# The Effects of Long-Term Mindfulness Exercises on Personal and Sustainability Values in Thailand

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**Abstract**

This study investigated how long-term mindfulness exercises influence personal and sustainability values in Thailand. A structured questionnaire was administered to 400 individuals who had practiced mindfulness for at least one year. The questionnaire measured mindfulness, environmental awareness, social awareness, self-esteem, narcissism, and sustainable consumption using established scales adapted from prior research. Regression and mediation analyses were conducted to test the hypothesized relationships. The results showed that long-term mindfulness had a significant direct effect on sustainability values. Social awareness and narcissism partially mediated this relationship, while self-esteem demonstrated full mediation. In contrast, environmental awareness did not significantly mediate the effect. These findings suggest that mindfulness fosters sustainability values through enhanced social awareness, improved self-esteem, and reduced narcissism. Theoretically, this study contributes to mindfulness and sustainability research by presenting a multi-pathway model in the Thai context. Practically, the results highlight the potential of mindfulness-based interventions to promote ethical consumption, leadership development, and community well-being. Limitations include the cross-sectional design, the use of convenience sampling, and relatively low reliability for some measures. Future studies should apply longitudinal or cross-cultural designs to confirm the generalizability of these findings.

**Keywords**: Long-Term Mindfulness, Environmental Awareness, Social Awareness, Personal Values, Sustainable Consumption

## Introduction

Recently, mindfulness practices have gained increasing attention as a psychological intervention that cultivates awareness, emotional regulation, and adaptability (Verhaeghen, 2017; Shapiro et al., 2006). In Buddhist contexts, mindfulness is central to reducing suffering through moment-to-moment awareness (Phra Prom Khunaporn, 2012). While mindfulness has been linked to improved psychological well-being, enhanced self-esteem, and prosocial behaviors (Randal et al., 2015), long-term practice may also generate self-enhancement bias that manifests as narcissism (Vonk & Visser, 2021). Thus, mindfulness is not only beneficial but also multifaceted in its personal and social outcomes.

Kabat-Zinn (2012) pointed out that mindfulness enhances attentiveness and focus throughout the day, while also increasing self-awareness by encouraging individuals to observe thoughts, emotions, and behaviors without judgment. This awareness deepens understanding of internal processes and supports intentional behavioral change. At the societal level, mindfulness fosters more conscious and sustainable consumption, and environmentally, it encourages more thoughtful use of resources. In addition to individual well-being, mindfulness has implications for consumption patterns. Prior studies suggest that mindfulness encourages conscious consumption, reduces impulsivity, and promotes environmental stewardship (Bahl et al., 2016; Bahl et al., 2023). By fostering heightened awareness, mindfulness can support sustainable decision-making at both personal and societal levels (Sheth et al., 2011). However, the pathways through which mindfulness contributes to sustainability values remain underexplored, particularly regarding how internal traits—such as environmental and social awareness, self-esteem,

and narcissism—mediate its effects on sustainable consumption. Despite growing evidence that mindfulness practices support behavior change, promote sustainability-oriented values, reduce stress, and enhance work performance, organizational adoption remains limited. This reluctance is mainly due to a lack of understanding or acceptance of mindfulness within managerial settings (Panditharathne & Chen, 2021; Wamsler et al., 2018).

Most existing studies have focused on the psychological or spiritual benefits of mindfulness, but less attention has been given to its role in shaping sustainability-oriented behaviors (Panditharathne & Chen, 2021). Given Thailand's increasing environmental challenges and consumer culture, it is critical to understand how mindfulness may foster sustainable consumption. This study addresses this gap by examining both the direct and mediating effects of mindfulness on sustainability values, using a Thai sample of long-term practitioners.

By integrating personal values (self-esteem and narcissism) with social and environmental awareness, this study provides a comprehensive framework for understanding how mindfulness influences sustainable consumption. Clarifying these pathways will not only contribute to theory but also offer practical insights for designing mindfulness-based interventions that promote sustainability.

Nevertheless, limited evidence exists on how long-term mindfulness translates into sustainability values within the Thai context. Prior research often highlights individual benefits but overlooks multi-dimensional pathways leading to sustainable behavior. To address this gap, the present study investigates both the direct and mediating effects of mindfulness on sustainability values among Thai practitioners.

### Literature Review and Critical Perspectives

Evidence suggests that mindfulness fosters environmental awareness and pro-environmental behavior (Dhandra, 2019; Thiermann & Sheate, 2020), yet most studies are Western-based and cross-sectional, limiting cultural generalizability. Social awareness is another pathway: mindfulness strengthens empathy and prosocial decisions (Roche et al., 2020; Goleman, 2006), though critics argue that secular mindfulness often neglects its ethical dimension (Krznaric, 2017). Self-esteem consistently shows positive associations with mindfulness (Awad et al., 2022), while narcissism presents a paradox—sometimes undermining prosociality but at times motivating sustainable actions for social recognition (Bowen et al., 2022; Lin et al., 2021). Finally, while mindfulness is linked to sustainable consumption (Resnik, 2022; Kumar et al., 2024), results remain inconsistent, with some studies suggesting mindfulness may reduce external concerns when practiced without ethical grounding (Karl & Stanley, 2024).

Taken together, prior research highlights promising links between mindfulness and sustainability but also reveals key limitations: reliance on Western contexts, fragmented focus on single mediators, and limited integration of ambivalent traits such as narcissism. Thus, while existing studies confirm the relevance of mindfulness for personal and sustainability values, important gaps remain. This study addresses these gaps by testing a multi-pathway model in Thailand, integrating environmental and social awareness, self-esteem, and narcissism as mediators, thereby extending theoretical understanding and offering practical insights for mindfulness-based interventions that promote sustainable consumption.

### Research Objective

To investigate the relationships between mindfulness, environmental and social awareness, self-esteem, narcissism, and sustainable consumption, focusing on both direct and mediating effects.

### Research Hypotheses

**1. H1:** Long-term mindfulness exercises refine personal values and develop sustainability values.

2. **H2:** Environmental awareness mediates the effect of long-term mindfulness exercises on refining personal values and developing sustainability values.

3. **H3:** Social awareness mediates the effect of long-term mindfulness exercises on refining personal values and developing sustainability values.

4. **H4:** Self-esteem mediates the effect of long-term mindfulness exercises on refining personal values and developing sustainability values.

5. **H5:** Narcissism mediates the effect of long-term mindfulness exercises on refining personal values and developing sustainability values.

**Conceptual Framework**

The conceptual framework for this study aims to investigate the mechanisms of mindfulness that contribute to personal values and sustainability. It is organized around five key variables that serve as the foundation for the analysis:

**Independent Variable**

- **Long-term Mindfulness Exercises:** The sustained practice of meditation or focused attention for a duration exceeding one year, aimed at cultivating present-moment awareness, self-understanding, and the ability to regulate emotions and behavior.

**Mediating Variables**

- **Environmental Awareness:** The extent to which individuals who practice mindfulness are aware of environmental concerns.

- **Social Awareness:** The ability of individuals who practice mindfulness to comprehend and appropriately respond to social situations by considering others' perspectives.

- **Self-esteem:** The assessment of individuals who practice mindfulness regarding their belief in their own worth, capabilities, or ethical integrity.

- **Narcissism:** The extent to which individuals who practice mindfulness exhibit a personality trait characterized by an inflated self-perception, a strong need for admiration and recognition from others, and a belief in their own superiority over others.

**Dependent Variable**

- **Sustainable Consumption:** The extent to which individuals who practice mindfulness engage in consumption behaviors that minimize negative environmental impacts, prioritize resource efficiency, and promote waste reduction

The diagram below visually represents the conceptual framework, illustrating the relationships between the independent, mediating, and dependent variables.
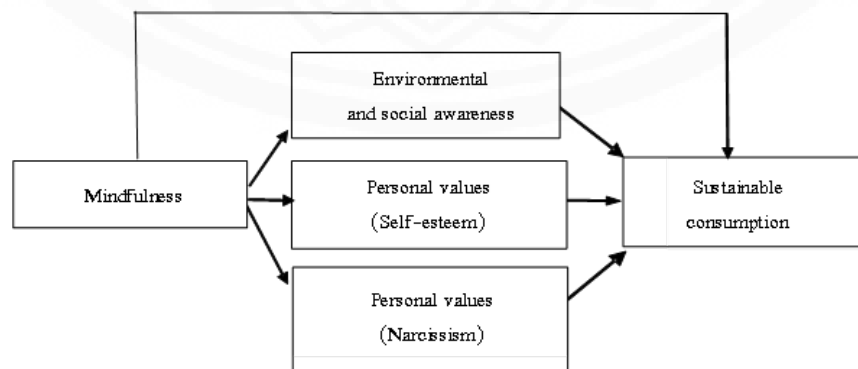


**Figure 1** Conceptual Framework of Mindfulness Exercises Affect Personal and Sustainability Values.

**Methods and Materials**

**Research Design and Sampling Technique**

This study examined how long-term mindfulness exercises refined personal values and developed sustainability values. A quantitative research approach was employed using both secondary and primary data. Secondary data from relevant research literature were used to design the conceptual framework and questionnaire, while primary data were collected through a survey of 400 individuals in Thailand who had practiced mindfulness for at least one year. Data collection followed three sequential stages: 1) questionnaire development, 2) participant recruitment, and 3) data analysis. A structured questionnaire—adapted from established scales and validated through expert review and pilot testing.

The survey was administered through both online channels (e.g., Google Forms, email) and paper copies. Participants were recruited using convenience sampling. The sample size of 400 was determined using Cochran's formula (1977) with a 95% confidence level and a 5% margin of error. With an assumed population proportion of 0.50, the required sample size was approximately 385. A total of 400 responses were collected to account for potential data errors or incomplete responses.

Participants were required to have practiced mindfulness for at least one year. The sample consisted of individuals from diverse demographics in Thailand (e.g., age, gender, education level).

**Materials**

A structured questionnaire was designed and divided into seven sections:

**1. Screening Questions on Mindfulness Practice and General Information of Respondents.** This section identified respondents who had practiced mindfulness for at least one year and collected demographic information. It included seven screening questions and four closed-ended demographic questions. Only eligible respondents proceeded with the questionnaire.

**2. Mindfulness:**

**Objective:** To measure the level of mindfulness among individuals who had practiced mindfulness for more than one year.

This section consisted of 16 closed-ended questions, developed based on the work of Brown and Ryan (2003). Responses were rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Higher scores indicated greater levels of mindfulness.

**3. Environmental Awareness:**

**Objective:** To assess the degree of awareness and concern for environmental issues.

This section consisted of 3 closed-ended questions developed by the researcher based on the studies of Straughan and Roberts (1999) and Polonsky et al. (2014). Items were rated on a 5-point Likert scale. Higher scores reflected stronger environmental awareness.

**4. Social Awareness:**

**Objective:** To measure the extent of awareness and sensitivity toward social issues and responsibilities.

This section consisted of 5 closed-ended questions developed by the researcher based on the studies of Carlo and Randall (2002); Quoquab et al. (2019) and Gupta and Sheth (2024). Items were rated on a 5-point Likert scale. Higher scores indicated stronger social awareness.

5. **Self-esteem:**

**Objective:** To evaluate individuals' overall sense of self-worth and self-respect.

This section consisted of 3 closed-ended questions based on research by Rosenberg (2015). Responses were rated on a 5-point Likert scale. Higher scores indicated higher self-esteem.

6. **Narcissism:**

**Objective:** To measure the degree of self-centeredness and narcissistic traits.

This section consisted of 9 closed-ended questions developed from the work of Gebauer et al. (2012). Items were rated on a 5-point Likert scale. Higher scores indicated higher levels of narcissism.

7. **Sustainable Consumption and Sacrifice:**

**Objective:** To assess individuals' engagement in sustainable consumption behaviors and their willingness to make personal sacrifices for sustainability.

This section was divided into two parts. The first part on sustainable consumption included 10 closed-ended questions, developed from research by Sudbury-Riley and Kohlbacher (2016). The second part on sacrifice consisted of 4 closed-ended questions, based on the studies of Davis et al. (2011) and Stern et al. (1999). Items were rated on a 5-point Likert scale. Higher scores reflected greater engagement in sustainable consumption and willingness to sacrifice.

The original questionnaire was developed in English and translated into Thai by the Language Center, Kasetsart University. A pilot test was conducted with 30 participants to assess clarity and relevance, and necessary refinements were made.

**Content Validity**

Content validity was ensured through alignment with theories and review by an academic advisor. Construct validity was examined using Pearson correlation coefficients. The correlation matrix showed significant associations among key variables ($p < .05$ or $p < .01$), with no coefficient exceeding .80, supporting convergent and discriminant validity.

The correlation matrix indicated that all variables were significantly correlated in the expected directions ($p < .05$ or $p < .01$), supporting both convergent and discriminant validity. Specifically, self-esteem ($r = .50$, $p < .01$) and narcissism ($r = .51$, $p < .01$) showed strong positive associations with sustainability values, while social awareness ($r = .35$, $p < .01$) and environmental awareness ($r = .27$, $p < .01$) also demonstrated moderate positive correlations. Importantly, no correlation coefficient exceeded .80, suggesting the absence of multicollinearity and confirming that the constructs, while interrelated, remain empirically distinct. These results support the internal structure and validity of the measurement model, reinforcing the theoretical framework underpinning the relationships among mindfulness and sustainability-related values.

**Reliability Testing**

In this study, Cronbach's alpha was used to evaluate the internal consistency of the measurement scales. While most subscales exceeded the commonly accepted threshold of $\alpha > .70$ (Nunnally & Bernstein, 1994), two scales —environmental awareness ($\alpha = .47$) and social awareness ($\alpha = .46$)—yielded lower values. Such results are not uncommon in psychological research, particularly when scales consist of a small number of items (Kline, 1999 as cited in Field, 2005; Taber, 2018). Despite the modest reliability, both scales were retained because the items were conceptually relevant, theoretically justified, and supported by previous literature. Item-total correlations also exceeded .30, providing further support for their inclusion.

Although some subscales yielded relatively low alpha values, these measures were retained due to their theoretical relevance and empirical support in prior research. This limitation should be acknowledged, and future studies may consider employing larger item pools or advanced validation techniques, such as Confirmatory Factor Analysis (CFA), to further strengthen the psychometric properties of the scales.

**Data Collection and Analysis**

Prior to data collection, the researcher obtained formal authorization from the Faculty of Business Administration at Kasetsart University, along with an official introduction letter. Ethical approval for the study was granted by the Institutional Review Board (IRB) of Kasetsart University Research Ethics Committee (KUREC), under the approval code KUREC-SSR67/194 (COE No. COE67/153), dated 17 December 2024, ensuring adherence to established research ethics standards.

Data collection for this study comprised both secondary and primary data. Secondary data were obtained from various documents relevant to the research topic, including books, academic articles, theses, and dissertations published in both domestic and international journals, as well as electronic sources. Primary data were collected through questionnaires administered to a sample of individuals in Thailand who had practiced mindfulness for at least one year. A total of 400 fully completed questionnaires were obtained and reviewed for completeness and accuracy, then systematically coded using a predetermined coding scheme to prepare for statistical analysis.

**Statistical Methods**

Data analysis employed both descriptive and inferential statistics, utilizing the Statistical Package for the Social Sciences (SPSS) software. Simple linear regression analysis was employed to test Hypothesis 1 by examining the linear relationship between a single independent variable and a dependent variable. Additionally, mediation analysis was performed to explore the mediating effects between variables in the study, specifically testing Hypotheses 2 to 5. This analysis aimed to investigate the mediating roles of environmental and social awareness, self-esteem, and narcissism in the relationship between mindfulness practice and the development of sustainability values.

## Results

**Demographic Information**

Table 1    Demographic Information

| Questionnaire | Options | Percentage (%) |
|---|---|---|
| Methods of Mindfulness Practice. | Breathing | 43.60% |
| | Mediation | 30.38% |
| | Yoga | 26.02% |
| How often do you practice these exercises? | Every day | 9.50% |
| | Four or more times a week | 28.75% |
| | Once a week | 57.00% |
| | Once a month | 4.75% |
| How long are your practice sessions? | less than 30 min | 7.75% |
| | 30 - 60 min | 82.25% |
| | more than 60 min | 10.00% |

**Table 1** (Cont.)

| Questionnaire | Options | Percentage (%) |
|---|---|---|
| Reasons for your practice | To be more aware | 34.93% |
| | To gain focus | 24.13% |
| | To have better self-control | 24.02% |
| | For physical fitness | 10.81% |
| | Sharing pictures on social media | 6.11% |
| Gender | Male | 26.00% |
| | Female | 74.00% |
| Age Group | 20 – 30 years | 12.50% |
| | 31 – 40 years | 26.25% |
| | 41 – 50 years | 49.25% |
| | 51 – 60 years | 9.25% |
| | 61 years or older | 2.75% |
| Education | Primary education | 1.50% |
| | Secondary school | 3.25% |
| | High School or Vocational School | 9.50% |
| | Bachelor's degree | 81.25% |
| | Master's degree or higher | 4.50% |
| Monthly Income | ≤ 15,000 baht | 11.25% |
| | 15,001 – 30,000 baht | 28.00% |
| | 30,001 – 50,000 baht | 57.50% |
| | 50,001 – 70,000 baht | 1.75% |
| | 70,000 or more | 1.50% |

Table 1 summarizes the demographic characteristics of the sample. Most respondents practiced breathing or meditation once a week for 30–60 minutes. They were predominantly female, aged 41–50, held a bachelor's degree, and earned 30,001–50,000 baht monthly.

**Finding by Hypotheses**

**Table 2** Hypothesis Testing Summary

| | Hypothesis | Test | Statistics (t, F) | p-value | Conclusion |
|---|---|---|---|---|---|
| H1: | Long-term mindfulness exercises refine personal values and develop sustainability values. | Simple Regression | F-statistic = 7.93 | < 0.05 | Supported |
| H2: | Environmental awareness mediates the effect of long-term mindfulness exercises on refining personal values and developing sustainability values. | Mediation Analysis | Indirect Effect = -0.01 | > 0.05 | Not Supported |
| H3: | Social awareness mediates the effect of long-term mindfulness exercises on refining personal values and developing sustainability values. | Mediation Analysis | Indirect Effect = 0.03 | < 0.05 | Supported |
| H4: | Self-esteem mediates the effect of long-term mindfulness exercises on refining personal values and developing sustainability values. | Mediation Analysis | Indirect Effect = -0.04 | < 0.05 | Supported |
| H5: | Narcissism mediates the effect of long-term mindfulness exercises on refining personal values and developing sustainability values. | Mediation Analysis | Indirect Effect = 0.03 | < 0.05 | Supported |

**Hypothesis Testing for H1：**

As shown in Table 2, the results of the simple linear regression analysis indicated a significant effect of long-term mindfulness on sustainability values. The regression model yielded an F-statistic of 7.93 ($p < 0.05$), confirming that mindfulness significantly predicted sustainability values.

The standardized regression coefficient for mindfulness was $\beta = -0.14$, with a t-value of $-2.82$ and a significance level of $p = 0.01$, suggesting a moderate negative relationship. The adjusted R-squared value of the model was 0.02, indicating that mindfulness accounted for 1.70% of the variance in sustainability values.

In addition to statistical significance, the effect size was also considered. The adjusted $R^2$ of .02 indicates a small effect size, consistent with Cohen's (1988) guidelines. Although modest, the standardized coefficients ($\beta$ values) indicate meaningful yet modest effects, which are important in the context of psychological and behavioral research where multiple factors influence outcomes.

Overall, these findings supported Hypothesis 1, demonstrating that individuals who engage in long-term mindfulness practices tend to hold more refined and sustainability-oriented personal values.

**Table 3**　VIF Values for Multicollinearity Diagnosis

| Predictor | Tolerance | VIF |
|---|---|---|
| Environmental Awareness | 0.80 | 1.25 |
| Social Awareness | 0.67 | 1.48 |
| Self-esteem | 0.65 | 1.53 |
| Narcissism | 0.62 | 1.62 |
| Sustainable Consumption | 0.64 | 1.57 |

As shown in Table 3, to further examine multicollinearity among the independent and mediating variables, a multiple linear regression was conducted using mindfulness as the dependent variable and the other five variables—environmental awareness, social awareness, self-esteem, narcissism, and sustainable consumption—as predictors. The Variance Inflation Factor (VIF) values ranged from 1.25 to 1.62, all below the commonly accepted threshold of 5. These values confirm that multicollinearity is not a concern and the variables used in this study are sufficiently distinct.

**Mediation Analysis Results for H2-H5**

The mediation analysis examined whether four factors—environmental awareness, social awareness, self-esteem, and narcissism — explained the effect of long-term mindfulness on sustainable consumption. Table 4 summarizes the direct and indirect effects, including confidence intervals for indirect paths. Each mediator was tested in a separate model using the PROCESS macro (Model 4) with bootstrapped confidence intervals (Hayes, 2022).

**Table 4**　Mediating Effect Analysis (Summary of Effects on Sustainability Values)

| Predictor Variable | Mediator | Direct Effect ($\beta$) | Indirect Effect ($\beta$) | Total Effect ($\beta$) | 95% CI for Indirect Effect | Significance |
|---|---|---|---|---|---|---|
| Mindfulness | Environmental Awareness | −0.09 | −0.01 | −0.09 | [−0.02, 0.01] | Not Significant |
| Mindfulness | Social Awareness | −0.13 | 0.03 | −0.09 | [0.01, 0.06] | Significant |
| Mindfulness | Self-esteem | −0.06 | −0.04 | −0.09 | [−0.07, −0.01] | Significant |
| Mindfulness | Narcissism | −0.12 | 0.03 | −0.09 | [0.00, 0.05] | Significant |

**Direct Effect of Mindfulness on Sustainable Consumption (Controlling for Mediators)**

The direct effect of mindfulness on sustainability values remained statistically significant in most models after controlling for the mediators. This finding suggests that mindfulness independently contributes to the development of sustainability-related values beyond the mediating pathways. For example, in the models that included social awareness and narcissism, the direct effects were $\beta = -0.13$ and $\beta = -0.12$, respectively, both with $p < .05$. However, in the self-esteem model, the direct effect was reduced to $\beta = -0.06$ and was no longer statistically significant ($p = .05$), suggesting the possibility of full mediation in this pathway.

**Environmental Awareness as Mediator (H2)**

When controlling for environmental awareness, the direct effect of mindfulness on sustainable consumption remained significant ($\beta = -0.09$). The specific indirect effect was small and non-significant ($\beta = -0.01$, 95% CI [-0.02, 0.01]), as the confidence interval includes zero. These results indicate that environmental awareness does not significantly mediate the relationship between mindfulness and sustainability values. In other words, environmental awareness does not account for the effect of mindfulness on sustainability-related behaviors.

**Social Awareness as Mediator (H3)**

The direct effect of mindfulness on sustainability values remained statistically significant ($\beta = -0.13$), while the indirect effect through social awareness was also significant ($\beta = 0.03$, 95% CI [0.01, 0.06]). The significance of both effects indicates that social awareness functions as a partial mediator in this relationship. Social awareness partially explains the mechanism through which mindfulness influences sustainability values. This implies that mindfulness enhances awareness of others and social context, promoting value alignment with sustainability.

**Self-esteem as Mediator (H4)**

In the case of self-esteem, the direct effect of mindfulness on sustainability values was marginal ($\beta = -0.06$), while the indirect effect through self-esteem was significant ($\beta = -0.04$, 95% CI [-0.07, -0.01]). The absence of a significant direct effect, combined with a significant indirect effect, suggests full mediation. These findings indicate that the influence of mindfulness on sustainability values operates entirely through its effect on self-esteem. In particular, mindfulness appears to foster a more positive and stable self-concept, promoting the adoption of sustainability-oriented values.

**Narcissism as Mediator (H5)**

The direct effect of mindfulness remained significant after including narcissism in the model ($\beta = -0.12$), while the indirect effect was also statistically significant ($\beta = 0.03$, 95% CI [0.00, 0.05]). Therefore, narcissism is identified as a partial mediator. Mindfulness appears to reduce narcissistic traits, which subsequently supports the development of sustainability values. Although the indirect effect is modest, the mediation is statistically meaningful and suggests that decreasing egocentric tendencies may be one route through which mindfulness works.

**Total Indirect Effect**

By summing all significant specific indirect effects, the total indirect effect of mindfulness on sustainable consumption is approximately: $-0.01 + 0.03 - 0.04 + 0.03 = 0.02$.

Although each mediator was analyzed in a separate model, the cumulative contribution of all mediators can be roughly estimated by aggregating the statistically significant specific indirect effects. Based on this approximation, the combined indirect effect of mindfulness on sustainability values is estimated to be around 0.02.

This estimated total indirect effect reflects the multiple pathways through which mindfulness influences value formation. The overall pattern supports a multifaceted mediation structure, in which some mediators—such as self-esteem and social awareness—exert more substantial influence than others. However, it is important to emphasize that this value does not represent a total indirect effect derived from a simultaneous multiple-mediator model. Rather, it is a cumulative estimate based on independent single-mediator models and should be interpreted with caution.

## Discussion

This study examined how long-term mindfulness shapes sustainability values through multiple mediators. The findings confirm that mindfulness exerts both direct and indirect effects, consistent with frameworks such as the value-belief-norm and self-determination theories, which highlight the role of internalized values and self-regulation in guiding prosocial and pro-environmental behavior.

### Mindfulness and Sustainability Values (H1)

The results supported Hypothesis 1 by showing that long-term mindfulness is associated with the refinement of personal values and the development of sustainability values. Although the effect size was modest, this aligns with studies suggesting that mindfulness encourages ethical reflection and conscious decision-making (Sheth et al., 2011; Resnik, 2022). Theoretically, mindfulness can serve as a self-regulatory mechanism that aligns personal values with sustainable behavior. However, the negative regression coefficient observed ($\beta = -0.14$) signals possible unintended consequences—a "dark side of mindfulness" (Vonk & Visser, 2021). Without explicit ethical grounding, mindfulness may foster detachment or self-focus, weakening pro-sustainability orientations (Karl & Stanley, 2024). Practically, mindfulness-based interventions should therefore emphasize ethical and community dimensions to ensure that the practice reinforces, rather than undermines, sustainability goals.

### Environmental Awareness (H2)

Contrary to expectations, environmental awareness was not a significant mediator. This contrasts with studies linking mindfulness to pro-environmental behavior (Dhandra, 2019; Thiermann & Sheate, 2020). In the Thai context, relational and self-concept factors may exert stronger influence than ecological awareness alone. Participants may acknowledge environmental issues, but awareness alone appears insufficient to drive behavioral change without social or ethical reinforcement. This highlights the need for community-based programs that integrate ecological knowledge with social engagement, so that environmental awareness can be translated into tangible sustainable practices.

### Social Awareness (H3)

Social awareness partially mediated the relationship, consistent with the empathy-altruism hypothesis. This supports evidence that mindfulness fosters empathy and social responsibility (Roche et al., 2020; Starczewski et al., 2023). Practically, mindfulness-based training should include empathy exercises, peer interactions, or group reflections, as these relational practices may amplify the prosocial dimension of mindfulness and directly support sustainability outcomes.

### Self-esteem (H4)

Self-esteem fully mediated the relationship, showing that mindfulness builds psychological security that supports value-consistent actions. This is consistent with self-determination theory and prior studies linking mindfulness with higher self-worth and resilience (Randal et al., 2015; Awad et al., 2022). From a practical

perspective, organizations and educational institutions can leverage mindfulness to foster self-esteem, thereby encouraging ethical leadership and long-term commitment to sustainability-oriented decisions.

**Narcissism (H5)**

Narcissism functioned as a partial mediator, reflecting its ambivalent role. While mindfulness reduced narcissistic tendencies, traits such as the desire for recognition may still motivate pro-sustainability behavior when socially rewarded (Bowen et al., 2022; Lin et al., 2021). In practice, sustainability campaigns can strategically frame eco-friendly behavior as socially visible and prestigious, thereby channeling recognition motives into constructive contributions to sustainability.

**Theoretical and Practical Contributions**

Theoretically, this study extends mindfulness research by revealing its complex, multi-pathway influence on sustainability values and highlighting the dual potential of mindfulness to encourage prosocial outcomes while exposing risks of self-focus when ethical grounding is absent. Practically, the results call for mindfulness-based programs that integrate ethics, empathy, and community engagement, ensuring consistent contributions to sustainability across cultural contexts.

**Cultural Context and Final Synthesis**

Compared with Western literature (e.g., Dhandra, 2019; Thiermann & Sheate, 2020), the Thai context underscores that relational and self-concept factors outweigh purely ecological awareness. This reinforces the need for mindfulness programs that embed ethical framing and community engagement so that environmental knowledge is translated into tangible behavior change.

**In summary,** long-term mindfulness shapes sustainability values through diverse mechanisms—positive (self-esteem, social awareness), ambivalent (narcissism), and at times negative (dark-side effects, non-significant environmental awareness). These results demonstrate mindfulness's multi-pathway influence on sustainability and underscore the importance of designing interventions that deliberately incorporate ethical, relational, and community-based elements to achieve reliable pro-sustainability outcomes across cultures.

## Conclusion and Suggestions

### Conclusion

This research confirms that long-term mindfulness practices foster sustainability values, particularly sustainable consumption, through multiple mechanisms. The findings emphasized that sustainable consumption—the dependent variable and ultimate outcome of the model—is shaped directly by mindfulness and indirectly through enhanced social awareness, improved self-esteem, and reduced narcissism. These results highlight sustainable consumption as the central linkage through which psychological and relational factors translate mindfulness practice into tangible pro-sustainability behaviors.

A key novelty of this study lies in its integration of both positive and ambivalent traits, such as self-esteem and narcissism, into a multi-pathway explanatory model. By demonstrating how these traits jointly mediate the mindfulness–sustainability link, the research extends current theories beyond simple positive effects to account for ambivalent and even paradoxical influences. Conducted in the Thai cultural context, the findings also challenge assumptions rooted in Western literature by showing that relational and self-concept pathways outweigh environmental awareness in shaping sustainable consumption. This novelty underscores the contribution of the study to advancing mindfulness and sustainability research across diverse cultural settings.

**Limitations**

Several limitations should be noted. First, the cross-sectional design limits causal inference regarding the long-term effects of mindfulness on sustainable consumption. Second, the sample was restricted to Thai practitioners, which may constrain cross-cultural generalizability. Third, some scales, particularly for environmental and social awareness, showed relatively low reliability; although retained for theoretical relevance, this may reduce measurement precision. Finally, the use of PROCESS macro for mediation does not provide overall model fit indices, so adequacy was assessed through explained variance ($R^2$) and standardized coefficients ($\beta$) as indicators of effect size (Cohen, 1988). While small, these effects remain meaningful in behavioral research. Future studies employing Structural Equation Modeling (SEM) could provide model fit indices (e.g., CFI, RMSEA) alongside effect size estimates.

Despite these limitations, this study contributes by empirically demonstrating how mindfulness influences sustainable consumption through multiple psychological pathways, underscoring both its potential and complexity.

**Suggestions for Practice**

**1. Mindfulness-based Programs for Sustainability**

Organizations and educational institutions should consider integrating mindfulness training into sustainability education. By cultivating traits such as self-awareness and empathy, such programs can serve as a foundation for promoting ethical consumption and long-term behavior change.

**2. Personal Development and Leadership**

Leaders and managers who engage in regular mindfulness practice may develop higher levels of self-esteem and reduced narcissism, which are conducive to value-based leadership and socially responsible decision-making.

**3. Community and Policy Implications**

Policymakers aiming to promote sustainable consumption should recognize the role of psychological and value-based drivers. Supporting community-based mindfulness initiatives could enhance environmental and social responsibility at a grassroots level.

**Suggestions for Future Research**

**1. Integrated Mediation Models**

Future studies should employ parallel mediation or structural equation modeling to evaluate the relative strength of mediators and test overall model fit, thereby providing a clearer picture of how different pathways shape sustainable consumption.

**2. Longitudinal and Experimental Designs**

To strengthen causal inference, longitudinal or experimental studies are needed to investigate the long-term impact of mindfulness training on value change and sustainable behavior.

**3. Cross-cultural Examination**

Conducting similar research in different cultural contexts would help validate the generalizability of the findings and explore how cultural values interact with mindfulness in shaping sustainability orientations.

**4. Advanced Psychometric Validation**

Employing larger item pools and Confirmatory Factor Analysis (CFA) would improve measurement reliability and further validate the integration of ambivalent traits, such as narcissism, in sustainability research.

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