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## Attitudes Towards Complementary and Alternative Medicine Influence Its Use

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### Abstract

**Objective**—The aim of this study was to explore how attitudes towards complementary and alternative medicine (CAM) and conventional medicine influence CAM use in a healthy population, and how health locus of control and exercise further affect CAM use.

**Design**—A cross-sectional survey design was used.

**Participants**—The sample consisted of 65 healthy graduate students.

**Main Outcome Measures**—Since previous studies have focused on the attitudes of medical providers towards CAM, there are currently no standard, widely used measures of attitudes towards CAM from the perspective of the healthcare recipient. Thus, a new measure, the Complementary, Alternative, and Conventional Medicine Attitudes Scale (CACMAS) was created to address how attitudes of healthcare recipients affect CAM use. The Multidimensional Health Locus of Control Scale (MHLC) was used to investigate effects of health locus of control on CAM use, and participants reported which of 17 listed CAM treatments they had used in the past, were currently using, or would likely use in the future. Participants also reported days of exercise in the past month to explore if those engaging in healthy behaviors might report more CAM use.

**Results**—Having a philosophical congruence with CAM and agreement with holistic balance was associated with increased CAM use. Dissatisfaction with conventional medicine was also related to increased CAM use, but to a lesser extent. Those attributing health to personal behaviors (an internal health locus of control) reported more CAM use, as did those engaging in more resistance training in the previous month.

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The use of complementary and alternative medicine (CAM) has become increasingly popular in the United States, such that an estimated 38% of American adults reported using a form of CAM in the previous year<sup>1</sup> and spent an estimated \$33.9 billion on CAM therapies in 2007<sup>2</sup>. However, it remains unclear what drives the choice to begin CAM therapy, and why use is on the rise<sup>3, 4</sup>. Many reasons for seeking CAM treatments have been reported, such as having a chronic illness not responding well to traditional medical treatment (e.g., back pain, arthritis<sup>1</sup>), and feeling a greater sense of control over personal health when using CAM<sup>5</sup>. While these are significant factors, it is also important to consider attitudes towards CAM when assessing why it is chosen as a treatment.

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Two attitudinal dimensions that have been discussed as theoretically relevant to understanding CAM use are possession of a philosophical orientation congruent with CAM and dissatisfaction with conventional medicine. The former describes the degree to which individuals perceive CAM to be consistent with their conceptualization of health and illness<sup>6</sup>. Those with a philosophical orientation congruent with CAM would theoretically be more likely to pursue CAM treatment. Attitudes towards CAM have been explored in medical providers (e.g., doctors, nurses, medical students)<sup>7–11</sup>, but largely neglected in healthcare recipients. The current study investigates attitudes towards CAM in potential healthcare recipients rather than providers, to address how attitudes towards CAM influence those who might seek CAM treatments. Astin<sup>6</sup> found that having a philosophical congruence with CAM predicted increased CAM use in a mail survey of a random sample of individuals, but examined this with relatively few yes/no questions. The current study expands upon this potential predictor of CAM use with additional questions that use a Likert scale.

Dissatisfaction with conventional medicine has also been suggested as a reason for seeking CAM treatment, with patients citing such issues as poor doctor-patient communication and not enough time spent with the doctor<sup>3, 12, 13</sup>. Previous studies suggest that having a philosophical orientation congruent with CAM treatments may be more influential in the decision to use CAM than is being dissatisfied with conventional medicine<sup>6, 14</sup>, with some finding users of CAM to be no more dissatisfied with conventional medicine than non-users<sup>6</sup>. Indeed, CAM is often sought as a supplemental treatment rather than as a replacement for conventional methods<sup>15</sup>. However, most literature investigating attitudes towards CAM and conventional medicine in healthcare recipients have focused on individuals with illnesses (e.g., cancer, HIV, chronic illness) or those currently seeking medical services from either a CAM or conventional medical clinic<sup>4, 12, 16</sup>. The current study explores these dimensions in a healthy population.

Attitudes towards health in general may also contribute to the decision to seek CAM treatment. A belief in being able to affect personal health, rather than attributing health to others (e.g., doctors, family) or chance, may influence the way a person actively contributes to their own health<sup>17, 18</sup>. Those with a greater internal health locus of control (HLC), measured using the Multidimensional Health Locus of Control Scale (MHLC)<sup>19</sup>, are more likely to believe that their own actions directly relate to their health than those attributing health externally (to others or chance)<sup>17, 20</sup>. Having greater control over personal health is a commonly reported reason for seeking CAM treatment<sup>5, 21, 22</sup>, with previous studies finding a positive correlation between internal HLC and CAM use<sup>21–23</sup>, although these results are not consistent<sup>4, 23</sup>. As with attitudes towards CAM and conventional medicine, the relationship between HLC and CAM use has largely been explored in individuals with illnesses and/or recruited from clinics<sup>4, 14, 23–25</sup>. While Sasagawa et al.<sup>22</sup> found a positive relationship between an internal HLC and CAM use in healthy individuals, Testerman et al.<sup>4</sup> did not find such a link. However, participants in the latter study were recruited from a medical clinic and those in the former were randomly selected via the Internet. The current study aims to clarify previous results by examining the relationship between HLC and CAM use in a healthy population, given that the disparity between results could be influenced by the different illnesses for which participants were seeking care. The current study recruited healthy participants from a university setting rather than from a conventional medical or CAM clinic. As such, the current study will be better able to explore CAM attitudes and usage in a population that is not currently ill, making it more likely to include those who seek CAM for preventive as well as curative use.

The objective of the current study is to investigate the effects of attitudes towards CAM and conventional medicine on CAM usage in a population of healthy adults, and to examine how HLC affects CAM attitudes and usage. Specifically, the current study will explore whether

having a philosophical congruence with CAM, or being dissatisfied with conventional medicine, influences the choice to use CAM treatments. Since previous studies have focused on the attitudes of medical providers towards CAM, there are currently no standard, widely used measures of attitudes towards CAM from the perspective of the client/patient. As such, a new measure was created for the current study based on a review of the existing literature, including a scale designed to assess the attitudes of medical students toward CAM<sup>7</sup> and a survey of reasons patients use CAM<sup>6</sup>. Items were also based on content analysis of interviews with CAM users regarding their reasons for seeking CAM treatment<sup>26</sup>.

It is hypothesized that those with an internal HLC will be more likely to use CAM. Since those with a greater sense of control over their personal health may also exhibit healthier behaviors in general<sup>17, 21</sup>, the current study also examines exercise habits, hypothesizing that philosophical congruence with CAM and an internal HLC will be positively correlated with exercise. Previous studies have found those who use CAM to report more exercise than non-users<sup>27, 28</sup>, so the current study also explores the relationship between exercise and CAM use, with the hypothesis that those who report more aerobic exercise and resistance training will report greater CAM use. Knowledge of the motivations behind CAM usage will be valuable to practitioners of both CAM and conventional medicine, especially given the rising use of CAM.

## Methods

### Participants

Using a cross-sectional design, responses were collected from 65 graduate students from the Psychology department at the University of Colorado at Boulder, aged 22–45 ( $M = 27.87$ , 18 males, 47 females) (see Table 1). Written questionnaires, mailed to all students in the department (response rate of 78%), were completed voluntarily and anonymously, with participant compensation of \$50. Participants gave informed consent and all aspects of the present study were in accordance with and approved by the University of Colorado Human Research Committee.

### Measures

To measure attitudes towards CAM in healthy adults not in the medical professions, a questionnaire based on a review of the existing literature was created, named the Complementary, Alternative, and Conventional Medicine Attitudes Scale (CACMAS) (see Table 2). Items were modified from a scale assessing attitudes of medical students toward CAM<sup>7</sup> and a survey of reasons patients use CAM<sup>6</sup>. Additional items were written based on a content analysis of interviews with CAM users regarding their reasons for seeking CAM treatment<sup>26</sup>. The following two dimensions were identified from the literature as potentially explaining CAM use: a) possession of a philosophical orientation congruent with CAM and b) dissatisfaction with conventional medicine. Philosophical congruence with CAM was measured with items such as “Most complementary therapies stimulate the body’s natural therapeutic powers,” and “I believe complementary medicine enables me to take a more active part in maintaining my health.” Dissatisfaction with conventional medicine was measured with items such as “I don’t trust medical doctors and hospitals, so I use them as little as possible,” and “I have a lot of confidence in the medical doctor I see most often” (reverse scored). Participants responded using a 7-point Likert scale, ranging from 1 (“strongly disagree”) to 7 (“strongly agree”).

After completing the CACMAS, participants filled out the Multidimensional Health Locus of Control Scale (MHLC)<sup>19</sup>, used to assess the degree to which health is attributed to a) internal factors (self), b) powerful others (e.g., doctors, family, friends), and c) chance.

These 3 subscales each contained 6 questions and were scored using a 7-point Likert scale ranging from 1 (“strongly disagree”) to 7 (“strongly agree”).

Following this, participants reported CAM use by noting if they had used a form of CAM treatment in the past, were presently using it, or would consider using it in the future, on a list of 17 CAM modalities (see Table 3), similar to those used in other studies<sup>1, 7</sup> and to those listed on the website for the National Center for Complementary and Alternative Medicine (NCCAM)<sup>29</sup>. Lastly, participants reported frequency of resistance training and aerobic exercise in the previous month, by noting how many days per week on average they engaged in each during the past month.

## Statistical Analyses

Data were analyzed using SPSS version 16.0 (SPSS, Inc., Chicago, IL). Factor analysis was conducted on the CACMAS using Varimax rotation. In addition, Cronbach’s alpha was calculated to determine internal consistency. Correlational and regression analyses were conducted on the following variables of interest: CACMAS, MHLC, CAM usage, exercise, and age. Due to previous studies finding that women report more CAM use than men<sup>1, 22, 25</sup>, gender effects were explored using one-way ANOVA analyses.

## Results

### Preliminary Analyses

A factor analysis was conducted to determine if the CACMAS reflected the two intended factors (philosophical orientation congruent with CAM, and dissatisfaction with conventional medicine). However, three factors emerged during factor analysis rather than the anticipated two: a) philosophical congruence with CAM (eigenvalue = 6.99, 27.96% of variance), b) dissatisfaction with conventional medicine (eigenvalue = 3.39, 13.56% of variance), and a third factor c), which will be called “holistic balance” (eigenvalue = 2.22, 8.86% of variance) (see Table 2). Important factors were identified by scree plot and as those with an eigenvalue greater than 2. The holistic balance factor represents the more holistic views associated with CAM and includes the questions “Physical and mental health are maintained by an underlying energy or vital force”, “Health and disease are a reflection of balance between positive life-enhancing forces and negative destructive forces” and “The body is essentially self-healing and the task of a health care provider is to assist in the healing process”. Due to the clear emergence of this third factor, the two subscales were subsequently broken into three subscales for correlational analyses. One question (“A patient’s expectations, health beliefs, and values should be integrated into the patient care process”) was discarded from analyses because it did not clearly load on any of the three factors and another (“I found it difficult to talk to my doctor”) was discarded from analyses due to low reliability. The resulting 6-item dissatisfaction with conventional medicine subscale yielded adequate reliability (alpha = .78), as did the 4-item holistic balance subscale (alpha = .79), with higher reliability for the 13-item philosophical congruence with CAM subscale (alpha = .88).

As shown in Table 1, on a scale of 1–7, with 7 being “strongly agree”, participants reported a moderate to fair amount of philosophical orientation congruent with CAM ( $M = 4.56$ ,  $SEM \pm .13$ ) and a lower mean endorsement of holistic balance ( $M = 3.51$ ,  $SEM \pm .16$ ). Dissatisfaction with conventional medicine was fairly low ( $M = 2.84$ ,  $SEM \pm .14$ ). All means were significantly different from each other,  $p < .001$ . Holistic balance score was significantly correlated with both philosophical orientation congruent with CAM ( $r = .50$ ,  $p < .001$ ) and dissatisfaction with conventional medicine ( $r = .26$ ,  $p = .037$ ), such that increased belief in holistic balance was associated with more congruence with CAM

philosophy and more dissatisfaction with conventional medicine. There was also a positive correlation between philosophical congruence with CAM and dissatisfaction with conventional medicine,  $r = .30, p = .016$ .

### CACMAS and CAM Usage

Correlational analyses were used to see if attitudes measured in the CACMAS were related to CAM usage (see Table 4). As hypothesized, having a philosophical orientation congruent with CAM therapies was associated with significantly more past CAM use ( $r = .51, p < .001$ ), present use ( $r = .41, p = .001$ ), and likely future use ( $r = .38, p = .002$ ). A higher score in agreement with holistic balance was significantly associated with more present CAM use ( $r = .52, p < .001$ ) and likely future use ( $r = .34, p = .006$ ), but not with use of CAM in the past ( $r = .19, p = .138$ ). Dissatisfaction with conventional medicine was positively correlated with greater past use of CAM ( $r = .25, p = .045$ ), but not with current use ( $r = .07, p = .603$ ) or likely future use ( $r = .05, p = .682$ ).

Analyses also examined whether CACMAS score and CAM usage differed as a function of gender or age. Female participants reported significantly greater philosophical congruence with CAM than male participants ( $M = 4.75, SEM \pm .24$  and  $M = 4.08, SEM \pm .15$ , respectively,  $F(1, 64) = 5.73, p = .020$ ) and significantly more use of CAM in the past than males ( $M = 3.40, SEM \pm .32$  and  $M = 2.00, SEM \pm .49$ , respectively,  $F(1, 64) = 5.55, p = .022$ ). Females also reported marginally greater dissatisfaction with conventional medicine than males ( $M = 3.00, SEM \pm .17$  and  $M = 2.41, SEM \pm .22$ , respectively,  $F(1, 64) = 3.84, p = .054$ ). One participant did not report age, so analyses involving age were on 64 participants. There was a significant effect of age on CAM use, such that older participants reported more past ( $r = .36, p = .004$ ) and current ( $r = .45, p < .001$ ) CAM use. There were no effects of age on CACMAS scores.

### Health Locus of Control (HLC)

Correlational analyses were also conducted to see if an individual's HLC was related to CACMAS score and/or usage of CAM (see Table 4). That is, to see if those with an internal HLC would be more likely to use CAM and to have attitudes favorable towards CAM. Indeed, significant associations between internal HLC and CAM use were found, such that having a greater internal HLC was positively correlated with present CAM use ( $r = .33, p = .007$ ) and likely future CAM use ( $r = .27, p = .030$ ), although not with past CAM use ( $r = .13, p = .296$ ). Furthermore, having an internal HLC was positively associated with attitudes towards CAM, with significant correlations between internal HLC and both a philosophical orientation towards CAM ( $r = .32, p = .009$ ) and a holistic balance viewpoint ( $r = .47, p < .001$ ). Dissatisfaction with conventional medicine was not significantly correlated with internal HLC ( $r = .05, p = .688$ ). A significant correlation between internal HLC and chance HLC was found, such that those with an internal HLC attributed health less to chance,  $r = -.37, p = .002$ . There was a significant correlation between powerful others HLC and age, such that as age increased, participants attributed health less to powerful others (e.g., family, doctors, friends),  $r = -.32, p = .009$ .

### Exercise

One participant was excluded from analyses investigating resistance training because she was determined to be a significant outlier based on graphical observation and Grubb's test for outliers<sup>30</sup>. This participant engaged in significantly more weekly resistance training than the mean (4.06 standard deviations above the mean) and as such, skewed results. Thus, the sample size for relationships involving resistance training is 64 rather than 65.



Analyses were conducted to investigate the relationship between exercise and CAM use (see Table 4), to see if those who regularly engaged in exercise used more CAM, since previous studies have found CAM users more likely to engage in healthy behaviors than non-users<sup>27, 28</sup>. Additionally, the relationship between exercise and attitudes towards CAM was explored, with the hypothesis that those with a philosophical orientation congruent with CAM would be more likely to engage in exercise. There was a significant relationship between aerobic exercise and philosophical congruence with CAM, such that those with a higher philosophical congruence with CAM reported more aerobic exercise (average days per week of exercise) in the previous month ( $r = .25, p = .041$ ). There was a marginally significant positive association between philosophical congruence with CAM and resistance training (average days per week of training) in the previous month ( $r = .22, p = .089$ ). There was also a significant relationship between resistance training in the previous month and CAM usage, such that those who were presently using CAM and those who were likely to use CAM in the future reported more resistance training ( $r = .28, p = .027$  and  $r = .28, p = .028$ , respectively).

Since it has been suggested that those with an internal HLC may be more likely to engage in preventive health measures<sup>17, 21</sup>, analyses investigated the relationship between HLC and exercise in the previous month and found that those with a higher internal HLC engaged in more aerobic exercise in the previous month,  $r = .29, p = .020$  (see Table 4). However, there was no significant correlation between internal HLC and resistance training in the previous month,  $r = .19, p = .140$ . There were no significant relationships between exercise levels and age or gender.

### Multiple Regression Analyses

Given that there were correlations between subscales on the CACMAS and HLC (see Table 4), multiple regression analyses were performed to investigate the contribution of each to CAM usage (see Table 5). Philosophical congruence emerged as the most consistent predictor of CAM use when controlling for HLC and the other CACMAS subscales. It was the sole predictor of past CAM use, and along with powerful others HLC predicted future CAM use. Holistic balance was the sole predictor of current CAM use, even when controlling for HLC and the other CACMAS subscales. In exercise outcomes, aerobic exercise was predicted by internal HLC and marginally by philosophical congruence.

### Discussion

The current study provides important information on the reasons people seek CAM treatment, specifically how attitudes towards CAM and conventional medicine, as well as health in general, relate to CAM usage. While previous research has focused on CAM attitudes and usage among medical providers, or those recruited from medical or CAM clinics, the current study involved healthy graduate students recruited from a university setting. As such, the current study was able to address why healthy individuals seek CAM treatment, allowing greater generalizability to those seeking CAM for preventive as well as curative reasons.

Although only two constructs were identified from past research as predictors of CAM use (philosophical congruence with CAM, and dissatisfaction with conventional medicine), a third unique construct named “holistic balance” was revealed during preliminary data analyses. Although holistic balance correlates with philosophical congruence with CAM more than it does with dissatisfaction with conventional medicine, it emerges as a unique factor. Items loading on philosophical congruence focused on a broad array of concepts, including the mind-body relation, and nature of the client-practitioner relation. Holistic balance items tended to be more narrowly focused on a particular conception of the mind-

body relation (e.g., as self-healing, in balance, and maintained by an underlying energy). Based on this content, it is reasonable that participants could endorse the broader philosophical congruence without subscribing to the particular beliefs about holistic balance. As this conceptual distinction has not been made before, it will be important to identify how consistent this distinction is, and the unique predictors and consequences of each.

As may be expected, having a philosophical orientation congruent with CAM was positively correlated with CAM usage, such that those with beliefs congruent with CAM were more likely to have used CAM in the past, be currently using it, and be likely to use it in the future. It was also found that those with a strong response to holistic balance questions were significantly more likely to be presently using CAM and to use CAM in the future. When controlling for other hypothesized predictors of CAM use (HLC and the other CACMAS subscales), philosophical congruence with CAM still predicted past and future CAM use, but holistic balance predicted current use. A possible explanation for this could be that although a philosophical agreement with CAM treatments may make an individual willing to try CAM treatments if the opportunity presents itself, the particular beliefs about holistic balance may be more effective in promoting active seeking of CAM treatments. This could explain why those with higher agreement with holistic balance were more likely to be presently engaging in CAM treatments, whereas those with a philosophical congruence with CAM indicated being willing to try CAM in the future.

Dissatisfaction with conventional medicine showed a less clear relationship with CAM use, as has been previously reported in the literature<sup>14</sup>. Dissatisfaction with conventional medicine was positively correlated with past CAM usage, such that participants were more likely to have used a form of CAM in the past if they were dissatisfied with conventional medicine. However, there was no relationship between current or likely future CAM use and dissatisfaction with conventional medicine. The latter result is consistent with other reports noting that while dissatisfaction with conventional medicine is frequently mentioned anecdotally as a reason for using CAM, this may account for relatively little variance in why people actually seek CAM<sup>6</sup>. The current data suggest that CAM is sought primarily because of an approach toward mind-body practices rather than out of a desire to avoid conventional medicine.

Having a positive attitude towards CAM was also correlated with having an internal HLC, such that believing health to be a result of personal behavior was positively related to having a viewpoint congruent to that associated with CAM treatments, and also with beliefs in holistic balance. An internal HLC was also associated with current CAM use and greater likelihood of using CAM in the future, such that those who believe personal actions to impact health are more likely to use CAM. These results are consistent with previous studies finding a positive correlation between internal HLC and CAM use<sup>21-23</sup>. However, as mentioned above, it did appear that attitudes towards CAM were more influential on CAM usage than was having an internal HLC, given that internal HLC was no longer a significant predictor of CAM use when taking CAM attitudes into account. Perhaps surprisingly, dissatisfaction with conventional medicine and belief that health is determined by powerful others were not strongly (negatively) correlated. This is likely explained by the fact that while items assessing the impact of powerful others include many references to conventional medical practitioners, powerful others also include family and friends. Since both the CACMAS and MHLC investigate attitudes towards healthcare, there was a concern that they might be targeting the same construct. However, given that the scales were only modestly intercorrelated and that CACMAS score was more influential on reported CAM usage than was MHLC score with all subscales in a model together, it appears that the CACMAS is indeed investigating a unique aspect of health attitudes than is the MHLC. Since the

CACMAS predicted CAM usage over and above the MHLC, it is a useful additional measure to explore reasons individuals may choose CAM treatments.

There was a significant relationship between attitudes congruent with CAM and aerobic exercise, such that those who exercised more reported a greater philosophical congruence with CAM. A similar pattern was seen for resistance training, although only marginally significant. Furthermore, there was a significant association between participation in resistance training throughout the month and CAM usage (present and likely future use). Having an internal HLC was significantly correlated with both aerobic exercise and a philosophical orientation congruent with CAM. This suggests that those who were more conscious of taking personal action to care for their health were more open to both exercise and CAM. Since participants in the current study only recorded if they had used, were using, or were likely to use forms of CAM, future studies could investigate frequency of CAM use, to determine if frequent users have different health behaviors than infrequent users. Additional health measures could also be included in future studies, as previous research has found CAM users to report greater support of other good health practices (e.g., good diet, reduced stress, good sleeping habits) <sup>13</sup>.

Previous studies have found women to report using more CAM than men <sup>1, 22, 25</sup>, so the current study investigated effects of gender on CAM attitudes and usage. Consistent with previous findings, women were found to use more CAM in the past. The current study adds to this by also discovering women to have a greater philosophical congruence with CAM than men. There was also a trend towards women having greater dissatisfaction with conventional medicine than men. Given that philosophical congruence with CAM and dissatisfaction with conventional medicine are both potential reasons to seek CAM, it follows that women were found to report more CAM use in the past than men.

An age effect was also found, such that older participants were more likely to have used CAM in the past and be currently using it. This finding is consistent with previous studies that have found older participants more likely to use CAM treatments <sup>31</sup>, and with a national survey finding 30–69 being the age group amongst which CAM use is most common <sup>1</sup>. This makes intuitive sense, as older participants are more likely to have health problems for which they have sought medical care. Additionally, older participants may be more likely to be suffering from chronic ailments, such as back pain, that are difficult to treat with conventional medicine <sup>32</sup>. It was also found that older participants were less likely to attribute health to powerful others. Given that the “powerful others” category in the MHLC includes family and friends, this could reflect younger participants having more recently left home, an environment in which their parents would be more in control of their health than when living independently. Furthermore, since older adults have likely had more experience with healthcare than younger adults, they may have had more experiences in which physicians were unable to assist with health problems and as such may attribute less impact to powerful others.

There are some limitations of the current study to note. Given that data were collected from graduate students, this could make results hard to generalize to the general public, as previous studies have found higher education levels to be correlated with increased CAM use <sup>1, 6, 25</sup>. CAM use reported in the current study was higher than the estimated national average of 38.3% (looking at similar CAM modalities), with 63% of participants reporting current use of at least one CAM modality. Part of this could also be due to participants living in Boulder, an area in which CAM practitioners and training facilities are prevalent. Boulder has 89 listed acupuncture practitioners <sup>33</sup>, and houses two acupuncture colleges <sup>34, 35</sup>, a massage college <sup>36</sup> and a school devoted to the study of homeopathy <sup>37</sup>, which is considerable for a city with a population of only 103,650 <sup>38</sup>. All participants were recruited



from the Psychology department, although given the breadth of the Psychology department at the University of Colorado, there is significant diversity in students' interests and areas of study in Psychology (e.g., Behavioral Neuroscience, Social, Cognitive, Clinical). Thus, it is likely a modestly representative sample of graduate students. Another possible limitation is more women being included in the study than men, likely due to Psychology being a field in which women are typically overrepresented. Since the current sample size was relatively small ( $N = 65$ ), follow-up studies will include a more representative and larger group of participants. However, given the dearth of research on attitudes towards CAM of those who are not medical providers or recruited from a medical setting, this research represents a good starting point to investigate the reasons healthy adults seek CAM treatment.

In conclusion, the current study found a relationship between attitudes towards CAM and CAM use, such that those with a philosophical orientation congruent with CAM, and a belief in the power of holistic balance, are more likely to use CAM. Furthermore, those who attribute health to personal behaviors are also more likely to seek CAM treatment, although this appears to be less influential than attitudes towards CAM. There was a positive association between past CAM use and dissatisfaction with conventional medicine, indicating that unhappiness with conventional treatment does influence the decision to seek CAM treatment. However, the current results suggest that having a mindset in agreement with CAM philosophies may play a larger role in this decision. It is unclear, however, whether certain health beliefs lead to CAM use, or if it might be that use of CAM encourages particular beliefs. Future prospective studies will further examine this.

There are several potential benefits to this knowledge. Identifying reasons underlying CAM use could help explain CAM's increasing popularity as well as what aspects of healthcare are valued. This knowledge could be used to modify conventional medicine by incorporating certain aspects of CAM into traditional medical treatments. Possible ways to approach this could be to increase focus on doctor-patient interpersonal interactions during medical training, to encourage health providers to support and emphasize personal responsibility and involvement in health (e.g., adding exercise to a medication regimen for treatment of high cholesterol), and being able to provide appropriate information to patients about CAM treatments. Furthermore, the CACMAS is currently being used to assess whether attitudes towards CAM mediate the effectiveness of CAM treatment. If it is found that they do, the CACMAS could be used as a tool to predict for whom CAM treatments might be most successful, helping physicians identify patients that may benefit from CAM.

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**Table 1**

## Participant characteristics

Age (mean $\pm$ SEM)	27.87 $\pm$ .60
Year in graduate school (mean $\pm$ SEM)	3.32 $\pm$ .23
Gender (% male)	27.7
Ethnicity	
% Asian American	1.5
% Hispanic	1.5
% Caucasian	92.3
% Other	4.6
CACMAS score (mean $\pm$ SEM)	
Philosophical congruence with CAM	4.56 $\pm$ .13
Dissatisfaction with conventional medicine	2.84 $\pm$ .14
Holistic balance	3.51 $\pm$ .16
CAM usage (number of types of CAM used, mean $\pm$ SEM)	
Past use	3.02 $\pm$ .28
Current use	1.26 $\pm$ .16
Likely future use	6.78 $\pm$ .53
HLC score (mean $\pm$ SEM)	
Internal	29.69 $\pm$ .61
Powerful others	14.74 $\pm$ .64
Chance	16.94 $\pm$ .65
Exercise (average days per week in past month, mean $\pm$ SEM)	
Aerobic exercise	3.33 $\pm$ .22
Resistance training	1.14 $\pm$ .16

CACMAS score: Mean on a scale of 1 (strongly disagree) to 7 (strongly agree).

HLC score: Sum of scores for the 6 questions in each of the three categories (internal, powerful others, chance), on a scale of 1 (strongly disagree) to 7 (strongly agree), with a maximum score per category = 42.

**Table 2**

## Complementary, Alternative, and Conventional Medicine Attitudes Scale (CACMAS)

Questions (answered on a scale of 1–7, with 1 = strongly disagree and 7 = strongly agree)	Subscale Factor Loading		
	P	H	D
1. The health of my body, mind, and spirit are related, and whoever cares for my health should take them into account. (3)	<b>.435</b>	.010	.272
2. I have a more equal relationship with my complementary practitioner than with my doctor. (5)	<b>.579</b>	.160	.368
3. Effects of complementary therapies are usually the result of a placebo effect. (Reverse scored) (6)	<b>–.517</b>	–.003	–.010
4. I feel that complementary treatment is a more natural form of healing than orthodox medicine. (7)	<b>.595</b>	.468	–.005
5. Complementary therapies are a threat to public health. (Reverse scored) (9)	<b>–.716</b>	.036	.090
6. I feel so relaxed after complementary treatment sessions. (17)	<b>.575</b>	.122	–.013
7. I believe that complementary medicine enables me to take a more active part in maintaining my health. (18)	<b>.588</b>	.384	.046
8. Most complementary therapies stimulate the body's natural therapeutic powers. (19)	<b>.639</b>	.403	.241
9. Complementary therapies include ideas and methods from which conventional medicine could benefit. (20)	<b>.658</b>	.132	.082
10. Treatments not tested in a scientifically recognized manner should be discouraged. (Reverse scored) (21)	<b>–.521</b>	–.079	.018
11. I believe that complementary therapy will be more effective for my problem than orthodox medicine. (22)	<b>.538</b>	.213	.325
12. The explanation of my illness that I was given by my complementary practitioner made sense. (23)	<b>.631</b>	.210	–.175
13. I value the emphasis on treating the whole person. (24)	<b>.681</b>	.037	.078
14. The body is essentially self-healing and the task of a health care provider is to assist the healing process. (2)	.096	<b>.605</b>	.265
15. Physical and mental health are maintained by an underlying energy or vital force. (10)	.220	<b>.538</b>	.214
16. A patient's symptoms should be regarded as a manifestation of a general imbalance or dysfunction affecting the whole body. (12)	.249	<b>.482</b>	.095
17. Health and disease are a reflection of balance between positive life enhancing forces and negative destructive forces. (13)	–.038	<b>.993</b>	.109
18. The last time I went to see a medical doctor, I was very satisfied with the care I received. (Reverse scored) (1)	–.144	.061	<b>–.748</b>
19. The last time I had important questions about my health care and I asked a medical doctor about them, I understood the answer. (Reverse scored) (4)	–.018	–.076	<b>–.357</b>
20. I have a lot of confidence in the medical doctor I see most often for my health care. (Reverse scored) (8)	.099	–.134	<b>–.807</b>
21. I don't trust doctors and hospitals, so I use them as little as possible. (11)	.210	.283	<b>.474</b>
22. The last time I saw a medical doctor, he or she did not understand my problem. (14)	.040	.177	<b>.700</b>
23. The last time I saw a medical doctor, he or she did not give me enough time. (25)	.030	.107	<b>.574</b>
24. I found it difficult to talk to my doctor. *(16)	.065	.076	<b>.523</b>
25. A patient's expectations, health beliefs, and values should be integrated into the health care process. **(15)	.304	.203	–.010

P = Philosophical congruence with CAM

D = Dissatisfaction with conventional medicine

H = Holistic balance

Number in parenthesis indicates question order.

\* Question not included in analyses due to low reliability

\*\* Question not included in analyses due to low factor loading



**Table 3**

Treatment modalities included in CAM usage questionnaire

<b>CAM Treatment</b>
Biofeedback
Hypnosis
Meditation/yoga/relaxation/imagery
T'ai chi/qi gong
Acupuncture/acupressure
Ayurveda
Curanderismo
Chiropractic
Massage
Osteopathy
Therapeutic touch/Reiki
Spirituality/prayer
Herbal/botanical/supplements
Homeopathy
Cranio-sacral
Rolfing
Naturopathy

Table 4

Intercorrelations of hypothesized predictors and usage of CAM

	1	2	3	4	5	6	7	8	9	10	11	12
1. Philosophical congruence with CAM	...											
2. Dissatisfaction with conventional medicine	.30 <sup>†</sup>	...										
3. Holistic balance	.50 <sup>‡</sup>	.26 <sup>†</sup>	...									
4. Past CAM use	.51 <sup>‡</sup>	.25 <sup>†</sup>	.19	...								
5. Present CAM use	.41 <sup>‡</sup>	.07	.52 <sup>‡</sup>	.35 <sup>†</sup>	...							
6. Future CAM use	.38 <sup>†</sup>	.05	.34 <sup>†</sup>	.41 <sup>‡</sup>	.28 <sup>†</sup>	...						
7. Internal HLC	.32 <sup>†</sup>	.05	.47 <sup>‡</sup>	.13	.33 <sup>†</sup>	.27 <sup>†</sup>	...					
8. Chance HLC	-.23 <sup>*</sup>	.03	-.12	-.18	-.12	-.13	-.37 <sup>†</sup>	...				
9. Powerful others HLC	-.15	-.11	.15	-.20	.02	.24 <sup>*</sup>	.12	.18	...			
10. Aerobic exercise	.25 <sup>†</sup>	-.04	.16	-.11	.20	-.08	.29 <sup>†</sup>	.02	-.03	...		
11. Resistance training	.22 <sup>*</sup>	-.13	.12	.23 <sup>*</sup>	.28 <sup>†</sup>	.28 <sup>†</sup>	.19	.02	-.10	.19	...	
12. Age	.19	.16	.20	.36 <sup>†</sup>	.45 <sup>‡</sup>	.09	-.32	.01	-.32 <sup>†</sup>	-.10	.06	...

\* p < .10  
<sup>†</sup> p ≤ .05  
<sup>‡</sup> p ≤ .001

**Table 5**  
Multiple regression analyses investigating contributions of CACMAS and HLC subscales to reported CAM usage and exercise.

	Past CAM Use		Current CAM Use		Future CAM Use		Aerobic Exercise		Resistance Training	
	$\beta$	<i>p</i>	$\beta$	<i>p</i>	$\beta$	<i>p</i>	$\beta$	<i>p</i>	$\beta$	<i>p</i>
Philosophical congruence with CAM	1.04	.001	.26	.128	1.47	.014	.43	.097	.27	.137
Dissatisfaction with conventional medicine	.23	.326	-.13	.353	-.19	.681	-.20	.333	-.26	.083
Holistic balance	-.14	.586	.41	.006	.33	.508	-.08	.719	.02	.898
Internal HLC	-.003	.960	.02	.51	.05	.698	.12	.032	.05	.195
Chance HLC	-.03	.610	.004	.895	-.05	.639	.07	.124	.04	.240
Powerful Others HLC	-.04	.446	-.008	.779	.23	.025	-.03	.558	-.03	.282