exposure (r =.39, p < .001), indicating a higher level of Openness to Experience and familiarity/exposure to CAM with age. Finally, there a significant positive correlation between attitudes toward alternative medicine and age (r = .16, p = .046), indicating that more positive attitudes are related to older age, more familiarity/exposure, and higher Openness to Experience.

Table 5

Correlations Among Demographic Variables, Scores on Familiarity/Exposure, Openness to Experience, and Attitudes Toward Alternative Medicine (N = 148) for Total Sample

	Age	N of years in U.S.	Sex	Year in school	Nationality	Fam/expo	Open to exp
Age							
N of years in U.S.	.08						
Sex	-.13	.01					
Year in school	.72**	-.18*	-.05				
Nationality	.22**	-.93**	-.78	.40**			
Fam/expo	.49**	.22**	-.12	.47**	.37**		
Open to exp	.19*	.08	-.05	-.00	.00	.39**	
AAMS	.16*	.13	-.08	.09	-.06	.36**	.33**

*$p < 0.05$; ** $p < 0.01$

Exploring Predictors of AAMS in the Asian Sample

Table 6 presents the bivariate correlation analysis that was carried out for the Asian student sample. There was a significant positive correlation found between familiarity/exposure and age ($r = .26$, $p = .029$). There was a significant positive correlation between attitudes toward alternative medicine and familiarity/exposure ($r = .45$, $p < .001$) and Openness to Experience ($r = .25$, $p = .035$), indicating that more positive attitudes are related to more familiarity/exposure, and higher Openness to Experience in Asian students. As age was significantly related to familiarity/exposure for Asian students, the following regression analysis controls for age. Demographic variables that were not significantly associated with the variables of interest were not included in the regression analysis.

Table 6

Correlations Among Demographic Variables, Scores on Familiarity/Exposure, Openness to Experience, and Attitudes toward Alternative Medicine (N = 72) With Asian Students

	Age	*N* of years in U.S.	Sex	Year in school	Fam/expo	OtoE
Age						
N of years in U.S.	.32**					
Sex	-.19	-.19				
Year in school	.54**	.10	-.10			
Fam/expo	.26*	.04	-.12	.35**		
OtoE	.03	.08	-.04	-.19	.13	
AAMS	.09	.06	-.08	.09	.45**	.25*

*$p < 0.05$; **$p < 0.01$

A multiple regression analysis (see Table 7) was conducted for the Asian students to determine the relative strength of the association between Openness to Experience, familiarity/exposure to CAM, and attitudes toward alternative medicine. The dependent variable for the analyses was the score on the AAMS. The following predictor variables were included: age in Step 1, familiarity/exposure scores relating to knowledge, use and helpfulness and Openness to Experience in Step 2, with attitudes toward alternative medicine as the dependent variable.

Using the stepwise method, a significant model emerged for Asian participants: F (3, 68) = 7.18, $p < 0.001$. The model explains 20.7% of the variance (Adjust Rsq = .207). Table 6 gives the information for the predictor variables entered into the model. Familiarity/exposure was found to be a significant predictor (Beta = .433, $p < 0.001$) but age was not.

Table 7

Hierarchical Regression Analysis Summary for Variables Predicting AAMS for Asian students (N = 72)

Variable	B	SE B	Beta	Adjusted R^2	ΔR^2
Step 1	.284	.382	.089	-.006	.008
Age					
Step 2	-.092	.351	-.029	.207	.233
Age					
Fam/exposure	8.748	2.227	.433*		
Openness to exp	.120	.066	.194		

*$p < 0.001$

Exploring Predictors of AAMS in the American Sample

For the sample of American students, there was a significant positive correlation between age and familiarity/exposure ($r = .59$, $p = .000$), age and Openness to Experience ($r = .27$, $p = .019$) and age and attitudes toward alternative medicine ($r = .26$, $p = .026$). There was a significant positive correlation between attitudes toward alternative medicine and familiarity/exposure ($r = .38$, $p = .001$) and Openness to Experience ($r = .40$, $p < .001$), indicating that more positive attitudes also are related to more familiarity/exposure, and higher Openness to Experience in American students (see Table 8). As age was significantly related to Familiarity/Exposure, Openness to Experience and Attitudes Toward Alternative Medicine for American students, the following regression analysis controls for age.

A multiple regression analysis was conducted for the American students to determine the relative strength of the association between Openness to Experience, Familiarity/Exposure to CAM, and Attitudes Toward Alternative Medicine. The dependent variable for the analyses is the score on the AAMS. The following predictor variables were included: age in Step 1, Familiarity/Exposure scores relating to knowledge, use and helpfulness and Openness to Experience in Step 2, with attitudes toward alternative medicine as the dependent variable.

Table 8

Correlations Among Demographic Variables, Scores on Familiarity/Exposure, Openness to Experience, and Attitudes Toward Alternative Medicine (N = 76) With American Students

	Age	*N* of years in U.S.	Sex	Year in school	Fam/expo	OtoE
Age						
N of years in U.S.	.99**					
Sex	-.07	-.09				
Year in school	.80**	.81**	.04			
Fam/expo	.59*	.57**	-.15	.41**		
OtoE	.27*	.27*	-.12	.10	.61**	
AAMS	.26*	.28*	-.09	.16	.38**	.40**

*$p < 0.05$; **$p < 0.01$

Using this hierarchical method, a significant model emerged for American participants: $F(3, 72) = 5.68$, $p = 0.001$. The model explains 15.8% of the variance (Adjusted Rsq = .158). Table 9 presents the information for the predictor variables entered into the model. Openness to Experience was found to be a significant predictor (Beta = .276, $p < 0.05$) as well as age in Step 1 (Beta = .225, $p < 0.05$).

Table 9

Hierarchical Regression Analysis Summary for Variables Predicting AAMS for American students (N = 76)

Variable	*B*	*SE B*	Beta	Adjusted R^2	ΔR^2
Step 1	.501	.221	.225*	.053	.065
Age					
Step 2	.174	.260	.088	.158	.126
Age					
Fam/exposure	2.885	2.939	.157		
Openness to exp	.115	.056	.276*		

*$p < 0.05$

Post-Hoc Analyses

A one-way MANOVA was carried out to compare the Asian and American sample on their endorsement of CAM items. The analysis revealed a significant multivariate main effect for nationality: Wilks' $\lambda = .774$, F (12, 134) = 3.26, $p < .001$. Given the significance of the overall test, the univariate main effects were examined. Significant univariate differences for nationality were obtained for homeopathic treatment, F (1, 145) = 1.33, $p = .005$, and naturopathy, F (1, 145) = 2.83, $p = .042$, *qigong*, F (1, 145) = 9.07, $p < .001$, acupuncture, F (1, 145) = 13.76, $p = .003$, *yoga*, F (1, 145) = 30.26, $p = .007$, and meditation, F (1, 145) = 1.31, $p = .017$ (see Tables 10 and 11). Asian students were found to be significantly more familiar with and have exposure to homeopathic treatment, naturopathy, *qigong*, acupuncture, *yoga* and meditation compared to American students.

Table 10

Familiarity/Exposure Mean and Standard Deviation Scores by CAM Item in Asian and American Samples

	Asian (n = 72)		American (n = 76)			
Variable	*M*	*SD*	*M*	*SD*	*F*	*p*
Herbal Products	3.16	1.04	2.82	1.11	1.42	.236
Homeopathic	2.74	1.14	2.10	.56	8.20	.005
Naturopathy	2.63	.62	2.17	.96	4.19	.042
Traditional Healers	2.34	.96	2.04	.82	1.89	.171
Chelation Therapy	1.66	.41	1.53	.45	2.66	.105
Massage	3.76	.96	3.74	.94	.00	.998
Taichi	2.37	.92	2.12	.82	1.06	.305
Qigong	2.09	.83	1.60	.54	14.29	.000
Reiki	1.98	.91	1.61	.81	2.14	.146
Acupuncture	2.85	1.00	2.34	.69	9.38	.003
Yoga	3.72	1.02	3.21	.88	7.43	.007
Meditation	3.58	1.23	2.94	1.09	5.85	.017

Table 11

Multivariate and Univariate Analyses of Variance for Age and Nationality on CAM Items

Variable	Age	Nationality
MANOVA *F* (12, 134)	5.44**	3.26**
Herbal products	10.15	1.42
Homeopathic	13.02**	8.20**
Naturopathy	17.20**	4.19*
Traditional healers	11.41**	1.89
Chelation therapy	.65	2.66
Massage	.41	.00
Taichi	12.49**	1.06
Qigong	6.00*	14.29**
Reiki	36.46**	2.14
Acupuncture	36.46**	2.14
Yoga	3.72	7.43**
Meditation	25.67**	5.85*

*$p < 0.05$; **$p < 0.01$

In addition to being nonsignificant between Asian and American samples, scores on familiarity/exposure for chelation therapy had the lowest scores out of types of CAM surveyed. This supports the validity of the survey and sample response as chelation therapy was originally included as a validity detector due to its low and infrequent use.

A one-way MANOVA also was carried out to compare the Asian and American sample on specific areas of knowledge, use and helpfulness of CAM approaches. A significant

multivariate main effect for nationality was revealed: Wilks' λ = .783, F (3, 143) = 13.241, p =. 001. Given the significance of the overall test, the univariate main effects were examined. Significant univariate differences for nationality were obtained for CAM knowledge, F (1, 145) = 4.93, p = .028, CAM use, F (1, 145) = 12.15, p = .001, and perception of CAM helpfulness, F (1, 145) = 411.75, p = .001 (see Tables 12 and 13). Asian students were found to have significantly higher CAM knowledge, CAM use, as well as a higher perception of CAM helpfulness when compared to American students, indicating that higher familiarity/exposure to CAM was based on all three areas.

Table 12

Knowledge, Use, and Helpfulness Scores in Asian and American Sample

	Asian (n = 72)		American (n = 76)			
Variable	M	*SD*	*M*	*SD*	*F*	*p*
Knowledge	2.62	.61	2.31	.56	4.93	.028
Use	2.09	.60	1.67	.56	12.15	.001
Helpfulness	3.51	.62	3.07	.68	11.75	.001

Table 13

Multivariate and Univariate Analyses of Variance for Age and Nationality for Knowledge, Use and Helpfulness

	MANOVA	ANOVA F(1,145)		
Variable	F (3, 143)	Knowledge	Use	Helpfulness
Age	13.24	23.39	34.63	17.20
Nationality	5.81	4.93	12.15	11.75

CHAPTER 4

DISCUSSION

The purpose of the present study was to examine the differences between American students and international Asian students at a mid-Western university in their attitudes toward CAM. It was designed to build upon previous research by focusing on differences in students' exposure to and familiarity with CAM, and assessing the effects of the personality construct of Openness to Experience. Each hypothesis and related findings will be discussed. Theoretical and practical implications of the results will be presented, in addition to the study's strengths and limitations. Finally, suggestions for future research will be put forward.

The Effect of Nationality on Attitudes Toward CAM

First, it was hypothesized that Asian nationality, and implicitly, Asian cultural identification, is positively correlated with positive attitudes toward CAM. Many CAM therapies have their roots in Asian culture and medical systems, specifically those of Chinese and Indian origins, making Asians who are recent immigrants or international students a special population of interest for comparison.

However, there were no significant differences in positive attitudes toward alternative medicine between Asian and American students. Although there has been evidence related to a higher rate of ethnically related CAM use in individuals of Asian origin (An-Fu, 2006), there is limited data on attitudes toward CAM in patients of Asian origin. Results may indicate a

complex relationship between attitudes toward CAM, based on multiple factors that include age, education, etc. and not purely national origin or cultural identification.

This study also clearly supports the association previously found that higher education is associated with positive attitudes toward CAM (Unutzer et al., 2000). However, findings showed no gender differences in this sample. Prior studies have found a positive association between female gender and endorsement of positive attitudes toward CAM.

The Effect of Asian Nationality on the Relationship Between Familiarity/Exposure to CAM and Attitudes

Secondly, it was hypothesized that for Asian students, Familiarity/Exposure to CAM would be associated with positive attitudes toward CAM. Although no significant differences were found in attitudes toward CAM between Asian and American students, Asian students were found to have a higher amount of familiarity and exposure to CAM compared to American students. Familiarity/exposure was found to be a predictor variable for positive attitudes toward CAM with the Asian sample. This is consistent with previous models/research about immigrants and international students who were raised in home environments before moving to the United States. This will be discussed further in the section below. Familiarity and exposure was found to be positively associated with age, higher education, and Asian nationality.

Post-hoc analyses indicated areas of CAM familiarity/exposure that were significantly different between Asian and American samples. These areas included homeopathic treatment, naturopathy, *qigong*, acupuncture, *yoga* and meditation, all of which had higher scores endorsed by Asian students, supporting consistently higher familiarity/exposure to CAM. The items fall into the two CAM groups of whole medical systems and mind-body medicine, suggesting that those two domains of CAM may have higher ethnic relevance to individuals of Asian origin.

Domains of knowledge, use and helpfulness were also assessed in determining differences between samples for familiarity/exposure to CAM, and the Asian sample was found to endorse significantly higher scores on all three domains compared to the American students. This is consistent with previous research that suggests Asian individuals who recently immigrated to the United States with better education are more likely to use ethnic-associated CAM (An-Fu, 2006).

The Effect of American Nationality on the Relationship Between Openness to Experience and Attitudes

Third, it was hypothesized that Openness to Experience would be associated with positive attitudes toward CAM for American students. Openness to Experience was indeed found to be a predictor variable for positive attitudes toward CAM with the American sample. A similar effect was found for age. As discussed previously, it has been found that out of the five personality traits, only Openness to Experience is a significant factor affecting a person's likelihood to use CAM (Sirios & Gick, 2002). The results of this study are therefore consistent with previous research that points to the association between Openness to Experience and CAM use. Familiarity and exposure were also positively associated with Openness to Experience across both Asian and American students suggesting a potential relationship between these two factors. A larger range in scores in Openness to Experience was found for American students, but, overall, Openness to Experience scores seem to be similar between Asian and American students.

Overall, for both Asian and American students positive attitudes toward alternative medicine were positively associated with familiarity/exposure and the personality dimension of Openness to Experience. A similar positive relationship was found for older age, particularly in American students. Research has been mixed on how age is related to positive attitudes toward

CAM. In the total sample studied, results showed that relatively older students had more positive attitudes toward CAM. This is consistent with previous findings that older students use CAM more and are more knowledgeable about it (Synovitz et al., 2006). Increased exposure to health care and alternative health care across time, as well as more experience with chronic health problems, may lead to acquisition or search for unconventional treatments. However, the present study's sample are still relatively young (age 35 and younger), and this finding also supports previous research that indicated younger persons have a more positive attitudes toward CAM (DeBar et al., 2003). Because age was found to be significantly related to the variables of interest, it was taken into consideration when conducting statistical analyses.

Theoretical and Practical Implications

The findings in the study regarding familiarity/exposure to CAM are consistent with the Bindler-Ball health care model that strongly points to the influence of family, culture, and community in relation to health care choices. Results indicated a higher level of familiarity/exposure to CAM for Asian international students compared to American students. The influence of others (such as family members) who use CAM through the role of social learning has also been linked to CAM use and development of attitudes toward CAM (Nowak & Dorman, 2008). A person's values and goals for health/illness and health care are strongly influenced by the interaction of culture and family background. This is likely to influence a person's choices of treatment for medical problems. While familiarity/exposure to CAM was found to be higher in the Asian international sample than in the American sample, both in individual CAM items and domains of knowledge, use, and helpfulness, the influence of culture on CAM familiarity/exposure did not bear out in Asian participants have significantly more positive attitudes toward CAM.

Openness to Experience was found to be positively associated with positive attitudes toward CAM in both groups of students. Findings appear to support the theory that CAM users who have unconventional personality traits may be more inclined to be more involved with their health care and utilize CAM treatments, which are more focused on the patient and psychosocially supportive when compared to conventional medicine. In order to examine these relationships, Sirois and Purc-Stephenson (2008) recruited 184 CAM clients and had them complete measures in areas of the five-factor model of personality, CAM use/ motivations, and health status. Openness to Experience was found to be significantly related to CAM use, specifically, a breadth of CAM use and higher education, independent of age or health problems. Again, individuals high in Openness to Experience are willing to experiment, and the readiness to try a variety of CAM therapies is consistent with this personality trait.

Because Openness to Experience as a personality trait has been found to be stable over time and across genders, awareness of associated cognitions (for example, the belief that CAM treatments are consistent with their lifestyles) and behaviors could provide useful information for individuals' long-term health care choices and practices. Health care providers may be able to utilize this knowledge about their patients in recommendations or integrated treatments. Conversely, at-risk individuals can be targeted more easily and appropriate treatments/health behaviors encouraged. The content of patient-provider communication can be targeted to consider the impact of Openness to Experience and other personality traits. If additional personality traits and their associated motivators can be identified, providers can potentially style or adapt their interactions with patients to improve adherence and treatment outcomes (Sirois & Purc-Stephenson, 2008).

Health care providers have an increasing need to systematically understand and incorporate increased knowledge about patterns, exposure to, attitudes/beliefs associated with modalities of CAM into medical models of conceptualizing health. Along with an increased understanding of personality traits and attitudes/beliefs associated with different groups of people, this knowledge would contribute to the development of comprehensive systems of care with all cultural groups in the United States. As previously discussed, with chronic health care problems on the rise, it is important that new methods of health care are integrated into both practice and education. CAM may be a strong resource for minority health, especially with an Asian immigrant or international population. Individuals who have recently moved from Asian countries may be more likely to practice health care or traditions that are from their specific countries.

All these factors have implications for health care professionals effectively addressing young adults' needs for treatment, especially with increasing diversity in the United States and the rise of CAM use. Health care professionals need to be aware of and implement culturally and individually sensitive and appropriate techniques of dealing with and recommending health care.

Study Strengths

A notable strength of this study is that it specifically focused on ethnically relevant historical connections to CAM, not in the broad sense of cross-cultural differences alone, but in targeting in particular the Chinese and Indian sources of multiple CAM therapies in the variable of Asian nationality. The study had been designed especially to target types of CAM therapies that arise from Asian sources. Therapies like prayer, for example (which would result in a general overstatement of CAM use) were excluded, so as not to confound results. Separate variables were considered in the hypotheses for the two groups of interest—familiarity and

exposure to CAM as pertinent for Asian students and personality traits of Openness to Experience for American students, reflecting different mechanisms and processes in which these two groups of students might develop attitudes toward alternative medicine. The study examined reasons for why individuals are drawn to CAM and its effectiveness based on context. In terms of context, relevant examples include the patient's openness to change, the patient's reasons for using CAM and expectations about it, as well as previous positive experiences (Long, 2009).

Study Limitations

Design. It should also be noted that this study utilized a convenience sample with a cross-sectional design. The role of self-selection bias needs to be considered when examining results. For example, the Asian participants who completed the survey may be individuals who had a higher fluency in English that potentially increased comfort with responding to the survey. Due to a large number of Asian international students enrolled in graduate programs, there were differences in the educational level of Asian students compared to American students, with Asian students having a higher level of education on average. The author attempted to accommodate this by recruiting American students who were older in age and who were in higher level undergraduate or graduate classes by analyzing age as a covariate.

Generalizability. Another limitation of the study was that the participants came from one Midwestern university, and their attitudes and backgrounds may not be representative of students residing in different regions of the United States. Furthermore, many of the American students were from Indiana. The author anticipated that the American students participating would primarily be Caucasian, which was found in the sample. The Asian international student sample was limited to students who have chosen to come to a smaller Midwestern university which may potentially reflect different personality types, resources, or perceptions about the United States,

for example, a possible bias or preference toward Western practices. Additionally, the sample of Asian students available was in large part dependent on the university's recruitment of students in other countries, indicating preexisting relationships between certain universities, potentially increasingly the likelihood of a biased sample.

Measurement. A possible limitation was the measure for collecting information about familiarity/exposure to CAM, which was developed for use in this study. However, the survey was pilot tested, and information about clarity and understanding from participants was gathered. The measure required the participant to indicate their level of familiarity on a rating scale of 1–5, as well as use of a particular CAM therapy, which is similar to many surveys designed for collecting information on CAM use.

Future Research

The findings of the study are naturally limited by time and resources that prevented the use of more intensive measures of attitudes, (for example, through more detailed and verbal qualitative interviews), and familiarity/exposure to CAM, which could reveal more subtle details about what contributes to positive attitudes in both American and Asian students. A more qualitative approach in gathering information could also have been employed with a brief interview to ascertain the degree of exposure participants have to CAM, as well as their own hypotheses about their attitudes toward CAM, whether positive, negative or neutral. A more in-depth qualitative survey could also be completed in the future with interviews potentially in Asian languages, for example Mandarin, Telugu, Korean and so on. This could be translated into English using forward and backwards translation as has been done in some other studies. For example, Hsiao et al. (2006) found that among Chinese Americans, those who were lacking in fluency in English used CAM more compared to those who were proficient in English. However,

South Asians who lacked proficiency in English were less likely to use CAM compared to South Asians who were fluent in English. Fluency in English, as well as other languages, could therefore also be another area for further study in relation to attitudes toward CAM and CAM use. Details of frequency of CAM use could also be used to clarify impact of predictor variables examined.

Further research may also build upon the results of the current study by examining the responses given by individuals of other nationalities or ethnicities within Asian culture to investigate how attitudes toward CAM differ between groups. The findings regarding the impact of familiarity/exposure to CAM and the findings related to Openness to Experience being a strong indicator of positive attitudes toward CAM should both be investigated in the future using other national, ethnic, and cultural groups.

Asian and American students in other parts of the United States should be studied to determine if there are more positive attitudes toward CAM in areas compared to the Midwest. This is suggested in light of the findings that higher rates of CAM use have been found in Western areas of the United States (Keith, Kronenfeld, Rivers & Liang, 2005). Larger studies could be carried out collaboratively with universities across the United States in order to acquire a sample that would allow comparisons among regions. The study could also be extended to assess the stability of attitudes and use of CAM by following participants over time and assessing if there is change or stability as a function of personality or other variables.

As Openness to Experience has been associated with holistic health practice and being proactive in seeking out health care, focus on how personality relates to motivators for CAM use in future research is likely beneficial for an increased understanding of health care behaviors. In addition to Openness to Experience, Conscientiousness and Agreeableness have also been shown

to be associated with more healthy behaviors, for example, exercise and less unhealthy behaviors such as smoking. Additional research could furthermore be carried out on assessing the influence of other personality traits on attitudes toward CAM. For example, Extraversion and Neuroticism have been associated with positive health practices and negative ideas of personal health respectively, and would be interesting to explore in relationship to CAM attitudes. This could further clarify how the mechanism of personality traits and associated cognitions/behaviors impact health care choices. Future research could also focus on how other personality factors are related to consultation with CAM providers on the premise of varying motivations for initiating consultation associated with different personality traits. The association of personality traits and adherence to treatment ought to be researched as it may play a big part in treatment success through impact on provider-patient relationships.

The fields of health care and health education can be informed through this study with an increased understanding of psychosocial predictors of CAM use. As evidenced by this study, factors of previous experiences, personality traits and beliefs may have a complex relationship to health care values, decisions and behaviors. Differences in use of health care and types of health, and even health practices are important to research and assess for, especially with increasing diversity within the United States and increased catering to multiple minority groups. Increased knowledge about patterns of CAM, exposure to CAM, attitudes and beliefs associated with different groups and modalities of CAM, as well as personality traits associated with different groups would allow health care providers to begin to systematically understand and incorporate this into medical models of conceptualizing health and comprehensive systems of care with all cultural groups in the United States.

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APPENDIX A: ATTITUDES TOWARDS ALTERNATIVE MEDICINE SCALE ITEMS

Definition of Complementary and Alternative Medicine: A group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine.

Listed below are a number of statements concerning alternative medicine. You must decide to what extent you agree or disagree with each statement. The options you have are:

1. Strongly agree
2. Agree
3. Mildly agree
4. Mildly disagree
5. Disagree
6. Strongly disagree

For each statement you should circle the number that corresponds most closely to your own view of that statement.

Please do not leave out any of the statements.

Alternative medicines must be subject to more scientific testing before they can be accepted.	Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
	1	2	3	4	5	6

Alternative medicines are merely a financial con trick.	Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
	1	2	3	4	5	6

Alternative medicine can be dangerous in that it can prevent people from getting 'proper' treatment.	Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
	1	2	3	4	5	6

Alternative medicine is merely a fashionable fad which will soon disappear.	Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
	1	2	3	4	5	6

It is worth trying alternative medicine before going to the doctor.	Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
	1	2	3	4	5	6

Alternative medicine should only be used in minor ailments and not in the treatment of more serious illnesses.	Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
	1	2	3	4	5	6
Alternative medicine should only be used as a last resort, when conventional treatment has nothing to offer.	Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree

	1	2	3	4	5	6

Alternative medicine has possible uses only as preventative medicine and is of no use once an illness has appeared.	Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
	1	2	3	4	5	6

Conventional medicines have so many side effects that most doctors are not as well informed about them as they should be.	Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
	1	2	3	4	5	6

Many alternative medicines could be prescribed instead of giving people repeat prescriptions of drugs such as tranquilizers.	Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
	1	2	3	4	5	6

Alternative medicine produces longer lasting and more complete results.	Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
	1	2	3	4	5	6

Alternative medicine represents a confused and ill-defined approach.	Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
	1	2	3	4	5	6

Alternative medicine builds up the body's own defenses, so leading to a permanent cure.	Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
	1	2	3	4	5	6

Alternative medicine works to restore the body's own balance.	Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
	1	2	3	4	5	6

THANK YOU FOR YOUR ASSISTANCE

APPENDIX B: CAM FAMILIARITY/EXPOSURE RATING ITEMS

How familiar are you with _____? How frequently do you use _____? How helpful do you think this would be to people? For each statement you should circle the number that corresponds most closely to your own experience. Please do not leave out any of the statements. Please check below prior to answering these questions.

1. **Herbal products –** Nonvitamin and nonmineral, such as herbs and other products from plants, enzymes, e.g., ginseng, Echinacea.

- o Heard of or used before
- o Never heard of or used before

IF "Heard of or used before" checked, GO TO

- o For physical health
- o For psychological health

AND

- o Used in conjunction with conventional medicine
- o Used alone

a. Which best describes your knowledge of use of herbal products?

Never heard of it	Heard of it but know very little	Know a little (somewhat familiar)	Know a fair amount	Know it well (very familiar)
1	2	3	4	5

b. Which best describes your use of herbal products?

Never used	Used 1 – 2 times	Used 3 – 5 times	Used 6 – 8 times	Used more than 8 times
1	2	3	4	5

c. How helpful would you consider herbal products for yourself or in general?

Very unhelpful	Somewhat unhelpful	Not helpful or unhelpful	Somewhat helpful	Very helpful
1	2	3	4	5

d. Please describe what you have used or the amount/way/purpose you have used herbal products for. We encourage you to take a few extra minutes to describe this in detail.

2. **Homeopathic treatment -** Homeopathy is a system of medical practices based on the theory that any substance that can produce symptoms of disease or illness in healthy person can cure those symptoms in a sick person. Administered in extremely diluted form, homeopathic remedies are derived from many natural sources – including plants, metals, and minerals.

o Heard of or used before
o Never heard of or used before
IF "Heard of or used before" checked, GO TO
o For physical health
o For psychological health
AND
o Used in conjunction with conventional medicine
o Used alone

a. Which best describes your knowledge of use of homeopathic treatment?

Never heard of it	Heard of it but know very little	Know a little (somewhat familiar)	Know a fair amount	Know it well (very familiar)
1	2	3	4	5

b. Which best describes your use of homeopathic treatment?

Never used	Rarely use	Sometimes use	Often use	Use
1	2	3	4	5

c. How helpful would you consider homeopathic treatment for yourself or in general?

Very unhelpful	Somewhat unhelpful	Not helpful or unhelpful	Somewhat helpful	Very helpful
1	2	3	4	5

d. Please describe what you have used or the amount/way/purpose you have used homeopathic treatment for. We encourage you to take a few extra minutes to describe this in detail.

3. **Naturopathy** - An alternative medical system. Naturopathic medicine proposes that there is a healing power in the body that establishes, maintains, and restores health. Practitioners work with the patient with a goal of supporting this power through treatments such as nutrition and lifestyle counseling, dietary supplements, medical plants, exercise homeopathy, and treatments from traditional Chinese medicine.

o Heard of or used before
o Never heard of or used before
IF "Heard of or used before" checked, GO TO
o For physical health
o For psychological health
AND
o Used in conjunction with conventional medicine
o Used alone

a. Which best describes your knowledge of use of naturopathy?

Never heard of it	Heard of it but know very little	Know a little (somewhat familiar)	Know a fair amount	Know it well (very familiar)
1	2	3	4	5

b. Which best describes your use of naturopathy?

Never used	Used 1 – 2 times	Used 3 – 5 times	Used 6 – 8 times	Used more than 8 times
1	2	3	4	5

c. How helpful would you consider naturopathy for yourself or in general?

Very unhelpful	Somewhat unhelpful	Not helpful or unhelpful	Somewhat helpful	Very helpful
1	2	3	4	5

d. Please describe what you have used or the amount/way/purpose you have used naturopathy for. We encourage you to take a few extra minutes to describe this in detail.

4. **Traditional healers -** A traditional healer is someone who employs any one of a number of ancient medical practices that are based on indigenous theories, beliefs, and experiences handed down from generation to generation. The methods employed by each type of traditional healer have evolved to reflect the different philosophical backgrounds and cultural origins of the healer e.g., cuandero, botanica, shaman, etc.

- o Heard of or used before
- o Never heard of or used before

IF "Heard of or used before" checked, GO TO

- o For physical health
- o For psychological health

AND

- o Used in conjunction with conventional medicine
- o Used alone

a. Which best describes your knowledge of use of traditional healers?

Never heard of it	Heard of it but know very little	Know a little (somewhat familiar)	Know a fair amount	Know it well (very familiar)
1	2	3	4	5

b. Which best describes your use of traditional healers?

Never used	Used 1 – 2 times	Used 3 – 5 times	Used 6 – 8 times	Used more than 8 times
1	2	3	4	5

c. How helpful would you consider traditional healers for yourself or in general?

Very unhelpful	Somewhat unhelpful	Not helpful or unhelpful	Somewhat helpful	Very helpful
1	2	3	4	5

d. Please describe what you have used or the amount/way/purpose you have used traditional healers for. We encourage you to take a few extra minutes to describe this in detail.

5. **Chelation therapy** - Chelation therapy is a chemical process to which a substance is used to bind molecules, such as metals or minerals, and hold them tightly so that they can be removed from a system, such as the body. In medicine, chelation has been scientifically proven to rid the body of excess or toxic metals. For example a person who has lead poisoning may be given chelation therapy in order to bind and remove excess lead from the body before it can cause damage.

- o Heard of or used before
- o Never heard of or used before

IF "Heard of or used before" checked, GO TO

- o For physical health
- o For psychological health

AND

- o Used in conjunction with conventional medicine
- o Used alone

a. Which best describes your knowledge of use of chelation therapy?

Never heard of it	Heard of it but know very little	Know a little (somewhat familiar)	Know a fair amount	Know it well (very familiar)
1	2	3	4	5

b. Which best describes your use of chelation therapy?

Never used	Used 1 – 2 times	Used 3 – 5 times	Used 6 – 8 times	Used more than 8 times
1	2	3	4	5

c. How helpful would you consider chelation therapy for yourself or in general?

Very unhelpful	Somewhat unhelpful	Not helpful or unhelpful	Somewhat helpful	Very helpful
1	2	3	4	5

d. Please describe what you have used or the amount/way/purpose you have used chelation therapy for. We encourage you to take a few extra minutes to describe this in detail.

6. **Massage** – Therapists manipulate muscle and connective tissue to enhance function of those tissues and promote relaxation and well-being.

o Heard of or used before
o Never heard of or used before
IF "Heard of or used before" checked, GO TO
o For physical health
o For psychological health
AND
o Used in conjunction with conventional medicine
o Used alone

a. Which best describes your knowledge of use of massage?

Never heard of it	Heard of it but know very little	Know a little (somewhat familiar)	Know a fair amount	Know it well (very familiar)
1	2	3	4	5

b. Which best describes your use of massage?

Never used	Used 1 – 2 times	Used 3 – 5 times	Used 6 – 8 times	Used more than 8 times
1	2	3	4	5

c. How helpful would you consider massage for yourself or in general?

Very unhelpful	Somewhat unhelpful	Not helpful or unhelpful	Somewhat helpful	Very helpful
1	2	3	4	5

d. Please describe what you have used or the amount/way/purpose you have used massage for. We encourage you to take a few extra minutes to describe this in detail.

7. ***Taichi -*** *Taichi* is a mind-body practice that originated in China as a martial art. A person doing *taichi* moves his body slowly and gently, while breathing deeply and meditating. Many practitioners believe that *taichi* helps the flow throughout the body of a proposed vital energy called *qi*. A person practicing *taichi* moves her body in a slow, relaxed and graceful series of movements. One can practice on one's own or in a group. The movements make up what are called forms.

o Heard of or used before
o Never heard of or used before
IF "Heard of or used before" checked, GO TO
o For physical health
o For psychological health
AND
o Used in conjunction with conventional medicine
o Used alone

a. Which best describes your knowledge of use of *taichi*?

Never heard of it	Heard of it but know very little	Know a little (somewhat familiar)	Know a fair amount	Know it well (very familiar)
1	2	3	4	5

b. Which best describes your use of *taichi*?

Never used	Used 1 – 2 times	Used 3 – 5 times	Used 6 – 8 times	Used more than 8 times
1	2	3	4	5

c. How helpful would you consider *taichi* for yourself or in general?

Very unhelpful	Somewhat unhelpful	Not helpful or unhelpful	Somewhat helpful	Very helpful
1	2	3	4	5

d. Please describe what you have used or the amount/way/purpose you have used *taichi* for. We encourage you to take a few extra minutes to describe this in detail.

8. ***Qigong*** - *Qigong* is an ancient Chinese discipline combining the use of gentle physical movements, mental focus, and deep breathing directed toward specific parts of the body. Performed in repetitions, the exercises are normally performed two or more times a week for 30 minutes at a time.

o Heard of or used before
o Never heard of or used before
IF "Heard of or used before" checked, GO TO
o For physical health
o For psychological health
AND
o Used in conjunction with conventional medicine
o Used alone

a. Which best describes your knowledge of use of *qigong*?

Never heard of it	Heard of it but know very little	Know a little (somewhat familiar)	Know a fair amount	Know it well (very familiar)
1	2	3	4	5

b. Which best describes your use of *qigong*?

Never used	Used 1 – 2 times	Used 3 – 5 times	Used 6 – 8 times	Used more than 8 times
1	2	3	4	5

c. How helpful would you consider *qigong* for yourself or in general?

Very unhelpful	Somewhat unhelpful	Not helpful or unhelpful	Somewhat helpful	Very helpful
1	2	3	4	5

d. Please describe what you have used or the amount/way/purpose you have used *qigong* for. We encourage you to take a few extra minutes to describe this in detail.

9. ***Reiki or energy healing therapy -*** *Reiki* is an energy medicine practice that originated in Japan. In *reiki,* the practitioner places his hands on or near the person receiving treatment, with the intent to transmit *ki,* believed to be the life-force energy.

- o Heard of or used before
- o Never heard of or used before

IF "Heard of or used before" checked, GO TO

- o For physical health
- o For psychological health

AND

- o Used in conjunction with conventional medicine
- o Used alone

a. Which best describes your knowledge of use of energy healing therapy?

Never heard of it	Heard of it but know very little	Know a little (somewhat familiar)	Know a fair amount	Know it well (very familiar)
1	2	3	4	5

b. Which best describes your use of energy healing therapy?

Never used	Used 1 – 2 times	Used 3 – 5 times	Used 6 – 8 times	Used more than 8 times
1	2	3	4	5

c. How helpful would you consider energy healing therapy for yourself or in general?

Very unhelpful	Somewhat unhelpful	Not helpful or unhelpful	Somewhat helpful	Very helpful
1	2	3	4	5

d. Please describe what you have used or the amount/way/purpose you have used energy healing therapy for. We encourage you to take a few extra minutes to describe this in detail.

10. **Acupuncture** - describes a family of procedures involving stimulation of anatomical points on the body by a variety of techniques. American practices of acupuncture incorporate medical traditions from China, Japan, Korea, and other countries. The most commonly used acupuncture technique involves penetrating the skin with thin needles that are manipulated by the hands or by electrical stimulation.

- o Heard of or used before
- o Never heard of or used before
  IF "Heard of or used before" checked, GO TO
- o For physical health
- o For psychological health
  AND
- o Used in conjunction with conventional medicine
- o Used alone

a. Which best describes your knowledge of use of acupuncture?

Never heard of it	Heard of it but know very little	Know a little (somewhat familiar)	Know a fair amount	Know it well (very familiar)
1	2	3	4	5

b. Which best describes your use of acupuncture?

Never used	Used 1 – 2 times	Used 3 – 5 times	Used 6 – 8 times	Used more than 8 times
1	2	3	4	5

c. How helpful would you consider acupuncture for yourself or in general?

Very unhelpful	Somewhat unhelpful	Not helpful or unhelpful	Somewhat helpful	Very helpful
1	2	3	4	5

d. Please describe what you have used or the amount/way/purpose you have used acupuncture for. We encourage you to take a few extra minutes to describe this in detail.

11. ***Yoga*** – *Yoga* is a mind-body practice in complementary and alternative medicine with origins in ancient Indian philosophy. The various styles of yoga that people use for health purposes typically combine physical postures, breathing techniques, and meditation or relaxation. There are numerous schools of yoga.

- o Heard of or used before
- o Never heard of or used before
  IF "Heard of or used before" checked, GO TO
- o For physical health
- o For psychological health
  AND
- o Used in conjunction with conventional medicine
- o Used alone

a. Which best describes your knowledge of use of *yoga*?

Never heard of it	Heard of it but know very little	Know a little (somewhat familiar)	Know a fair amount	Know it well (very familiar)
1	2	3	4	5

b. Which best describes your use of *yoga*?

Never used	Used 1 – 2 times	Used 3 – 5 times	Used 6 – 8 times	Used more than 8 times
1	2	3	4	5

c. How helpful would you consider *yoga* for yourself or in general?

Very unhelpful	Somewhat unhelpful	Not helpful or unhelpful	Somewhat helpful	Very helpful
1	2	3	4	5

d. Please describe what you have used or the amount/way/purpose you have used *yoga* for. We encourage you to take a few extra minutes to describe this in detail.

12. **Meditation** – The term meditation refers to a variety of techniques or practices intended to focus or control attention. Most of them are rooted in Eastern religious or spiritual traditions. These techniques have been used by many different cultures throughout the world for thousands of years.

o Heard of or used before
o Never heard of or used before
IF "Heard of or used before" checked, GO TO
o For physical health
o For psychological health
AND
o Used in conjunction with conventional medicine
o Used alone

a. Which best describes your knowledge of use of meditation?

Never heard of it	Heard of it but know very little	Know a little (somewhat familiar)	Know a fair amount	Know it well (very familiar)
1	2	3	4	5

b. Which best describes your use of meditation?

Never used	Used 1 – 2 times	Used 3 – 5 times	Used 6 – 8 times	Used more than 8 times
1	2	3	4	5

c. How helpful would you consider meditation for yourself or in general?

Very unhelpful	Somewhat unhelpful	Not helpful or unhelpful	Somewhat helpful	Very helpful
1	2	3	4	5

d. Please describe what you have used or the amount/way/purpose you have used meditation for. We encourage you to take a few extra minutes to describe this in detail.

APPENDIX C: DEMOGRAPHIC INFORMATION

Please fill out the following:

1. Age: _____
2. Nationality: _____
3. Ethnic/Racial Background: _____
4. Number of years you have lived in the US: _____
5. Religion: _____
6. First/native language: _____
7. Hometown (city and state): _____

Please check:

8. Sex: Male _____ Female _____
9. Year in School: Freshman _____ Sophomore _____ Junior _____ Senior _____ Graduate _____

APPENDIX D: INFORMED CONSENT

Title of Research: Attitudes toward Alternative Medicine in College Students as a Function of Nationality: Relationships to CAM Familiarity and Personality

Investigator: Joanna Ho, M.S.

Explanation of Procedures

You are being asked to participate in a research project to investigate your attitudes toward alternative medicine, as related to exposure to complementary and alternative medicine (CAM) and the personality trait of openness to experience. There are 4 sections to the assessment packet, assessing for attitudes toward alternative medicine, openness to experience, familiarity/exposure to CAM and demographic information. The assessment packet will take about 20- 30 minutes to complete.

Risks and Discomforts

You will not be at physical or psychological risk however it is possible that you may experience some minimal discomfort resulting from answering the questions.

Benefits

There are no direct benefits by participating in this project. However, this research is expected to yield information about the relationships between attitudes toward alternative medicine and nationality through familiarity to alternative medicine and the personality construct of openness to experience.

Confidentiality

Only the researcher and Indiana State University Institutional Review Board will have access to the research materials, which will be transferred directly after completion and password protected. It is important not to discuss the content of this assessment packet with other schoolmates in order to protect the legitimacy of the study results. After you have completed this survey, there will be no other future e-mail contacts related to this project.

Withdrawal

Participation in this study is voluntary; refusal to participate will involve no penalty. You are free to withdraw consent and discontinue participation in this study at any time.