Why Do We Use Traditional, Complementary, and Alternative Medicine Practices? The Role of Personality Traits and Thinking Dispositions

Predrag Teovanović, University of Belgrade, Republic of Serbia
Danka Purić, University of Belgrade, Republic of Serbia

The Asian Conference on Psychology & the Behavioral Sciences 2024
Official Conference Proceedings

Abstract
The use of traditional, complementary, and alternative medicine (TCAM) practices is growing worldwide. To understand the reasons behind this trend, we explored basic psychological variables such as personality traits and thinking dispositions as predictors of TCAM use. A sample representative of the Serbian adult population (N = 1003; 57.6% female; age range: 18-75) completed: 1) TCAM-22, a comprehensive checklist for indicating lifelong use of 22 TCAM practices such as acupuncture, use of herbal products, meditation/mindfulness, and prayer for own health, 2) HEXACO personality inventory, 3) DELTA inventory assessing the additional personality trait of Disintegration - a tendency towards psychotic-like experiences, 4) REI-8 assessing rational and experiential thinking styles, and 5) the Cognitive Reflection Test. An average participant used eight TCAM practices during their lifetime (M = 7.92), but there was also a considerable level of variability in TCAM use (SD = 3.30). Personality traits and thinking dispositions were significant predictors of TCAM use, $F(10, 992) = 10.70$, $p < .001$, explaining 9.7% of its variance. More use of TCAM was best predicted by high experientiality (β = .16) and high Openness (β = .14), followed by high Emotionality (β = .12) and Disintegration (β = .11), with low Honesty-Humility (β = -.09) and low cognitive reflection (β = -.06) also contributing to the prediction. Our results suggest that thinking styles and personality traits may play a significant role in the choice of medical treatment and should thus be taken into consideration when planning healthcare strategies.

Keywords: Traditional, Complementary, and Alternative Medicine (TCAM) Use, Personality Traits, Thinking Dispositions

Introduction

The use of traditional, complementary, and alternative medicine (TCAM) practices is experiencing a global surge (Harris et al., 2012; Kemppainen et al., 2017). However, TCAM is not without its risks including the potential for adverse effects or interactions when TCAM is combined with conventional medications and steering individuals away from proven conventional treatments (Patel et al., 2017). Recognizing these risks, the World Health Organization (WHO) underscores the necessity for a prudent approach to TCAM usage. This entails considering the evidence base for TCAM practices and carefully weighing their benefits against potential risks (WHO, 2019).

TCAM use is driven by a multitude of factors including deeply ingrained cultural beliefs, dissatisfaction with conventional medical treatments, the exponential growth of online information accessibility, and the perceived effectiveness in managing chronic conditions (Frass et al., 2012; Posadzki et al., 2013). However, despite belonging to the same culture or patient group, individuals exhibit varying levels of readiness in embracing TCAM practices resulting in significant intersubject variability in their use (Lazarević et al., 2021; 2023; Purić et al., 2022; Teovanović et al., 2021). It may be that some broader factors of individual differences are also relevant to the decision to use TCAM. Among these factors, personality traits and cognitive dispositions have emerged as particularly intriguing areas of investigation, offering insight into the psychological mechanisms underlying the inclination towards TCAM practices. Therefore, our research aimed to explore the predictive role of these basic psychological variables in TCAM use.

Personality Traits and TCAM Use

Several theoretical frameworks, including the Big Five model (Goldberg, 1993) and HEXACO (Lee et al., 2004), supplemented by Disintegration - a recent conceptualization of proneness to psychotic-like experiences as a fundamental personality trait (Knežević et al., 2017) - have been employed to explore the interplay between personality traits and TCAM use.

One of the most consistent findings in the literature underscores a positive correlation between Openness to experience and TCAM adoption (refer to Galbraith et al., 2018 for a recent review). Individuals exhibiting high levels of Openness tend to possess curiosity, imagination, and a willingness to embrace novel ideas and experiences. Given that TCAM often encompasses unconventional and holistic approaches to health, those with elevated levels of Openness are more likely to explore alternative healing modalities.

Furthermore, studies investigating the relationship between Honesty-Humility and TCAM use remain relatively scarce but promising. Initial evidence suggests that individuals scoring high in Honesty-Humility may exhibit a reduced propensity to engage in TCAM practices lacking empirical support or scientific validation (Ashton & Lee, 2009; Lazarević et al., 2023). Preliminary findings also suggest that Disintegration can offer insights into the dispositional roots of TCAM use (Hergovich & Arendasy, 2007; Lazarevic et al., 2021), and the same holds for Agreeableness **(**Sirois & Purc-Stephenson, 2008; Smith et al., 2008). Conversely, research findings on the relationship between Extraversion and TCAM use are rather inconsistent indicating both positive (Smith et al., 2008) and negative (Ackerman & Chopik, 2020) correlations.

Thinking Dispositions and TCAM Use

Understanding individuals' cognitive processing styles and how they relate to healthcare decisions, including the use of TCAM, is an area of increasing interest among researchers. The cognitive-experiential self-theory recognizes relatively stable individual differences in two distinct thinking style dimensions. The first, experiential system is automatic, effortless, rapid, and associated with affect, while the second, rational system is marked by conscious, analytical, effortful processing that is slower and devoid of emotional influence (Epstein, 1998). Thinking styles are typically measured as self-assessed ability and engagement in rational and experiential thinking, which are assumed to be independent dimensions rather than opposites on the same continuum. On the other hand, cognitive reflection ability is defined as the capacity or inclination to resist reporting the intuitive response (Frederick, 2005). It also contrasts rational and intuitive thinking, but typically assesses them as performance on questions that have both an intuitive, yet incorrect answer, and a correct answer that requires more deliberation.

Studies investigating the relationship between analytic thinking and TCAM use suggested that individuals more prone to analytic thinking may harbor greater skepticism toward TCAM practices (Bishop & Lewith, 2010; Saher & Lindeman, 2005; Wheeler & Hyland, 2008). Similarly, cognitive reflection ability is inversely correlated with TCAM use (Pennycook et al., 2020; Teovanović et al., 2020). Conversely, an intuitive (experiential) thinking style has been linked with a more receptive attitude toward TCAM use (Bishop & Lewith, 2010; Teovanović et al., 2020).

Current Study

Personality traits and thinking dispositions have previously been shown to be related to TCAM use. Yet, more studies are needed to evaluate their combined effects and compare the strength of individual associations within a comprehensive model. Therefore, this study sought to establish the predictive power of personality traits and thinking dispositions for TCAM use, and also isolate the best predictors of this behavior.

Method

This research was part of a larger preregistered study (for more details, see Knežević et al., 2023). The Ethical Committees of the Faculty of Philosophy in Belgrade (#935/1), Faculty of Special Education and Rehabilitation (#139/1), and Faculty of Media and Communications (#228) approved the protocol. All participants provided informed consent and willingly engaged in the study, with all procedures conducted following relevant guidelines/regulations and upholding the principles of the Declaration of Helsinki.

Sample

The study was run on a Serbian national sample during May and June 2023. Data collection was managed through a professional research agency. The recruited sample (N = 1231) was probabilistically selected at the household level, aiming for representativeness of the Serbian general population aged between 18 and 75 years. Following data collection, we first excluded 187 participants who failed either of three embedded attention check items and then a further 41 participants who produced low-quality data. Consequently, the final sample, which formed the basis of all analyses, consisted of 1003 participants. Their average age was

48.41 years (*SD* = 17.02), with females comprising 50% of the sample and 59.3% living in urban areas (vs. 40.7% in rural). On average, participants had 11.96 years of formal education, were of middle socioeconomic status (*M* = 3.33 on a 1-6 scale, *SD* = 0.91), tended to align with mildly right-leaning political views (*M* = 4.41 on a 1-7 scale, *SD* = 1.79) and displayed a moderate level of religiousness (*M* = 3.29 on a 1-5 scale, *SD* = 1.34). They perceived their health as mostly good (*M* = 3.76 on a 1-5 scale, *SD* = 0.91).

Instruments and Measures

TCAM use was assessed via TCAM-22 (Purić et al., 2022), a comprehensive checklist for indicating lifelong use of 22 TCAM practices across four domains: alternative medical systems (comprising six items), natural product-based practices (six items), New Age practices (five items), and rituals/customs (five items). Participants indicated their use of each practice in a binary format (0 - indicating never having used the practice, 1 - indicating past or current usage). Total scores were derived by summing affirmative responses across relevant items, providing a measure of the count of lifetime engagement with selected practices.

Personality traits. The six fundamental personality traits: Honesty-Humility, Emotionality, eXtraversion, Agreeableness, Conscientiousness, and Openness - postulated by the HEXACO model -were assessed utilizing the HEXACO-60 inventory (Ashton & Lee, 2009). The additional broad trait of Disintegration was measured using the 20-item version of the DELTA9 scale (Knežević et al., 2017). Participants self-assessed each personality statement on a five-point Likert-type scale, ranging from 1 (*completely disagree*) to 5 (*completely agree*). The total score for each trait was derived by calculating the mean rating across the corresponding items.

Thinking styles were evaluated using an abbreviated 8-item version (Jokić et al, 2023) of the Rational-Experiential Inventory-40 (Pacini & Epstein, 1999). This scale consists of two subscales: rational (e.g., "I have a logical mind") and experiential (e.g., "I like to rely on my intuitive impressions"), each containing four items. Participants expressed their agreement with these statements on a scale ranging from 1 (*definitely not true of myself*) to 5 (*definitely true of myself*). The mean rating across the corresponding items was used as a measure of a given thinking style.

Cognitive reflection ability was assessed using the short Cognitive Reflection Test (Frederick, 2005), consisting of three items that cue an intuitive but incorrect response. The total score was computed based on the number of correct responses.

Results

As indicated by the results presented in Table 1, an average participant used 34.1% of the 22 examined TCAM practices during their lifetime. Looking at the domains of TCAM use, Natural product-based practices were by far the most commonly used with a typical participant reporting having used 84.8% of these practices, followed by Rituals/customs (33.6%). In contrast, participants had overall less experience in using Alternative medical systems (15.4%) and New Age (11.0%) practices.

Table 1. Descriptives for all variables

Variable	Items	Range	M	SD	Reliability
TCAM-22	22	0-22	7.51	3.27	.77
Alternative medical systems	6	1-6	0.93	1.23	.60
New Age practices	6	1-6	0.66	1.25	.70
Natural product-based practices	5	1-5	4.24	1.24	.70
Rituals/customs	5	1-5	1.68	1.34	.64
Honesty-Humility	10	1-5	3.61	0.66	.74
Emotionality	10	1-5	3.18	0.65	.71
eXtraversion	10	1-5	3.23	0.63	.76
Agreeableness	10	1-5	3.18	0.60	.69
Conscientiousness	10	1-5	3.59	0.62	.74
Openness	10	1-5	3.18	0.82	.78
Disintegration	20	1-4.6	2.40	0.71	.89
Rational thinking style	4	1-5	3.54	0.97	.80
Experiential thinking style	4	1-5	3.50	0.80	.72
Cognitive reflection	3	0-3	1.08	1.12	.67

Except for Disintegration, which was present in the sample to a moderately low degree, the means for all personality traits were above the scale midpoint while the ranges encompassed the entire spectrum of possible values. The same was true for both rational and experiential thinking styles, while out of three cognitive reflection items, participants on average got only one right.

Following the principal aim of the study, we investigated whether individual differences in TCAM use could be explained by personality traits and thinking dispositions, and if yes, to what extent. We conducted five separate multiple regression analyses, using overall TCAM use, as well as use within the four TCAM domains as criterion variables, and personality traits and thinking dispositions as predictors.

Results revealed that personality traits and thinking dispositions were significant predictors of overall TCAM use, $F(10, 992) = 10.70$, $p < .001$, explaining 9.7% of its variance (Table 2). Greater use of TCAM was primarily associated with high Experiential thinking ($\beta = .16$) and high Openness ($\beta = .14$), followed by high Emotionality ($\beta = .12$) and Disintegration ($\beta = .11$), with low Honesty-Humility ($\beta = -.09$) also contributing to the prediction.

Table 2. Multiple linear regressions with overall TCAM use and its four dimensions as dependent variables

	TCAM use (overall)		Alternative medical systems		New age medicine		Natural based practices		Rituals/ Customs	
	r	β	*r*	β	*r*	β	*r*	β	*r*	β
Honesty-Humility	-.06	-.09**	-.06	-.08*	-.08*	-.10**	.02	-.05	-.02	-.01
Emotionality	.13**	.12***	-.05	-.04	.06	.04	.13***	.12**	.21***	.19***
eXtraversion	.00	.01	.08*	.05	-.02	-.03	-.05	-.07*	-.02	.05
Agreeableness	.00	.04	-.01	.00	-.04	-.02	.06	.07*	-.01	.04
Conscientiousness	.05	.05	.03	.01	.01	.02	.10**	.08*	-.02	.03
Openness	.18**	.14***	.15***	.11**	.22***	.21***	.12***	.09**	-.02	-.04
Disintegration	.11**	.11**	.02	.04	.11**	.08*	.00	.00	.16***	.16***
Rational thinking	.06	.01	.09**	.02	.06*	-.01	.07*	.04	-.05	-.02
Experiential think.	.19**	.16***	.16***	.13***	.18***	.14***	.05	.02	.11**	.12***
Cognitive reflect.	-.07*	-.06	.01	-.01	-.05	-.06	-.03	-.05	-.10**	-.05
F (10, 992)	10.70***		5.34***		10.19***		4.94***		8.89	
R^2	9.7%		5.1%		9.3%		4.7%		8.2%	

Note. $^{***}p$ <.001, $^{**}p$ <.01, $^{*}p$ <.05

When considering specific domains of TCAM use, basic psychological variables were more predictive for New Age medicine use (R^2 = 9.3%) and Rituals/customs (R^2 = 8.2%) compared to the use of Alternative medical systems (R^2 = 5.1%) and Natural product-based practices (R^2 = 4.7%). Also, our analyses revealed a slightly different pattern of correlations. For instance, the combination of high Openness (β = .21) and Experiential thinking (β = .14) alongside low Honesty-Humility (β = -.10) explained individual differences in the use of New Age medicine. Conversely, the use of rituals and customs for healing purposes was better understood as a combination of heightened Emotionality (β = .19), Disintegration (β = .16), and Experientiality (β = .12).

Our results align well with the findings of previous studies. Namely, we replicated the conclusion that, out of all personality traits, Openness was the most relevant for the decision to use TCAM (Galbraith et al., 2018). It was both the strongest and the most consistent of TCAM use, both overall and across domains. The only exception was the use of Rituals/customs which comprise traditional and religious practices, which may reflect conservative worldviews. Also in line with previous studies, we found that Disintegration, Honesty-Humility, and eXtraversion are all relevant personality traits when considering TCAM use.

However, it is important to note that the experiential thinking style was equally important in predicting TCAM use as personality traits, and was relevant in predicting all TCAM domains, except for natural product-based practices. Since these practices were the most prevalent in the sample, it is possible that a restriction of range led to a lower correlation with this domain compared to others.

Conclusions

Our results suggest that thinking styles and personality traits may play a significant role in the choice of medical treatment, specifically the tendency to rely on TCAM, and should thus be taken into consideration when planning healthcare strategies. However, the relatively small percentage of explained variance indicates that other variables, such as previous experiences with official healthcare systems, (mis)trust in official medicine and its practitioners, but also irrational beliefs and cognitive biases, may be of even greater importance when it comes to TCAM use (Teovanović et al., 2024). Future studies should systematically explore the joint effects of a wider range of psychological variables on the use of TCAM. Additionally, investigating cultural variations in TCAM use and its relation with personality traits and thinking dispositions can provide valuable insights into the cross-cultural stability or instability of psychological underpinnings of TCAM use (see, e.g., Majima et al., 2022).

Acknowledgements

This research was supported by the Science Fund of the Republic of Serbia, #GRANT 7739597, *Irrational mindset as a conceptual bridge from psychological dispositions to questionable health practices* – REASON4HEALTH.

We would like to express our gratitude to our colleagues from the REASON4HEALTH project who contributed to the study design and data collection.

References

Ashton, M. C., & Lee, K. (2009). The HEXACO-60: a short measure of the major dimensions of personality. *Journal of Personality Assessment*, *91*(4), 340–345. https://doi.org/10.1080/00223890902935878

Bishop, F. L., & Lewith, G. T. (2010). Who Uses CAM? A Narrative Review of Demographic Characteristics and Health Factors Associated with CAM Use. *Evidence-Based Complementary and Alternative Medicine*, *7*(1), 11–28. https://doi.org/10.1093/ecam/nen023

Epstein, S. (1998). Cognitive-experiential self-theory. In *Advanced Personality* (pp. 211-238). Boston, MA: Springer US.

Frass, M., Strassl, R. P., Friehs, H., Müllner, M., Kundi, M., & Kaye, A. D. (2012). Use and acceptance of complementary and alternative medicine among the general population and medical personnel: a systematic review. *Ochsner Journal*, *12*(1), 45–56.

Frederick, S. (2005). Cognitive reflection and decision making. *Journal of Economic Perspectives*, *19*(4), 25-42.

Galbraith, N., Moss, T., Galbraith, V., & Purewal, S. (2018). A systematic review of the traits and cognitions associated with use of and belief in complementary and alternative medicine (CAM). *Psychology, Health & Medicine*, *23*(7), 854–869. https://doi.org/10.1080/13548506.2018.1442010

Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American Psychologist, 48*(1), 26–34. https://doi.org/10.1037/0003-066X.48.1.26

Harris, P. E., Cooper, K. L., Relton, C., & Thomas, K. J. (2012). Prevalence of complementary and alternative medicine (CAM) use by the general population: a systematic review and update. *International Journal of Clinical Practice*, *66*(10), 924–939. https://doi.org/10.1111/j.1742-1241.2012.02945.x

Hergovich, A., & Arendasy, M. (2007). Scores for Schizotypy and Five-Factor Model of a Sample of Distant Healers: A Preliminary Study. *Perceptual and Motor Skills, 105(1), 197–203.* https://doi.org/10.2466/pms.105.1.197-203

Jokić, B., Purić, D., & Knežević, G. (2023, March 31 – April 2). *REI-8: Development of a very brief version of Rational-Experiential Inventory using ant colony optimization procedure* [Conference presentation]. XXIX scientific conference Empirical studies in psychology, Belgrade, Republic of Serbia. https://hdl.handle.net/21.15107/rcub_reff_5662

Kemppainen, L. M., Kemppainen, T. T., Reippainen, J. A., Salmenniemi, S. T., & Vuolanto, P. H. (2018). Use of complementary and alternative medicine in Europe: Health-related and sociodemographic determinants. *Scandinavian Journal of Public Health*, *46*(4), 448–455. https://doi.org/10.1177/1403494817733869

Knezevic, G., Savic, D., Kutlesic, V., & Opacic, G. (2017). Disintegration: A reconceptualization of psychosis proneness as a personality trait separate from the Big Five. *Journal of Research in Personality, 70,* 187-201. https://doi.org/10.1016/j.jrp.2017.06.001

Knezevic, G., Lazarević, L., Purić, D., Zupan, Z., & Žeželj, I. (2023b). Prevalence of questionable health behaviours in Serbia and their psychological roots: protocol for a nationally representative survey. *BMJ Open*, *13*(10), e075274. https://doi.org/10.1136/bmjopen-2023-075274

Lazarević, L. B., Knežević, G., Purić, D., Teovanović, P., Petrović, M. B., Ninković, M., Živanović, M., Stanković, S., Branković, M., Lukić, P., Opačić, G., & Žeželj, I. (2023). Tracking variations in daily questionable health behaviors and their psychological roots: a preregistered experience sampling study. *Scientific Reports*, *13*(1), 14058. https://doi.org/10.1038/s41598-023-41243-w

Lazarević, L. B., Purić, D., Teovanović, P., Lukić, P., Zupan, Z., & Knežević, G. (2021). What drives us to be (ir)responsible for our health during the COVID-19 pandemic? The role of personality, thinking styles, and conspiracy mentality. *Personality and Individual Differences*, *176*, 110771. https://doi.org/10.1016/j.paid.2021.110771

Lee, K., & Ashton, M. C. (2004). Psychometric properties of the HEXACO personality inventory. *Multivariate Behavioral Research*, *39*(2), 329-358. https://doi.org/10.1207/s15327906mbr3902_8

Majima, Y., Walker, A. C., Turpin, M. H., & Fugelsang, J. A. (2022). Culture as a Moderator of Epistemically Suspect Beliefs. *Frontiers in Psychology*, *13*, 745580. https://doi.org/10.3389/fpsyg.2022.745580

Pacini, R., & Epstein, S. (1999). The relation of rational and experiential information processing styles to personality, basic beliefs, and the ratio-bias phenomenon. *Journal of Personality and Social Psychology, 76*(6), 972–987. https://doi.org/10.1037/0022-3514.76.6.972

Patel, S. J., Kemper, K. J., & Kitzmiller, J. P. (2017). Physician perspectives on education, training, and implementation of complementary and alternative medicine. *Advances in Medical Education and Practice*, *8*, 499–503. https://doi.org/10.2147/AMEP.S138572

Pennycook, G., McPhetres, J., Zhang, Y., Lu, J. G., & Rand, D. G. (2020). Fighting COVID-19 Misinformation on Social Media: Experimental Evidence for a Scalable Accuracy-Nudge Intervention. *Psychological Science*, *31*(7), 770–780. https://doi.org/10.1177/0956797620939054

Posadzki, P., Watson, L. K., Alotaibi, A., & Ernst, E. (2013). Prevalence of use of complementary and alternative medicine (CAM) by patients/consumers in the UK: systematic review of surveys. *Clinical Medicine*, *13*(2), 126–131. https://doi.org/10.7861/clinmedicine.13-2-126

Purić, D., Živanović, M., Petrović, M., Lukić, P., Knežević, G., Teovanović, P., Ninković, M., Lazić, A., Opačić, G., Branković, M., Lazarević, L. B.**,** & Žeželj, I. (2022). *Something old, something new, something borrowed, something green: How different domains of traditional, alternative, and complementary medicine use are rooted in an irrational mindset* [Preprint]. PsyArXiv. https://doi.org/10.31234/osf.io/agp5y

Saher, M., & Lindeman, M. (2005). Alternative medicine: A psychological perspective. *Personality and Individual Differences*, *39*(6), 1169-1178. https://doi.org/10.1016/j.paid.2005.04.008

Sirois, F. M., & Purc-Stephenson, R. J. (2008). Personality and consultations with complementary and alternative medicine practitioners: A Five-Factor Model investigation of the degree of use and motives. *Journal of Alternative and Complementary Medicine, 14*(9). https://doi.org/10.1089/acm.2007.0801

Smith, B. W., Dalen, J., Wiggins, K. T., Christopher, P. J., Bernard, J. F., & Shelley, B. M. (2008). Who Is Willing to Use Complementary and Alternative Medicine? *EXPLORE: The Journal of Science and Healing, 4(6), 359–367.* https://doi.org/10.1016/j.explore.2008.08.001

Teovanović, P., Lukić, P., Zupan, Z., Lazić, A., Ninković, M., & Žeželj, I. (2021). Irrational beliefs differentially predict adherence to guidelines and pseudoscientific practices during the COVID-19 pandemic. *Applied Cognitive Psychology*, *35*(2), 486–496. https://doi.org/10.1002/acp.3770

Teovanovic, P., Purić, D., Živanović, M., Lukic, P., Branković, M., Stanković, S., … Zezelj, I. (2024, January 27). *The Role of Cognitive Biases in Shaping Irrational Beliefs: A Multi-Study Investigation*. [Preprint]. https://doi.org/10.31234/osf.io/g59k4

Wheeler, P., & Hyland, M. E. (2008). Dispositional predictors of complementary medicine and vitamin use in students. *Journal of Health Psychology*, *13*(4), 516–519. https://doi.org/10.1177/1359105308088522

World Health Organization. (2019). *WHO global report on traditional and complementary medicine 2019*. World Health Organization.

Contact email: teovanovic@fasper.bg.ac.rs