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Personality and complementary and alternative medicine as potential explanations of self-rated health: A longitudinal investigation

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Abstract

This study examined whether complementary and alternative medicine (CAM) mediates the relationship between personality traits and long-term self-rated health. Data came from Waves 2 and 3 of the Midlife Development in the United States (MIDUS) study. All five personality traits and CAM use were measured at Wave 2, and self-rated health was assessed 10 years later at Wave 3. A composite CAM score captured overall engagement in alternative health practices. Structural equation modeling using the lavaan package in R estimated direct and indirect effects. Openness to experience predicted greater CAM use, while neuroticism and conscientiousness were directly associated with poorer and better health outcomes, respectively. However, CAM use did not mediate the relationship between any personality trait and future health. These findings suggest that personality traits are associated with long-term self-rated health independently of CAM use, indicating that other behavioral or psychological pathways may better account for these relationships.

Keywords

personality, complementary and alternative medicine (CAM), self-rated health, longitudinal study, mediation analysis, openness to experience, neuroticism, conscientiousness

Introduction

Personality traits are typically defined as internal, latent constructs that lead to relatively stable patterns of thoughts, feelings, and behaviors that reflect underlying dispositions. These traits have consistently predicted long-term health outcomes, including morbidity, mortality, and quality of life (Bogg and Roberts, 2004; Williams et al., 2004). Traits such as conscientiousness and openness to experience are generally associated with positive long-term health trajectories, while neuroticism often predicts poorer health outcomes (Honda and Jacobson, 2005; Lengel et al., 2016; Williams et al., 2004). Although the link between personality and health is well-established, understanding precisely how personality influences health remains an ongoing research challenge.

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Identifying specific behavioral pathways linking personality traits to health outcomes is crucial, as it provides potential intervention targets to improve health.

Complementary and alternative medicine (CAM) represents one possible set of behaviors that might connect personality traits and health. CAM includes various medical and wellness practices outside mainstream Western medicine, ranging from biologically-based therapies such as herbal supplements to mind-body techniques like meditation or yoga (Debas et al., 2011). CAM practices are notably widespread, with nearly 40% of American adults using some form annually (Barnes et al., 2008). Personality traits (particularly openness to experience, characterized by curiosity and receptivity to novel experiences) have been shown to predict engagement with CAM (Honda and Jacobson, 2005). However, empirical support for CAM's effectiveness in promoting health outcomes is inconsistent and frequently controversial, varying significantly across different practices (Staud, 2011). Given this mixed empirical landscape, it remains unclear whether CAM engagement meaningfully contributes to health outcomes or merely reflects personality-driven preferences without substantial health implications.

The present study investigates whether CAM use mediates the relationship between personality traits and long-term self-rated health. We focus specifically on self-rated health due to its demonstrated predictive validity for future health conditions and mortality across diverse populations (Idler and Benyamini, 1997; Jylhä, 2009). Five-Factor traits were selected because existing literature indicates they are most consistently and meaningfully associated with health outcomes and behaviors, including engagement in unconventional health practices such as CAM (Honda and Jacobson, 2005; Williams et al., 2004). Identifying how these personality-health associations unfold remains a key goal for advancing both theory and intervention.

Personality traits and long-term health outcomes

Substantial research demonstrates significant links between personality traits and long-term health outcomes. Conscientiousness (characterized by traits such as diligence, reliability, and self-control) predicts better long-term health, including increased longevity and reduced risk for chronic diseases (Bogg and Roberts, 2004). Conversely, neuroticism, marked by emotional instability and stress vulnerability, is consistently associated with poorer health outcomes, increased symptom reporting, and lower perceived health (Williams et al., 2004). Additionally, openness to experience, reflecting curiosity, intellectual engagement, and receptivity to new experiences, has been positively linked to health, though the mechanisms for this association remain less clear (Honda and Jacobson, 2005). Identifying why and how these personality-health relationships occur remains crucial, underscoring the importance of exploring behavioral mediators.

Health behaviors as pathways from personality to health

Health behaviors represent key explanatory mechanisms linking personality traits to health outcomes. Personality traits shape tendencies toward health-promoting or health-risk behaviors, thereby influencing individuals' long-term health. For example, highly conscientious individuals consistently demonstrate greater adherence to preventive health practices, healthier diets, and lower smoking rates, partially explaining their positive health outcomes (Bogg and Roberts, 2004). Conversely, individuals higher in neuroticism often engage in unhealthy coping behaviors (e.g. substance use) or less effective stress-management practices, negatively affecting their long-term health (Williams et al., 2004). Most research in this area has focused on conventional health

behaviors such as smoking, diet, exercise, or medication adherence. Less attention has been given to alternative behaviors such as CAM use, despite their widespread popularity and potential implications for health.

Complementary and Alternative Medicine (CAM) as a health behavior

CAM refers to a broad array of medical practices and products not typically included within conventional Western medical frameworks (Debas et al., 2011). The U.S. National Institutes of Health (NIH) categorizes CAM into five main domains: (1) alternative medical systems (e.g. traditional Chinese medicine, homeopathy); (2) mind-body interventions (e.g. meditation, yoga, guided imagery); (3) biologically-based therapies (e.g. herbal medicine, dietary supplements); (4) manipulative and body-based methods (e.g. chiropractic adjustments, massage therapy); and (5) energy therapies (e.g. Reiki, therapeutic touch; Debas et al., 2011). This diversity illustrates CAM's heterogeneous nature, encompassing practices ranging from empirically supported methods to approaches with little to no scientific validation.

Despite inconsistent empirical support, CAM usage remains prevalent. Approximately 40% of adults in the United States report engaging in CAM annually, most commonly natural products and mind-body techniques (Barnes et al., 2008). Individuals use CAM for various reasons, including managing chronic conditions, personal wellness, dissatisfaction with conventional medicine, and seeking treatments aligned with personal beliefs. Although CAM users frequently report subjective health benefits and satisfaction, rigorous clinical evaluations often yield mixed or inconclusive results regarding CAM's efficacy, indicating that benefits may be due partly to placebo or expectancy effects rather than intrinsic therapeutic properties (Staud, 2011). The widespread popularity and variable effectiveness of CAM highlight the importance of understanding the characteristics of individuals who seek out these alternative health practices.

Personality traits and CAM utilization

Research consistently demonstrates that openness to experience is significantly associated with greater likelihood of CAM utilization. Individuals high in openness, characterized by curiosity, creativity, and receptivity to novel experiences, are more inclined to explore unconventional health practices (Honda and Jacobson, 2005; Sirois and Purc-Stephenson, 2008). For instance, Honda and Jacobson (2005) found openness to positively predict nearly all CAM domains except manipulative body-based methods. Complementing this, a non-U.S. sample of Turkish academicians showed that Openness related to more favorable CAM attitudes, with 38.8% reporting past-year CAM use and 75.3% intending to use at least one modality (Metin et al., 2019). Together, these findings underscore openness as a central predictor of CAM usage, reflecting a general receptivity to novel approaches to health, across different populations and cultural contexts.

Other Big Five traits have shown less consistent associations with CAM. Extraversion has been weakly or negatively associated with introspective CAM practices such as meditation, possibly due to the introverted nature of such activities. Neuroticism exhibits mixed findings; although it might logically predict CAM engagement as a coping mechanism, empirical results often fail to demonstrate strong associations (Honda and Jacobson, 2005). Agreeableness and conscientiousness show limited or inconsistent links with CAM use, suggesting these traits may influence conventional health behaviors more robustly than alternative ones.

Beyond broad trait associations, coping and self-regulatory tendencies appear to channel personality into CAM choices. In a college sample, LaCaille and Kuvaas (2011) found that active coping and intrinsic self-regulation predicted CAM use, whereas avoidant coping specifically

predicted herbal-supplement use; importantly, satisfaction with conventional care did not predict either behavior. This pattern suggests that personality-linked self-regulation rather than simple dissatisfaction with biomedicine may help explain who turns to CAM and why, complementing evidence that Openness relates to CAM exploration (Honda and Jacobson, 2005).

Taken together, existing literature clearly links personality traits with health outcomes and establishes personality's role in predicting health behaviors, including CAM utilization. However, it remains unclear whether CAM use itself meaningfully mediates personality-health relationships. In other words, does CAM engagement offer tangible health benefits that help explain the link between personality and health outcomes among those who use such practices?

Current study

This study examines whether engagement in complementary and alternative medicine (CAM) serves as a behavioral mechanism linking personality traits to long-term self-rated health. Prior research consistently identifies openness to experience as a predictor of CAM engagement (Honda and Jacobson, 2005), while conscientiousness and neuroticism show more variable associations. However, the evidence linking CAM usage to improved health outcomes remains limited and inconclusive. As such, we adopt a cautious perspective on the potential health benefits of CAM, viewing it primarily as a psychologically or culturally motivated behavior rather than an empirically supported intervention for long-term health.

Using longitudinal data from the Midlife Development in the United States (MIDUS) study (Radler, 2014), we test whether CAM engagement at MIDUS 2 mediates the relationship between Big Five personality traits measured at the same wave and self-rated health assessed approximately 10 years later at MIDUS 3. To evaluate CAM engagement as a general behavioral tendency, we constructed a composite score reflecting average frequency of engagement across 15 CAM modalities. Self-rated health at MIDUS 2 is included as a covariate in all models to control for baseline differences in health status.

We focus on five personality traits (openness to experience, conscientiousness, neuroticism, extraversion, and agreeableness) and offer the following trait-specific hypotheses based on theoretical relevance and prior empirical patterns:

Hypothesis 1 (H1): Neuroticism and health via CAM use. We hypothesize that higher neuroticism at MIDUS 2 will predict poorer self-rated health at MIDUS 3, reflecting consistent links between neuroticism and negative health perceptions. Although individuals high in neuroticism may be more likely to explore various coping strategies, we expect little or no association between neuroticism and CAM use. Therefore, we do not anticipate a significant indirect effect through CAM engagement.

Hypothesis 2 (H2): Openness and health via CAM use. We hypothesize that higher openness to experience at MIDUS 2 will predict better self-rated health at MIDUS 3, due to greater psychological flexibility and exploration of diverse behavioral strategies. We also predict that openness will be positively associated with CAM engagement. However, given the weak evidence for CAM's long-term effectiveness, we expect no significant mediation effect through CAM use.

Hypothesis 3 (H3): Conscientiousness and health via CAM use. We hypothesize that higher conscientiousness at MIDUS 2 will predict better self-rated health at MIDUS 3, consistent with its robust associations with goal-directed health behaviors. However, we expect no substantial association between conscientiousness and CAM engagement. Thus, we anticipate no indirect effect through CAM use.

Hypothesis 4 (H4): Extraversion and health via CAM use. We hypothesize that extraversion will be associated with greater CAM engagement, potentially reflecting social openness or comfort with help-seeking. However, we do not expect extraversion to predict self-rated health directly or indirectly through CAM use.

Hypothesis 5 (H5): Agreeableness and health via CAM use. We hypothesize that agreeableness will be associated with CAM use, given its links to interpersonal trust and affiliative values. However, we do not expect agreeableness to predict self-rated health, nor do we anticipate a significant mediating effect via CAM engagement.

Methods

Data source and sample

Data for this study were drawn from the Midlife Development in the United States (MIDUS) longitudinal study, specifically Waves 2 (MIDUS 2) and 3 (MIDUS 3; Radler, 2014), which were conducted approximately 10 years apart. The analytic sample included participants with complete data on personality traits, complementary and alternative medicine (CAM) use, and self-rated health across both waves. Personality traits and CAM engagement were assessed at MIDUS 2, while self-rated health was measured at both MIDUS 2 (as a covariate) and MIDUS 3 (as the outcome). A total of 11,785 participants were initially available in the MIDUS 2 dataset. After applying listwise deletion for missing data on any relevant variables, the final analytic sample included 4011 participants across models.

Ethical statement

This study used de-identified, publicly available data from the MIDUS (Midlife in the United States) study. All procedures for MIDUS were approved by the appropriate institutional review board, and no additional ethical approval or participant consent was required for this secondary data analysis.

Measures

Personality traits. Personality traits were measured at MIDUS 2 using the Midlife Development Inventory (MIDI) Personality Scales developed by Lachman and Weaver (1997). Participants rated how much 31 adjectives described them using a 4-point Likert scale ranging from 1 ("A lot") to 4 ("Not at all"). These adjectives map onto five traits from the Big Five framework: neuroticism (4 items), extraversion (5 items), openness to experience (7 items), conscientiousness (5 items, including "thorough" added at MIDUS 2), and agreeableness (5 items). Items were reverse-coded where appropriate so that higher scores reflect greater standing on each trait. Trait scores were computed as the mean of all valid items, provided that participants responded to at least half of the items on the respective scale. Internal consistency for the MIDUS Wave 2 personality scales has been documented in the project manual: neuroticism ($\alpha = 0.74$), extraversion ($\alpha = 0.77$), openness to experience ($\alpha = 0.77$), conscientiousness ($\alpha = 0.68$), and agreeableness ($\alpha = 0.80$; Midlife in the United States (MIDUS), 2020).

The MIDI scales were administered to adults aged 25–74 in the United States who participated in MIDUS 2. The sample includes a nationally representative random-digit-dial (RDD) cohort, as well as additional respondents from twin pairs, siblings of RDD participants, and an urban oversample from Milwaukee. All participants were English-speaking and non-institutionalized at the time of data collection.

Complementary and Alternative Medicine (CAM). CAM use was assessed at MIDUS 2 using 15 self-report items covering a range of alternative health practices (e.g. acupuncture,

chiropractic, meditation, herbal therapy, spiritual healing). This battery initially included a 16th category called "other" but the response rate for any answer indicating any use was less than 3% and the operationalization of this specific item was vague, so it was dropped from this specific analysis. Respondents rated the frequency of use over the past year on a 5-point scale from "A lot" to "Never." For this study, a composite CAM score was created by reverse-coding and averaging all available items, such that higher scores reflect greater overall CAM engagement. This approach retained participants who responded to at least one CAM item and provided a general index of alternative health behavior frequency.

The use of a composite CAM score was guided by both theoretical and methodological considerations. Theoretically, this study aimed to evaluate CAM as a general behavioral tendency (an orientation toward alternative health practices) rather than to isolate the effects of specific modalities. Methodologically, the individual CAM domains were each assessed using single-item indicators, limiting their capacity to capture robust domain-specific constructs. Aggregating across items provides a more stable indicator of general CAM engagement while reducing measurement error associated with any single modality. This approach supports the study's goal of testing whether personality influences long-term health through broad behavioral patterns rather than discrete practices.

The 15-item CAM battery showed acceptable internal consistency at both waves: Wave 2 $\alpha = 0.71$ (std. $\alpha = 0.76$; 95% CI [0.70, 0.72]; average inter-item $r = 0.16$) and Wave 3 $\alpha = 0.72$ (std. $\alpha = 0.77$; 95% CI [0.71, 0.73]; average $r = 0.17$). At both waves, deleting any single item did not improve reliability (Wave 2 α_if_dropped ≈ 0.66–0.71; Wave 3 α_if_dropped ≈ 0.67–0.72), and all item–rest correlations were positive (Wave 2 r_drop = 0.14–0.55; Wave 3 0.19–0.56), indicating that no item was detrimental to scale coherence. Given the heterogeneity of modalities, these values are consistent with a modest but acceptable single "CAM use propensity" construct.

Self-rated health. Self-rated health is a widely used construct in health research and has consistently demonstrated strong predictive validity for a range of long-term outcomes, most notably mortality. Despite its simplicity, the use of a single-item measure (typically phrased as "How would you rate your overall health?") has been shown to outperform many objective indicators, including physician assessments and clinical biomarkers, in predicting who is at greatest risk of death (Idler and Benyamini, 1997). This robust association has been replicated across diverse populations and age groups, underscoring the measure's utility as a global indicator of health status (Jylhä, 2009). Importantly, individuals who rate their health as "poor" consistently face a significantly higher risk of mortality, even when controlling for diagnosed medical conditions. In the present study, self-rated health was assessed using a single item administered at both MIDUS 2 and MIDUS 3 that asked participants to rate their current overall physical health. Responses were recorded on a 1-to-5 Likert-type scale ranging from 1 = "Excellent" to 5 = "Poor." For interpretability, scores were reverse coded so that higher values reflected better perceived health. The MIDUS 3 rating served as the primary outcome variable, while the MIDUS 2 rating was included as a covariate in all mediation models to control for baseline differences in health status. This approach enabled the evaluation of long-term predictors of self-perceived health using a measure that is both psychologically meaningful and empirically validated.

Analytic strategy

Five structural equation models were estimated using the lavaan package in R to examine whether composite CAM use mediated the relationship between each Big Five personality trait and self-rated health at MIDUS 3. Each model included one trait as the predictor, CAM use at MIDUS 2 as the mediator, and self-rated health at MIDUS 3 as the outcome. Self-rated health at MIDUS 2 was included as a covariate to control for baseline health status.

To assess whether CAM heterogeneity could mask domain-specific effects, we created exploratory composites aligned with the U.S. NIH National Center for Complementary and Integrative Health (NCCIH) five-domain framework: (1) alternative (whole) medical systems, (2) mind-body interventions, (3) biologically based therapies, (4) manipulative/body-based methods, and (5) energy therapies. Where item coverage permitted, we formed unit-weighted means for each represented domain and analyzed these in parallel mediation models as a robustness check. Domains not represented by any MIDUS items were omitted.

All variables were treated as observed, and models were estimated using full information maximum likelihood (FIML) to account for missing data while preserving sample size. SEM was selected for its ability to estimate direct and indirect paths simultaneously within a single cohesive model and to provide fit indices evaluating how well the model aligned with the observed data. Standardized path coefficients are reported for all direct, indirect, and total effects. This approach allowed for rigorous testing of whether CAM engagement functioned as a behavioral pathway linking personality traits to long-term health outcomes across a 10-year span.

Results

The correlation matrix presented in Table 1 (see Appendix) shows associations among personality traits, categories of complementary and alternative medicine (CAM) use, overall cam use, and self-rated health for both Waves 2 and 3. Given the large sample size, statistical significance testing is largely uninformative, as even trivial correlations are likely to reach conventional significance thresholds (which was the case here). Thus, direct effect sizes are more informative and meaningful in assessing the practical importance of these associations. Notably, openness to experience demonstrated the most consistent positive correlations across all CAM domains (ranging from 0.07 to 0.14), indicating that individuals higher in openness tend to engage more frequently in CAM practices. Neuroticism displayed negative correlations with wave 2 self-rated health ($r = -0.2$) and Wave 3 self-rated health ($r = -0.18$), consistent with prior literature linking neuroticism to poorer health perceptions. Conscientiousness showed a modest positive association with self-rated health ($r = 0.24$ for wave 2 and $r = 0.19$ for wave 3), supporting the notion that conscientious individuals maintain better perceived health. Importantly, correlations between CAM engagement categories and self-rated health were generally very small (ranging from −0.06 to 0.04), supporting our initial perspective that CAM usage does not substantially relate to health outcomes.

Structural equation models with composite CAM use

We conducted five structural equation models to test whether CAM engagement at Wave 2 (composite variable) mediated the relationship between each Big Five personality trait at Wave 2 and self-rated health at Wave 3, controlling for baseline self-rated health. Each SEM estimated direct, indirect, and total effects, with variables treated as observed. Table 2 (see Appendix) presents standardized path estimates, significance values, and model fit indices.

Openness to Experience was significantly associated with higher CAM use ($\beta = 0.131$, $SE = 0.013$, $p < 0.001$), but CAM use did not significantly predict self-rated health at Wave 3 ($\beta = 0.005$, $SE = 0.042$, $p = 0.765$). The direct effect of openness on later health was small and marginally significant ($\beta = 0.035$, $SE = 0.031$, $p = 0.027$), and the indirect effect via CAM was nonsignificant. These results suggest that while openness is associated with greater CAM use, this pathway does not explain its link to later health.

Conscientiousness was not significantly related to CAM use ($\beta = 0.018$, $SE = 0.015$, $p = 0.290$), but it did significantly predict better health at Wave 3 ($\beta = 0.079$, $SE = 0.040$, $p < 0.001$). CAM use again did not predict later

health, and the indirect effect of conscientiousness on health through CAM was not significant. Thus, the relationship between conscientiousness and subsequent health appears to be direct.

Neuroticism showed no relationship with CAM use ($\beta = 0.003$, SE = 0.010, $p = 0.859$), but was a significant negative predictor of later health ($\beta = -0.065$, SE = 0.026, $p < 0.001$). As with other traits, the indirect effect through CAM was not significant. This finding supports prior work linking neuroticism to poorer health outcomes, independent of CAM engagement.

Agreeableness significantly predicted greater CAM use ($\beta = 0.112$, SE = 0.012, $p < 0.001$), but this did not translate into better health outcomes. The direct effect of agreeableness on health was not significant ($\beta = -0.014$, SE = 0.031, $p = 0.353$), nor was the indirect path through CAM use. These results suggest that while agreeable individuals may engage more with CAM, this does not appear to influence their health trajectory.

Extraversion also showed a significant positive relationship with CAM use ($\beta = 0.104$, SE = 0.012, $p < 0.001$), but no significant direct or indirect effects on Wave 3 health. The total effect of extraversion on health was likewise nonsignificant, indicating no robust connection between extraversion and later self-rated health in this model.

Across all models, the composite CAM variable showed very small or null associations with self-rated health, even after controlling for baseline health. The indirect effects from personality to health via CAM use were uniformly nonsignificant.

As an exploratory robustness check, we re-estimated the mediation models using NCCIH domain-specific CAM composites (alternative medical systems, mind–body practices, biologically based therapies, manipulative/body-based methods, and spiritual/energy approaches). Across domains, the pattern of results was unchanged: CAM domains showed trivial associations with later self-rated health, and indirect effects from personality to health via domain-specific CAM use were uniformly non-significant. The direction and magnitude of trait–health paths were materially the same as in the primary models.

Taken together, these findings suggest that while certain traits (i.e. openness, agreeableness, extraversion) are associated with CAM engagement, CAM use does not explain how personality traits influence long-term self-rated health.

Discussion

This study investigated whether engagement in complementary and alternative medicine (CAM) mediates the relationship between Big Five personality traits and long-term self-rated health. Using longitudinal data from the MIDUS study, we tested five mediation models (one for each trait) where a composite measure of CAM use served as the mediator between personality at Wave 2 and self-rated health at Wave 3. While several traits predicted CAM engagement, results consistently showed that CAM use did not significantly predict later health outcomes, nor did it mediate the effects of personality on health. These findings suggest that while personality traits may influence the likelihood of engaging in alternative health behaviors, such engagement does not appear to play a meaningful role in shaping self-rated health a decade later.

As expected, openness to experience was significantly associated with greater CAM use, consistent with prior research linking this trait to receptivity toward novel or unconventional experiences (Honda and Jacobson, 2005). However, the association between openness and later health was not explained by CAM engagement. Instead, a small but significant direct effect of openness on health emerged, suggesting alternative mechanisms (e.g. cognitive flexibility, adaptive coping, or openness to conventional health advice) may better account for its health relevance. This interpretation aligns with evidence connecting openness to traits like cognitive flexibility (Chen et al., 2022), which in turn have been linked to better physical health outcomes in chronic illness populations (Tellesa et al., 2024).

Neuroticism exhibited a negative association with later self-rated health, even after controlling for baseline health. This finding mirrors existing literature connecting neuroticism with increased health complaints, symptom sensitivity, and lower self-efficacy (Williams et al., 2004). Notably, neuroticism was not related to CAM use, suggesting that individuals higher in neuroticism may not be more likely to seek out alternative treatments as a coping strategy. Instead, their poorer health outcomes may stem from internal psychological vulnerabilities rather than from engagement or avoidance of particular health behaviors. These findings underscore the importance of neuroticism as a public health factor in its own right (Widiger and Oltmanns, 2017).

Conscientiousness showed a significant direct effect on long-term health, consistent with extensive evidence linking the trait to health-promoting behaviors such as adherence to medical recommendations, exercise, and avoidance of risky behaviors (Bogg and Roberts, 2004). However, conscientiousness was unrelated to CAM engagement, reinforcing the idea that CAM is not typically part of the behavioral profile of highly conscientious individuals. Rather than using alternative medicine, they may be more likely to rely on conventional, structured health practices that align with their preference for order, reliability, and evidence-based routines.

Interestingly, both agreeableness and extraversion were associated with greater CAM use, yet neither trait significantly predicted self-rated health, either directly or indirectly. These results suggest that individuals high in agreeableness or extraversion may be more likely to engage in CAM due to social or relational factors such as responsiveness to others' suggestions, openness to group-oriented wellness activities, or greater trust in interpersonal sources of advice. However, this increased engagement does not appear to translate into measurable health benefits over time. As with openness, CAM use in these groups may reflect lifestyle preferences or identity expression rather than a pathway to improved health outcomes.

The results aligned with all five hypotheses. Neuroticism and conscientiousness each showed significant direct effects on long-term health, with no evidence of mediation through CAM, consistent with **H1** and **H3**. Openness predicted greater CAM use, as expected (**H2**), but CAM did not explain the openness–health link; instead, a small direct effect remained. Agreeableness and extraversion were both associated with CAM engagement (**H4** and **H5**), but neither trait predicted health outcomes. Across all models, CAM use failed to mediate the relationship between personality and self-rated health, suggesting that personality traits influence long-term health through pathways other than CAM behavior. In an exploratory analysis looking at similar mediation pathways using NCCIH defined CAM domains, the results were largely the same, with certain traits such as openness having direct effects on individual domains of CAM, but no significant mediation pathways.

Taken together, these results temper optimistic assumptions about the effectiveness of CAM. Despite its popularity and cultural endorsement, composite CAM use was not associated with better long-term self-rated health. This lack of effect is notable given the breadth of practices included and the longitudinal scope of the study. While CAM may offer symbolic, social, or emotional value, it does not appear to exert a measurable influence on self-rated health over time. More broadly, the present findings support a model in which personality traits influence long-term health through more pervasive psychological or behavioral mechanisms, rather than through alternative medicine. CAM engagement may serve expressive or identity-related functions rather than functioning as a vehicle for actual health change. This interpretation aligns with prior critiques warning against overestimating the efficacy of alternative treatments (Ernst, 2000; Staud, 2011).

Strengths, limitations, and future directions

This study has several notable strengths. Chief among them is the use of a large, nationally representative longitudinal dataset from the MIDUS study, which enabled an examination of personality and health relationships over nearly a decade. Longitudinal design allows for stronger temporal inferences than cross-sectional studies and contributes meaningfully to scientific literature that often lacks long-term follow-up. Additionally, the inclusion of baseline self-rated health as a covariate strengthens the causal interpretation of direct and mediated effects by accounting for initial differences in health status. The analytic approach, including full information maximum likelihood to handle missingness and structural equation modeling to estimate mediation pathways, provides a rigorous framework for testing theoretically informed models.

At the same time, several limitations should be acknowledged. First, all data were based on self-report, which raises concerns about shared method variance and response biases such as social desirability or inaccurate recall. Although self-rated health is a widely accepted predictor of morbidity and mortality (Idler and Benyamini, 1997), supplementing it with objective health indicators would increase confidence in the generalizability of findings. Similarly, while there is strong evidence for the validity of self-report personality measures (Widiger and Boyd, 2009), using informant measures or interview techniques in future studies would strengthen the support for the findings of the current study. Second, our use of a composite CAM measure, while analytically efficient, may obscure meaningful differences across specific CAM modalities. Practices such as prayer, acupuncture, and exercise therapy vary widely in both mechanism and cultural meaning; grouping them into a single score limits the ability to detect domain-specific effects. Third, while our sample size remained robust, model estimation was constrained by the need to reduce complexity and avoid overfitting, which led to the exclusion of potential moderators or more fine-grained behavioral variables.

Patterns of CAM engagement may vary across cultural settings and clinical populations, which limits the generalizability of findings from a U.S.-based, community sample like MIDUS. For example, among oncology patients in a Central-European context, willingness to use CAM related to distinct individual-difference profiles (e.g. higher Extraversion and Neuroticism, lower Openness) that differ from U.S. samples in certain ways, suggesting that serious illness contexts and local treatment cultures can reshape who turns to CAM and why (Olchowska-Kotala, 2013). Similarly, a multicenter study of German patients with chronic liver disease reported substantial CAM use and highlighted attitudinal and lifestyle correlates within a specialty-care environment (Gittinger et al., 2024). Together, these studies underscore that CAM utilization and its links with personality are embedded in healthcare systems, illness experiences, and cultural norms.

Future research can address these limitations in several ways. Integrating objective health metrics (e.g. biomarkers, diagnoses, healthcare utilization) would enhance the ecological validity of outcome measures. Disaggregating CAM into more conceptually coherent subtypes or exploring usage motives, duration, and perceived benefit could clarify whether certain practices have unique relationships with personality or health. It may also be fruitful to investigate moderators such as socioeconomic status, cultural background, or access to conventional healthcare, which could shape both CAM use and health outcomes. Future work could test mediation models in non-U.S. cohorts and in disease-specific samples to evaluate whether the null CAM to health pathway we observed in MIDUS replicates across cultural and clinical contexts. Finally, more fine-grained longitudinal designs with repeated assessments of personality, CAM engagement, and health behaviors would allow researchers to capture dynamic interactions over time and explore possible bidirectional or reciprocal effects.

Conclusion

This study contributes to the growing literature on personality and health by testing whether complementary and alternative medicine (CAM) serves as a behavioral pathway linking personality traits to long-term health outcomes. Using longitudinal data and a composite measure of CAM use, we found that several traits (particularly openness, agreeableness, and extraversion) were associated with greater CAM engagement. However, CAM use did not predict later self-rated health, nor did it mediate the effects of personality traits on health over time.

These non-significant mediation findings are themselves meaningful. They suggest that while personality traits may shape preferences for alternative health practices, such preferences do not appear to yield long-term benefits in perceived health status. In other words, personality may influence who uses CAM, but CAM does not seem to be a mechanism through which personality affects health. This finding helps clarify the limits of CAM's role in personality-health models and contributes important nuance to discussions about the utility and effectiveness of alternative medicine.

Overall, the present results emphasize the need to distinguish between the expressive and instrumental functions of health behaviors. CAM engagement may reflect identity, values, or belief systems aligned with certain personality traits, but this engagement does not necessarily translate into better health outcomes. Future research should continue to probe the mechanisms by which personality shapes health, attending to both significant and non-significant findings as informative guides for theoretical development.

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Ethical considerations

This secondary analysis used de-identified, public-use MIDUS data (archived at ICPSR). No new data were collected; therefore, no additional ethics approval or participant consent was required. The original MIDUS studies received IRB approval and obtained informed consent at data collection.

Consent to participate

Obtained by MIDUS during the original data collections; no new consent was sought for this secondary analysis.

Consent for publication

Consent for publication is not applicable to this article as no identifiable participant data are included.

Author contributions

Christopher Guadalupe: Conceptualization, data analysis, manuscript drafting, revisions. Hilary L. DeShong: Supervision, manuscript review, and editing.

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Data availability statement

All data are publicly available via ICPSR (MIDUS repository).

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Appendix

Table 1. Correlations among personality, CAM use, and self-rated health.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Agreeableness	–												
2. Extraversion	**0.50**	–											
3. Neuroticism	−0.11	−0.20	–										
4. Conscientiousness	0.27	0.26	−0.20	–									
5. Openness	0.33	**0.51**	−0.21	0.28	–								
6. Bio-Based CAM	0.06	0.07	0.00	0.01	0.14	–							
7. Manipulative-Body CAM	0.06	0.06	0.01	−0.01	0.07	0.27	–						
8. Mind-Body CAM	0.13	0.10	0.01	0.03	0.12	0.44	0.33	–					
9. Alternative Medicine CAM	0.04	0.03	−0.01	0.00	0.11	0.44	0.29	0.31	–				
10. Energy Medicine CAM	0.07	0.07	0.03	−0.01	0.08	0.30	0.20	0.38	0.29	–			
11. Wave 2 Self-Rated Health	0.02	0.18	−0.20	0.24	0.17	0.00	−0.06	0.03	−0.03	−0.06	–		
12. Wave 3 Self-Rated Health	−0.01	0.10	−0.18	0.19	0.12	0.03	−0.05	0.04	0.01	−0.05	**0.55**	–	
13. Composite CAM Score	0.11	0.10	0.01	0.01	0.12	**0.68**	**0.66**	**0.88**	**0.54**	**0.54**	−0.02	0.00	–

Note. All values are Pearson correlation coefficients based on pairwise complete observations. Variables measured at MIDUS Wave 2 unless otherwise noted. Wave 3 Self-Rated Health was assessed approximately 10 years after Wave 2. **Bold = large correlation**; underline = medium correlation.
CAM: Complementary and Alternative Medicine.

Table 2. Mediation models for big five personality traits at wave 2, composite CAM use at wave 2, and self-rated health at wave 3.

Predictor	*a* (β, SE)	*b* (β, SE)	*c′* (β, SE)	*p* (*c′*)	Indirect (*b*, SE)	*p* (indirect)	Total (β, SE)	*p* (total)	R^2 mediator	R^2 outcome
Openness	0.131 (0.013)	0.005 (0.042)	0.035 (0.031)	0.027	0.001 (0.004)	0.765	0.036 (0.031)	0.023	0.017	0.331
Conscientiousness	0.017 (0.015)	0.010 (0.041)	0.079 (0.040)	<0.001	0.000 (0.001)	0.585	0.079 (0.039)	<0.001	0.001	0.337
Neuroticism	0.003 (0.010)	0.011 (0.041)	−0.065 (0.026)	<0.001	0.000 (0.000)	0.86	−0.065 (0.026)	<0.001	0.00	0.336
Agreeableness	0.112 (0.012)	0.013 (0.041)	−0.014 (0.031)	0.353	0.001 (0.004)	0.441	−0.013 (0.031)	0.401	0.013	0.33
Extraversion	0.104 (0.012)	0.009 (0.041)	0.014 (0.029)	0.38	0.001 (0.003)	0.562	0.015 (0.029)	0.345	0.011	0.331

Note. Wave 2 Big Five personality traits served as predictors; Wave 2 composite CAM use was tested as a mediator; and Wave 3 self-rated health was the outcome variable. All models controlled for Wave 2 self-rated health. Standardized path coefficients (β) are reported with standard errors (SE) in parentheses. R^2 values reflect the proportion of variance explained in the mediator and outcome variables.
CAM: Complementary and Alternative Medicine.