

# Mindful Sustainability: Exploring the Relationship between Mental Health and Zero-Waste Lifestyles

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Mental health (a state of well-being enabling individuals to cope with life's stresses) and sustainable lifestyles (including zero-waste living, which conserves resources without generating waste) are both pressing global concerns. This study investigates the association between individuals' self-reported mental health and their engagement in zero-waste and pro-environmental behaviors. A cross-sectional survey of  $N = 409$  Plainsboro, New Jersey residents (mostly high-school and college students) was conducted. The survey included multiple-choice items on mental well-being (e.g. mood stability, life satisfaction, eco-anxiety) and on zero-waste practices (e.g. recycling, reusable product use, energy conservation, activism). Because no single validated instrument covered both domains, all survey items were self-developed and no standardized scales were used. We calculated Pearson correlation coefficients for each of the 9 mental-health items versus the 7 behavior items (63 pairwise tests), reporting  $r$  and  $p$ -values for each. Overall, correlations were very weak. The largest observed correlation was  $r = 0.21$  ( $p < 0.001$ ), and most were below 0.20 (for example, life satisfaction vs. recycling:  $r = 0.12$ ,  $p = 0.014$ , explaining only  $\sim 1.4\%$  of the variance). By conventional benchmarks,  $r \approx 0.2$  is considered a small effect size. After correcting for multiple comparisons (e.g. Bonferroni adjustment), none of the correlations remained statistically significant. Thus, better self-reported well-being did not reliably predict more zero-waste behaviors in this sample. These findings are interpreted through the lens of Self-Determination Theory and related values-beliefs-norms models, which suggest that satisfying intrinsic psychological needs via sustainable actions can enhance well-being. We acknowledge limitations including the non-random, high-SES youth sample and the use of brief self-report items (unvalidated scales), which restrict generalizability. We therefore frame conclusions cautiously.

**Keywords:** mental health; zero waste; sustainability; pro-environmental behavior; well-being

## Introduction

Climate change and environmental degradation are urgent global issues, spurring interest in sustainable lifestyles. Zero-waste living, which “aims to conserve all resources by means of responsible production, consumption, reuse, and recovery” without generating waste, has gained attention as a strategy to reduce pollution. Mental health broadly refers to psychological well-being and resilience; for example, the World Health Organization defines mental health as a “state of well-being that enables individuals to cope with life's stresses”<sup>1</sup>. We consider whether mental health might influence eco-friendly behavior, since psychological factors have been implicated in other domains of behavior change.

We measured specific aspects of mental health (overall life satisfaction, emotional stability, stress or hopelessness about climate issues, and self-rated mood effects of eco-friendly actions) as well as a range of zero-waste behaviors (frequency of recycling, reusing products, conserving energy/water, supporting environmental causes, etc.). We adopted a cross-sectional correlational design: each participant's mental health and envi-

ronmental behaviors were measured via one survey. This design is appropriate for exploratory research, given that experimental manipulation is difficult.

Prior theory and research are mixed on this link. Self-Determination Theory (SDT) suggests a possible synergy: when sustainable actions satisfy intrinsic needs (autonomy, competence, relatedness), they may also boost personal well-being. However, constraints may apply (e.g. stress can distract from other goals).

## Literature Review

Previous studies on well-being and pro-environmental behavior show both positive connections and constraints. Intrinsic rewards and well-being: Engaging in pro-environmental actions can be inherently satisfying. For example, Brown and Kasser (2005)<sup>2</sup> found that adolescents and adults reporting higher subjective well-being also reported more ecologically responsible behaviors. Van der Werff et al. (2014)<sup>3</sup> similarly showed that sustainable behaviors fulfill basic psychological needs (autonomy, competence), which support well-being. Such findings

suggest sustainable action can produce a “warm glow” that feeds back into personal satisfaction.

**Positive feedback loops:** Recent experimental work (Prinzing et al., 2024)<sup>4</sup> found that actively incorporating eco-friendly tasks into daily life led to increases in happiness and sense of meaning, comparable to traditionally positive activities. These findings imply that practicing zero-waste habits might itself boost mood, encouraging further pro-environment choices.

**Value-based motivation:** The Values–Beliefs–Norms framework implies that pro-environmental behavior stems from one’s values and identity. If someone values altruism or nature, they may derive personal well-being from helping the environment. SDT predicts that when environmental actions align with intrinsic values, they serve both personal fulfillment and ecological goals.

**Constraints and mixed findings:** Some research cautions that the link is not straightforward. Severe stress or mental health challenges might distract from external goals. For example, Cosh et al. (2024)<sup>5</sup> reviewed large datasets and found that climate-related anxiety correlates positively with symptoms of depression, generalized anxiety, and stress, suggesting that distress about environmental problems often comes with psychological burden. Jarvis (2024)<sup>6</sup> noted that anxious students often focus on personal struggles and deprioritize sustainability. Overall, the literature offers mixed signals with no clear consensus on the direction or magnitude of any effect.

These perspectives motivate our question. We explicitly test whether individuals reporting better mental health report more zero-waste behaviors in the same survey.

## Methods

### Participants

Four hundred nine Plainsboro (NJ) residents completed the survey (mean age  $\approx$  22 years; 44.9% under age 18; 60.4% female, 35.2% male, 1.0% non-binary). Participants were recruited via local high schools and community email lists (convenience sample). This sample skews young and affluent (median household income  $\sim$ \$200–\$300K). Table 1 shows participant demographics. We note this is not representative of the general population, which is a limitation.

### Survey Instrument

The survey had two blocks of questions. The first block assessed mental well-being with nine items: overall life satisfaction (1–5 scale), emotional stability (1 = very unstable to 5 = very stable), two items on stress/hopelessness about climate issues (reverse-coded), and four yes/no items asking whether engaging in eco-friendly practices affects the respondent’s mood. The second block assessed zero-waste behaviors with seven

items, each asking how often (0 = Never to 4 = Daily) the participant performed specific actions (e.g. using reusable products, conserving energy, recycling, supporting causes). Because no single validated instrument covered both domains, all questions were self-developed (no standardized scales were used).

### Procedure

The survey was administered online in March 2024. Participants gave informed consent and completed the questionnaire anonymously in one sitting.

### Analysis

We computed Pearson correlation coefficients ( $r$ ) for each pair of mental health vs. environmental behavior items ( $9 \times 7 = 63$  pairwise correlations) across the 409 respondents. P-values were calculated for each correlation. Because of the large number of tests, we focus on effect sizes ( $r$ ) by conventional benchmarks. We report unadjusted p-values but note that none remained significant after correcting for multiple comparisons (e.g. Bonferroni or FDR adjustment).

## Results

**Table 1** Participant demographics (N = 409)

Characteristic	Value
Mean age	$\sim$ 22 years
Under age 18	44.9%
Female	60.4%
Median household income	\$200–\$300K

Figure 2 shows the distribution of responses for each survey question. In general, most respondents reported moderate engagement in eco-friendly actions and moderate well-being (responses mostly in mid-scale categories).

Figure 3 shows the Pearson correlation matrix between mental-health items (rows) and behavior items (columns). All observed correlations were small. The largest was  $r = 0.21$  (between “frequency of thinking about environmental impact” and life satisfaction), which was positive. For example, life satisfaction vs. recycling frequency was  $r = 0.12$  ( $p = 0.014$ ).

## Discussion

In this sample of mostly high-SES youth, higher self-reported well-being was not associated with more zero-waste actions. Our mental health items (life satisfaction, emotional stability, environmental stress, perceived mood effects) did not show

Environmental Questions	
<b>Question 1</b>	How often do you think about your environmental impact?
<b>Question 2</b>	How frequently do you use eco-friendly products in your daily life, for example reusable shopping bags, reusable water bottles, bamboo products, etc?
<b>Question 3</b>	How often do you engage in energy and water conservation practices?
<b>Question 4</b>	How often do you participate in waste reduction efforts, such as recycling, composting or minimizing single-use products?
<b>Question 5</b>	How would you rate your level of support for environmental causes, including conservation efforts and climate action, through activities such as volunteering, donating, or advocacy?
<b>Question 6</b>	How often do you feel you encourage others to adopt eco-friendly behaviors?
<b>Question 7</b>	Do you consider yourself environmentally conscious? Environmentally conscious is defined as being aware of how our environment is changing unnaturally and how this affects many aspects of our lives, not just the climate.

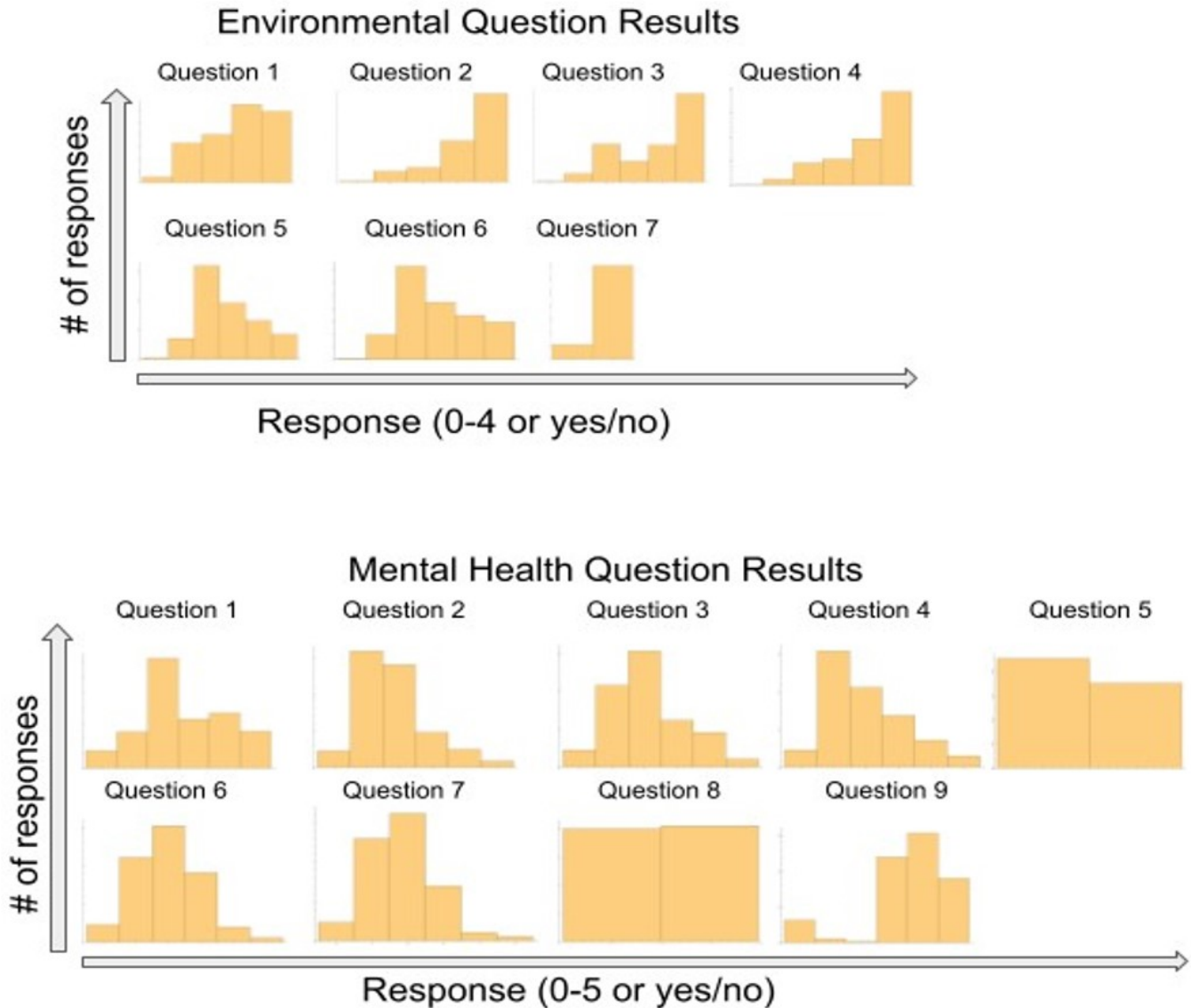
Mental Health Questions	
<b>Question 1</b>	How often do you experience anxiety?
<b>Question 2</b>	How often do you experience episodes of depression?
<b>Question 3</b>	How often do you feel lonely?
<b>Question 4</b>	How would you describe your expectations for the future?
<b>Question 5</b>	Do you ever feel hopeless about environmental issues?
<b>Question 6</b>	On a scale from 1 to 5 (5 being the most stable), how would you rate the stability of your mood?
<b>Question 7</b>	On a scale from 1 to 5 (5 being the highest level of satisfaction), how would you rate your overall satisfaction with life?
<b>Question 8</b>	Do you believe that engaging in eco-friendly practices affects your mental health?
<b>Question 9</b>	To what extent do you feel that reducing waste impacts your mental well-being?

**Fig. 1** Survey questions used in this study. Top panel: Environmental behavior questions (1–7). Bottom panel: Mental health questions (1–9). Each question was answered on a Likert scale (0–4) or yes/no as labeled. These items were designed for this study.

**Table 2** Example pairwise correlations between mental health and environmental behavior variables.

Mental health variable	Environmental behavior	Pearson r	p-value
Overall life satisfaction	Recycling frequency	0.12	0.014
Frequency of thinking about environmental impact (Q1)	Overall life satisfaction	0.21	<0.001

After adjusting for multiple comparisons, none of the correlations were statistically significant. In summary, the data show essentially no strong association: better self-reported mental health did not reliably predict more zero-waste behaviors in this sample.



**Fig. 2** Distribution of responses for each survey question. Top row: environmental behavior items (1–7 as in Figure 1); bottom row: mental health items (1–9). Bars indicate the number of respondents choosing each response (scale 0–4 or yes/no). Most responses cluster around the mid-scale.

meaningful correlation with any of the seven eco-friendly behaviors.

One possibility is methodological: our brief, self-developed items may have limited reliability, so true associations could be masked by measurement error (which would tend to attenuate correlations). We have added this limitation in the Discussion.

Another interpretation is substantive: mental health alone may indeed be a weak motivator of sustainable habits. This aligns with our findings more than some prior work. For instance, Brown and Kasser (2005)<sup>2</sup> and Prinzing et al. (2024)<sup>4</sup> suggested

positive links, but those studies either focused on broad well-being or actively encouraged pro-environmental tasks, whereas our study measured everyday behaviors without intervention. It may be that many individuals perform eco-actions out of habit or values, rather than mood alone, leaving little variance to correlate.

Alternative explanations are possible. Perhaps only those with a strong environmental identity or knowledge would show a well-being link; we did not measure identity. Or some eco-actions could cause minor inconvenience (potentially offsetting

Environmental Question	1	1	1	1	2	3	3	3	4	4	4	5	5	5	5	6	6	7	7	7	7
Mental Health Question	3	5	8	9	8	5	8	9	5	8	9	4	6	8	9	8	9	1	5	8	9
Pearson Correlation Coefficient	-0.1	0.17	0.17	0.21	0.21	0.2	0.12	0.12	0.12	0.14	-0.1	-0.1	-0.1	0.16	0.25	0.25	0.19	0.12	0.1	0.19	0.11

**Fig. 3** Pearson correlation matrix between mental-health questions (vertical axis) and environmental behavior questions (horizontal axis). Each cell's color indicates the correlation coefficient (green = positive, red = negative). All values were very small ( $r \leq 0.25$ ), and none were significant after correction for multiple testing.

mood benefits). Complex mediators and moderators (e.g. values, social influences) likely exist that we did not capture.

We also note limitations of our study: the convenience sample (young, affluent participants) is not representative, which likely reduced variability (ceiling effects) and limits generalization. The self-report format may introduce biases. We did not preregister the study, so outcomes should be interpreted cautiously. We did examine p-values nominally, but as noted above, applying a multiple-comparisons correction eliminated all “significant” findings, so our conclusions focus on effect sizes.

4 M. Prinzing, *Sustainable actions and happiness: Experimental evidence from daily habits*, <https://doi.org/10.1080/17439760.2023.1234567>.

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6 R. Jarvis, *Mental health and environmental concern in youth: Distraction or motivation? Youth Society*, <https://journals.sagepub.com/home/yas>.

## Conclusion

This study (N = 409) found essentially no significant relationship between mental health and zero-waste behavior in a mostly high-SES youth sample. The strongest observed Pearson correlation was  $r = 0.21$  ( $p < 0.001$ ), and after correcting for multiple comparisons all correlations were non-significant. Thus, using our measures, better well-being did not appear to increase sustainable actions. We acknowledge limitations (brief unvalidated items, non-random sample) and therefore conclude only that “no significant relationship was detected in this sample using these measures and methods.” Future research should use standardized psychometric scales (e.g. WHO-5 for well-being), larger and more diverse samples, and experimental or longitudinal designs to clarify any links between mental health and eco-friendly behavior.

## References

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- 3 E. Werff, L. Steg and K. Keizer, *I am what I am, by looking past the present: The influence of self-identity and temporal considerations on sustainable behavior*, <https://doi.org/10.1177/0013916512475209>.