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The Seeds We Sow:

From Polycrisis and -Isms to Interbeing and Societal Transformation

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Abstract

Amid overlapping global crises, many individuals experience psychological distress, anxiety, hopelessness, and a diminished sense of agency. Scholars increasingly argue that this erosion of perceived significance may be as consequential as climate change, biodiversity loss, polarization, and political turmoil, as it stems from a growing disconnection or alienation from self, others, and nature at the heart of today's polycrisis. Against this backdrop, spiritual approaches are gaining attention for their potential to foster resilience, connection, and sustained engagement. Yet their role in supporting societal transformation remains underexplored. This paper addresses this gap through a mixed-methods analysis of the Zen and the Art of Saving the Planet (ZASP) online course, drawing on survey data from three cohorts (2023–2024). The quantitative assessment ($n_1 = 868$) revealed statistically significant changes: approximately 60% of participants reported increased resilience and decreased

climate anxiety, and 76% reported increased connection, hope, empowerment, and coping. The qualitative analysis confirmed and complemented these findings, with around 85% of participants describing meaningful transformations in self-awareness, meaning-making, hope, agency, and engagement. At the same time, participants highlighted challenges in sustaining their practices and translating their learnings into climate and sustainability work contexts, pointing to the fragility of transformative change in modern societies and the need for targeted practical guidance across individual, collective, and system levels. Overall, the findings suggest that spiritually and scientifically grounded concepts and approaches (such as *interbeing*) can strengthen resilience, foster sustained engagement, and support societal transformation by addressing the root causes of today's polycrisis, including associated *-isms* such as individualism, materialism, elitism, consumerism, and extractivism.

Keywords
inner transformation, personal sphere of transformation, mindsets, paradigms, worldviews, religion, spirituality, existential sustainability, awareness-based systems change, culture change, climate change, climate action, mindfulness, inner development goals

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Introduction

In the face of escalating global crises—ranging from climate change and biodiversity loss to geopolitical tensions and social polarization—many individuals experience profound feelings of distress, overwhelm, anxiety, and disconnection (Cosh et al., 2024; Dodds, 2021; Hickman et al., 2021). What may appear to be an outcome, however, might also constitute a root cause of this polycrisis. Scholars increasingly suggest that the most pressing challenge lies not in rising external threats, but in the pervasive illusion of our own insignificance (O'Brien, 2021; Scharmer, 2025). This existential disconnection fosters meaninglessness, hopelessness, and apathy, perpetuating a vicious cycle that undermines individual, collective, and planetary wellbeing (Macy & Johnstone, 2022; Wamsler & Bristow, 2022).

Amid this landscape, spiritual approaches are receiving renewed attention for their potential to foster resilience, connection, and sustained engagement in the face of uncertainty and crisis (Luetz & Nunn, 2023; Reyes-Perez et al., 2025; Wamsler, 2018; Wamsler & Brink, 2018). Traditionally regarded as inner,

private, or peripheral, these domains may thus offer transformative pathways for navigating the complex emotional and ethical terrain of the polycrisis (Ives et al., 2023a, 2024; Koehrsen & Ives, 2025; Rowson, 2014; Woiwode, 2016). However, their role in fostering deeper societal transformation—beyond personal wellbeing—remains underexplored (Bristow et al., 2024).

Against this background, our research presents an exploratory mixed-methods analysis of the Zen and the Art of Saving the Planet (ZASP) online course, offered by Plum Village, a global mindfulness community founded by Thích Nhất Hạnh. The course is designed to nurture insight, compassion, community, and mindful action in service of the Earth. Based on Hạnh's book of the same name (Hanh, 2021), it is delivered in collaboration with Christiana Figueres, former Executive Secretary of the UN Framework Convention on Climate Change and a key architect of the 2015 Paris Agreement.

Theoretical and Contextual Grounding

Addressing Root Causes Through Inner Transformation and Awareness-Based Systems Change

This study is situated within the emerging scientific field of Inner Transformation for Sustainability, which examines how individual and collective values, beliefs, worldviews, and the inner capacities connected to them shape mindsets, behaviors, cultures, and wider systems (Bristow et al., 2024; IPBES, 2024; Ives et al., 2023b; Wamsler et al., 2021; Woiwode et al., 2021). In this field, today's polycrisis is understood as a convergence of existential, reinforcing threats that stem from pervasive experiences of disconnection or alienation from self, others, and nature (IPBES, 2024; Wamsler & Bristow, 2022). This alienation is rooted in the dominant paradigm in Western and modern societies, which assumes that our mind is separate from our emotions and body, that we are independent from one another, that some people are superior to others, and that humans are separate from, and superior to, nature (Eisenstein, 2013; Göpel, 2016; Scott et al., 2021; Wamsler & Bristow, 2022).

These assumptions persist despite robust scientific evidence, across fields such as ecology, neuroscience, psychology, anthropology, and systems science, all of which demonstrate the deep interconnectedness of all that exists (e.g., Escobar et al., 2024; Frymann, 2023; Siegel, 2022; Varela, 2000; Wilson, 1984). Accordingly, these assumptions shape our individual mindsets, behaviors, culture, and institutions. In everyday life, they manifest in a series of *-isms*, such as individualism, materialism, consumerism, systemic racism, casteism, and extractivism—all conditions that systematically undermine wellbeing and contribute to the deterioration of mental, physical, collective, and planetary health (Hawken, 2021; Henderson, 2020; Wilkerson, 2020).

Consequently, our mental health and the health of our planet are deeply entangled. Human wellbeing depends on the quality of our relationships, and the

same is true for the wellbeing of our planet (Scott et al., 2021). To make matters worse, our mind functions simultaneously as a root cause of the climate crisis, a victim of escalating climate impacts, and a barrier to adequate climate action (Wamsler & Bristow, 2022). In other words, as much as our minds are driving climate change, climate change is driving negative mental health, anxiety, and denial, which in turn worsen our responses at the individual, collective, and system levels, reinforcing existing paradigms and feelings of separation.

Transformative change requires addressing the root causes of today's polycrisis and thus engaging with the inner dimensions underlying increasing alienation from self, others, and nature, which are deeply embedded in individual mindsets, behaviors, cultures, and structures. These inner dimensions are considered deep leverage points for change (Meadows, 1999). They refer to human awareness, including individual and collective beliefs, values, worldviews, and the inner capacities that shape them (Wamsler et al., 2020, 2021). In this context, certain inner capacities can be identified as transformative, as they have the potential to support reconnection and the development of more relational beliefs, values, and worldviews.

Building on this understanding, scholars have increasingly highlighted the potential of mindfulness to help cope with and more meaningfully engage with the climate crisis (Wamsler et al., 2026). Accordingly, the latest reports of the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) reference meditation and mindfulness as potential levers for transformative change (IPBES, 2024; IPCC, 2022a, 2022b). At the same time, research on mindfulness and climate action across individual, collective, and systemic levels remains scarce and fragmented (Barrett et al., 2024; Geiger et al., 2020; Frank et al., 2019; Iniesta-Bonillo et al., 2025; Thiermann & Sheate, 2022; Wamsler et al., 2018).

The field of Inner Transformation for Sustainability emphasizes that developing inner capacity and vertical growth is crucial, but insufficient on its own (Ives et al., 2023b; Wamsler et al., 2024). Transformative change requires addressing the paradigm of separation across sectors and levels. This involves how organizations, systems, and frameworks are designed, and how more caring, relational capacities, values, beliefs, and worldviews can be institutionally embedded and operationalized to move toward a society of care and the regeneration of human and planetary wellbeing (Laloux, 2014; Wamsler et al., 2021). Concretely, this means for instance actively reshaping organizational cultures and work structures, adapting rules and policies, realigning operational and funding mechanisms, introducing new forms of collaboration and communication, and creating dedicated physical and temporal spaces that enable conditions for inner development, reflection, silence, and regeneration. In this way, (re)connectedness can become practically experienced, and wellbeing and sustainable behavior is systematically supported.

Awareness-Based Systems Change represents a key framework within this context and body of scholarship (Koenig et al., 2021; Scharmer, 2013, 2016). It integrates systems thinking, adult development theory, contemplative science, and relational ontologies to trace how shifts in awareness influence patterns of social and institutional relations, interactions, and fields (Abson et al., 2017; Kegan, 1995; Meadows, 1999; Senge et al., 2004; Varela et al., 1991). Awareness-Based Systems Change aligns closely with both the IMAGINE and the inner–outer transformation models (Ives et al., 2023b; Wamsler et al., 2021). These models identify the core characteristics of integrated inner–outer transformation. They conceptualize the interconnection between inner and outer change processes, map clusters of transformative capacities (which constitute the scientific counterpart to the Inner Development Goals), and highlight complementary ways in which these capacities can be nurtured across individual, collective, and system levels. In this context, they also explicitly highlight the need to integrate different knowledge systems, including local knowledge and wisdom traditions.

Within this landscape, Thích Nhất Hạnh's teaching of *interbeing* offers a relational ontology and contemplative practices that operationalize such theoretical approaches, cultivating awareness of interconnectedness and integrating inner and outer dimensions of change to address the root causes of today's polycrisis (Hanh, 2021; Ng & Walsh, 2019). By evaluating the ZASP course, this study contributes empirical evidence to these growing research streams, illustrating how spiritually informed, awareness-based practices may foster shifts in resilience, connection, and engagement across individual, collective, and system levels.

The ZASP Program

The ZASP program is a seven-week online course that was designed to translate key teachings from Hạnh's *Zen and the Art of Saving the Planet* (Hanh, 2021) into a structured learning environment that supports insight, community-building, and action in service of the Earth. More specifically, the course seeks to:

- develop resilience in the face of ecological breakdown,
- transform fear, despair, and climate anxiety into clarity and constructive engagement,
- foster a sense of meaning through interconnection with the Earth and all beings, and
- encourage sustainable, compassionate forms of climate action grounded in awareness rather than reactivity.

The course is structured around weekly themes: Embracing the Pain, Cutting Through Illusion, Living with Courage, Learning to Rest, Brave Dialogue, Mastering Mind and Habits, and Action Dimension. It combines pre-recorded teachings and practices from senior Plum Village monastics and

Christiana Figueres, with five live sessions, and four community sharing groups. In addition to these activities, participants are encouraged to read the book and may join optional smaller sharing groups.

The online learning platform includes asynchronous video lessons, recordings of live events, recommended daily mindfulness practices, and diverse, interactive community sections, including reflective prompts and spaces for discussion and optional peer-led sharing. The live events incorporate guided meditations, movement practices, applied exercises, and group sharing, all facilitated by monastics and lay Dharma teachers. Optional smaller sharing groups are peer-led, consisting of up to ten participants who meet four times throughout the course for joint reflections.

Overall, the course provides around 20 hours of recorded material. Participants are recommended to dedicate at least three hours per week (including live events), with an ideal commitment of five to seven hours. While the course is intended to run for seven weeks, it is self-paced, allowing learners to progress at their own pace, with all materials available for 12 months. This flexibility enables participants to tailor their learning to their schedules and engage fully, regardless of prior knowledge.[1]

Course participants are recruited through communications via Plum Village community channels (webpage, email, and social media) and targeted outreach to groups likely to benefit, such as sustainability and climate organizations, mindfulness groups, and students engaging in related issues. Pre-course surveys are distributed approximately two weeks before each course begins, with reminders sent during the first two weeks. Post-course surveys are distributed the week after the course ends and closed approximately five weeks later, following several reminders. The author of this study was not part of the facilitation team and held no formal role in program recruitment, design, or delivery. Involvement was solely research-focused.

Methodology

Analytical Approach

While spiritual approaches are increasingly recognized for their potential to foster resilience, connection, and sustained engagement, their role in enabling broader societal transformation remains underexplored (Luetz & Nunn, 2023; Reyes-Perez et al., 2025; Wamsler, 2018; Wamsler & Brink, 2018). This is particularly true for empirical studies of programmatic interventions. This study addresses this gap. It assesses the ZASP course's impact on participants' resilience, sense of connection, and habitual patterns of thinking and being that

[1] For more information, see plumvillage.org/zasp

may constrain action (e.g., climate anxiety; Cosh et al., 2024; Dodds, 2021), and how participants transform these patterns to engage across levels.[2]

The study provides an exploratory quantitative and qualitative evaluation of participants' pre- and post-course responses. The quantitative analysis focused on three scales, administered before and after the course, to assess its impact on participants' resilience, sense of connection, and climate-related anxiety (see details below). The qualitative component examined two post-course questions: one inviting participants to describe meaningful "Aha!" moments—sudden insights or realizations—and another asking them to reflect on the transformation of their "cows," understood as habitual patterns of thinking and being that may limit or obstruct action (Arora, 2025; Prenevost & Reber, 2024). Data were collected via the course team across three cohorts: *Sun & Moon* (October 15–December 03, 2023), *Air* (March 24–May 12, 2024), and *Breathe* (October 20–December 08, 2024).

This mixed-methods design allowed for a nuanced understanding of the course's impact, combining statistically measurable changes with in-depth insights into participants' experiential and reflective processes. Together, these approaches aimed to illuminate both the efficacy of the ZASP course in fostering individual resilience and connection and its potential to support sustained engagement and societal transformation in response to complex global crises.

The quantitative analysis was based on the following methodological aspects:

- The null hypothesis (H_0) was defined as: Participation in the ZASP course has no effect on balancing personal wellbeing with climate action, resilience levels, and/or climate anxiety. The focus is thus on the three specific scales (details below). Item-level statistical analyses are exploratory and should be interpreted with caution. Scale-level analyses remain the focus of confirmatory testing, as they correspond to the study's primary hypothesis. Item-level analyses highlight nuanced patterns within the scales and complement the qualitative findings, providing readers with a more detailed understanding of the results.
- The focus was on participants who completed both surveys (details in the next section). This approach preserved the "within-subject" integrity of the statistical analysis, allowing changes in responses over time to be measured, if any occurred.

[2] People's sustainability and climate actions can be conceptualized through the lens of authorship and social spheres. At the individual level, engagement manifests in private life and personal lifestyle choices. At the collective level, action occurs within societal contexts—through communities, organizations, or networks that influence social norms. At the system level, engagement targets institutions, policies, and structures, shaping broader societal and global outcomes.

In other words, the approach ensured internal validity, as the same individuals were compared pre- and post-course.

- Both the pre- and post-course surveys used scales to assess changes in participants' resilience, sense of connection, and habitual patterns of thinking and being that may constrain action, particularly climate-related anxiety. The assessment was designed to ascertain whether statistically significant changes (or patterns) occurred across participants, rather than to isolate the specific mechanism responsible for that change. Therefore, the design alone cannot rule out competing explanations. However, the within-subject design enhances sensitivity by controlling for stable individual differences, allowing a more precise estimation of change over time.
- To conduct the quantitative analysis, the internal consistency of all three scales was first checked. This was done using a threshold value of Cronbach's alpha (≥ 0.70) (DeVellis, 2011) and, for scales comprising fewer than ten items, an optimal range of inter-item correlations (0.20–0.40) (Briggs & Cheek, 1986). The latter is commonly used to assess the reliability of shorter scales (Pallant, 2020).
- Although the scales used in the surveys are ordinal in nature (i.e., Likert-type scales), they were treated as interval-level data for analytical purposes. Median (*Md*) scores and interquartile ranges (*IQRs*) were calculated and are reported for all scales, in line with the use of non-parametric statistical tests. Means were also computed to display increases or decreases when treating Likert scales as interval.
- Given the ordinal nature of the scales and the non-normal distribution of scores,[3] Wilcoxon signed-rank tests were used to assess whether participants' responses changed significantly from before to after the course. In this test for paired samples, "positives" refer to cases where post-course scores were higher than pre-course scores, "negatives" to cases where they were lower, and "ties" to cases with no change.
- To interpret the overall direction of change, the number of participants showing improvement (positives) was compared with those showing decline (negatives). If more participants improved than declined, the direction was considered an increase (↑); if more declined than improved, the direction was

[3] The test of normality of the distribution of scores was conducted using a Kolmogorov–Smirnov statistic. Scores from all scales (pre- and post-course) did not meet the assumption of normality ($p < .001$).

considered a decrease (↓); and if numbers were similar, no clear change was considered (↔). Importantly, for the Climate Anxiety Scale, higher scores indicate more anxiety. Therefore, a greater number of "negatives"—that is, participants with lower post-course scores—signals a decrease in anxiety and is interpreted as a positive outcome.

- To address potential inflation of Type I error across the three primary (confirmatory) scale-level comparisons (details below), *p*-values were adjusted using the Holm–Bonferroni sequential approach (Holm, 1979), i.e., *p*-values were ranked from smallest to largest and compared against successive adjusted alpha levels. After adjustments, all scale-level findings remained statistically significant. As indicated above, item-level analyses are exploratory and are reported without correction for multiple comparisons.
- To determine the minimum required sample size for the Wilcoxon signed-rank tests, the analysis used a 5% significance level ($\alpha = 0.05$), 95% statistical power, and a small effect size ($d = 0.2$). Using G*Power (Faul et al., 2009), a statistical power analysis tool, this resulted in a minimum required sample size of 379 participants. However, given the relatively large sample analyzed (868 participants; details in the next section), the tests were highly powered and sufficiently sensitive to detect even small effects with strong confidence.
- To measure the magnitude of the difference between pre- and post-course scores, the effect size (r) was calculated for all scales and related items. This was intended to quantify the strength of the observed effects (i.e., how strong the effect is). The number of paired participants was used as N, and Cohen's (1988) criteria were applied as benchmarks for interpretation: 0.1 = small effect, 0.3 = medium effect, and 0.5 = large effect. This approach provides a standardized, non-parametric measure of effect size appropriate for paired data.

All statistical tests were conducted using IBM SPSS Statistics 28 and evaluated at the conventional significance level of 5% ($\alpha = 0.05$). Two-tailed tests were used, meaning that any change in scores—whether an increase or a decrease—was tested for.

The qualitative data were examined using thematic analysis in relation to the research aim (Braun & Clarke, 2006; Nowell et al., 2017). The analysis involved the following steps: (1) familiarization with the data; (2) generating initial ideas and themes through open coding; (3) interpreting and systematically categorizing the content into themes and associated patterns; (4) reviewing; and (5) further defining through axial and selective coding (Braun & Clarke 2006;

Corbin & Strauss 2008; Nowell et al., 2017). Coding and analysis continued until saturation was reached—that is, when no new significant themes emerged and previously discarded codes were confirmed as irrelevant. The themes, patterns, and cross-cutting dimensions that emerged from this iterative process of constant comparison, coding, and categorization are presented and elaborated in the *Reported Aha! Moments and Most Significant Changes* section.

Sample

The total number of survey participants across all three cohorts was $N = 2{,}582$, and each cohort included a similar number of participants, with 961, 812, and 809 respondents, respectively. Completion rates for the pre-course survey were consistent across cohorts, at 36–40%, while post-course survey completion was lower, ranging from 14–16%. A portion of each cohort did not complete the survey in full, with incomplete surveys ranging from 13–14%. The proportion of participants who completed both the pre- and post-course surveys was also similar across cohorts, at approximately one third.

Cohort	**Sun & Moon** (Autumn 2023)	**Air** (Spring 2024)	**Breathe** (Autumn 2024)
Total number of survey participants	961 (100%)	812 (100%)	809 (100%)
Participants who completed pre-course survey only	360 (37%)	296 (36%)	323 (40%)
Participants who completed post-course survey only	140 (15%)	133 (16%)	111 (14%)
Participants who partially completed pre- and/or post-course survey	124 (13%)	116 (14%)	111 (14%)
Participants who completed both pre- and post-course surveys	337 (35%)	267 (33%)	264 (33%)
Total number of participants who completed both surveys	868 (34%)		

Table 1: *Survey participation and completion rates by cohort*

Note. The total number of participants was established after correcting for double counting and removing double or triple responses across cohorts: 14 (Sun & Moon), 17 (Air), and 45 (Breathe). All registered participants were invited to complete the pre- and post-course surveys. Excluding internal team members and duplicates, total registrations were approximately 3,290.

Combining all three cohorts, the total number of participants who completed both surveys and are therefore included in the quantitative analysis is $n_1 = 868$, representing approximately 34% of the total combined cohort sample. This consolidated paired-sample forms the basis for the analysis presented in this report and reflects the respondents who consistently engaged with the surveys before and after the course. The qualitative analysis included all post-survey responses (both complete and partial), regardless of whether participants had completed the pre-course survey ($n_2 = 1{,}526$).

Demographics

The sample used for the quantitative analysis (n_1 = 868) is characterized as follows: The age distribution was skewed towards older age groups. The largest proportion of respondents (26.6%) were aged 56 to 65, followed closely by those aged 66 and above (20.5%) and those aged 46 to 55 (20.2%). Participants aged 36 to 45 made up 16.2% of the sample, while those aged 26 to 35 represented 13.6%. Younger individuals aged 16 to 25 accounted for 2.5% of respondents, and a very small fraction (0.3%) chose not to disclose their age. Overall, the data indicated that nearly 70% of the sample was aged 46 or older.

In terms of gender identity, 76.5% of respondents identified as women. Men represented a significantly smaller share at 19.6%, and nonbinary individuals accounted for 2.8% of the sample. A small portion of participants (1.2%) preferred not to state their gender identity. Hence, participants who completed both surveys were predominantly female (76.5%), reflecting the overall gender composition of course participants.

The sample also indicates that participants were primarily from Europe (47%), followed by North America (30%), reflecting substantial representation from industrialized or OECD countries. Asia accounted for 9%, while Latin America and Africa comprised 8% and 2%, respectively, and Oceania comprised 3%.

Scales and Reliability

Both the pre- and post-course surveys employed three scales to quantitatively assess the impact of participation in the ZASP course on its intended objectives, including reducing climate anxiety and enhancing resilience. Scales and related measures are as follows:

- *Plum Village Scale*: It aims to assess if the ZASP course has the intended impact (see section *The ZASP Program*). It assesses specific aspects of resilience, anxiety, connection (to others and the Earth), and both individual and collective agency. It was measured using six items (e.g., "I feel that I am deeply connected with the Earth and with nature"; 1 = Not at all; 2 = A little; 3 = A moderate amount; 4 = A lot; 5 = A great deal). This scale contained one negatively worded item ("I struggle to handle my thoughts and feelings about the climate crisis") that needed reverse coding.
- *Brief Resilience Scale*: It aims to assess resilience, broadly defined as the ability to bounce back from stress. Based on Smith et al. (2008), it was measured using six items (e.g., "I tend to bounce back quickly after hard times"; 1 = Strongly Disagree; 2 = Disagree; 3 = Neither Agree Nor Disagree; 4 = Agree; 5 = Strongly Agree). This scale contained three

negatively worded items (e.g., "I have a hard time making it through a stressful event") that needed reverse coding.

– *Climate Anxiety Scale*: It aims to assess climate anxiety as a psychological response to climate change. Based on Clayton and Karazsia (2020), it was measured using thirteen items (e.g., "Thinking about climate change makes it difficult for me to concentrate"; 1 = Strongly Disagree; 2 = Disagree; 3 = Somewhat Disagree; 4 = Neither Agree Nor Disagree; 5 = Somewhat Agree; 6 = Agree; 7 = Strongly Agree).

Scale scores were calculated as the mean of the item scores for each scale (i.e., the sum of the items divided by the number of items). Overall, all three scales demonstrated acceptable to good internal consistency over time (i.e., pre- and post-course; see Table 2). Scales were deemed reliable based on a threshold value of Cronbach's alpha (≥ 0.70) (DeVellis, 2011) and an optimal range of inter-item correlations (0.20–0.40) (Briggs and Cheek 1986).[4]

Scale	**Plum Village Scale**		**Brief Resilience Scale**		**Climate Anxiety Scale**	
	Pre-course	Post-course	Pre-course	Post-course	Pre-course	Post-course
Cronbach's alpha	0.71	0.69	0.83	0.80	0.85	0.85
Inter-item correlations	0.29	0.27	0.46	0.42	0.31	0.31

Table 2. *Reliability checks of scales across time points*

Results

Plum Village Scale

The results suggest that the ZASP course had a positive impact and meaningfully supported participants in their learning and transformation processes. On average, scores of the *Plum Village Scale* increased by nearly 16% from before to after the course. Most participants reported feeling more connected, hopeful, and/or well-equipped after completing the course, whereas only a small number reported feeling less so. Overall, the shift in scores was significant, suggesting that the course achieved its intended objectives.

In statistical terms, tests revealed a significant improvement (z = -20.31, p < .001) in the median score from pre-course (Md = 3.17; IQR = 2.83–

[4] Item-deletion diagnostics using Cronbach's alpha were conducted for all items, pre- and post-course. Tests revealed only one marginal increase (from 0.69 to 0.70 for item #6 in the *Plum Village Scale* post-course). Therefore, all items were retained to preserve scale integrity and pre–post comparability.

3.50) to post-course (*Md* = 3.67; *IQR* = 3.33–4.00), with a large effect size (*r* = 0.69). The null hypothesis was rejected. Of the 868 participants, 660 (76.0%) reported an increase in scores post-course, 91 (10.5%) showed no change, and 117 (13.5%) reported a decrease. In sum, median scores increased by 15.8% from pre- to post-course. Figures 1 and 2 display the distribution of mean scores of the *Plum Village Scale* before and after course.

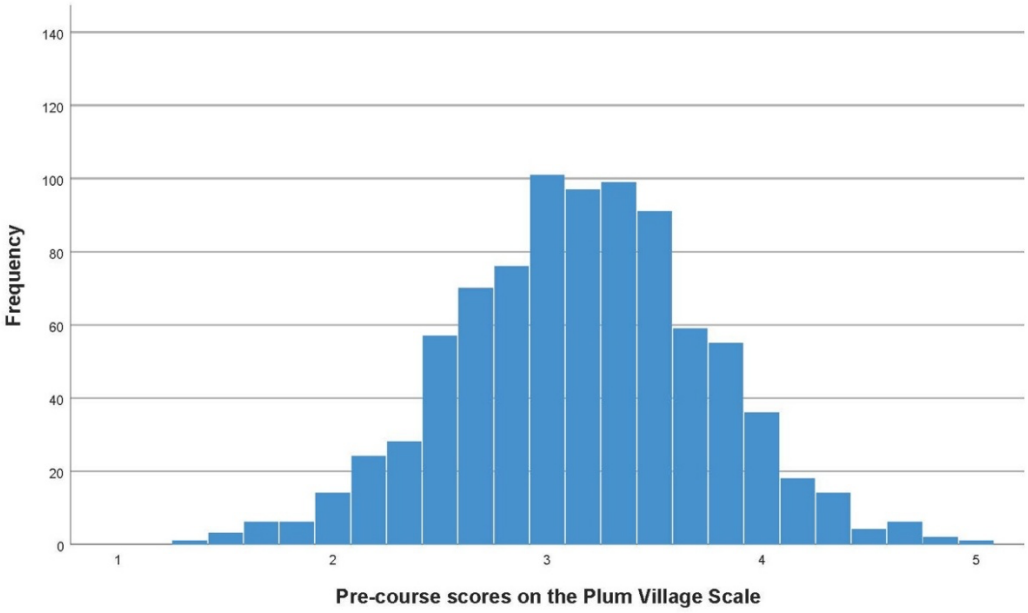

***Figure 1**: Distribution of mean scores of the Plum Village Scale before the course.*

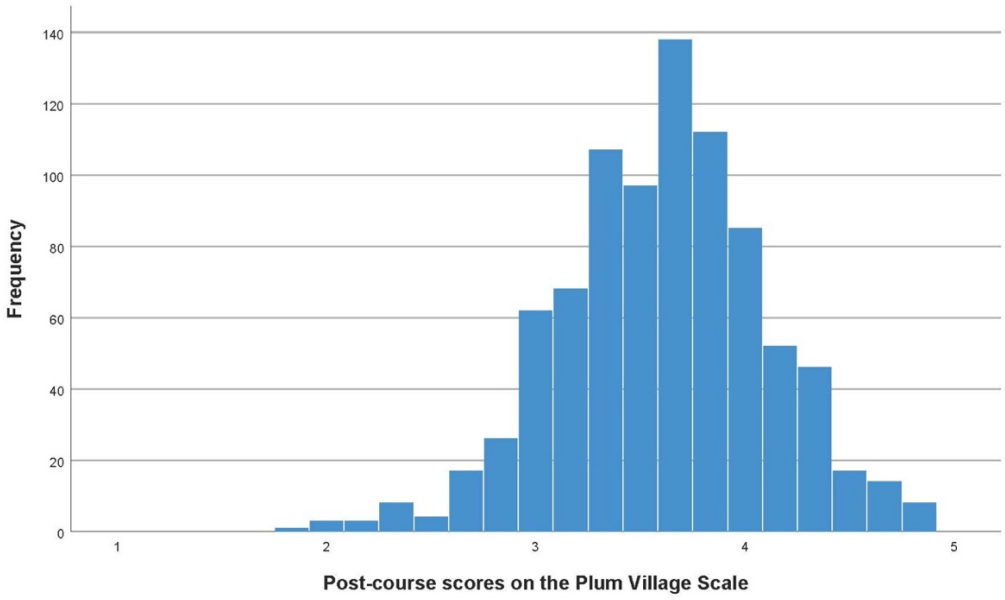

***Figure 2:** Distribution of mean scores of the Plum Village Scale after the course.*

At the item-level, responses reflected the pattern observed in the scale-level analysis. Findings showed statistically significant improvements in responses from pre- to post-course when analyzed individually. A summary of all item-level changes is shown in Table 3. Effect sizes (r) ranged from medium to large. Importantly, 63% of participants reported feeling more equipped with the inner resources they need to deal with climate change, and 42% felt more empowered to take action in response to climate change following the ZASP course. Figure A1 in the Appendix presents paired bar plots of the response distributions for each item on this scale, comparing the relative frequencies of responses before and after the course. These paired bar plots allow visual comparison of how participants' responses changed over time.

Item	**Cases: Positives / Negatives / Ties**	**Direction of change**	**Statistically significant?**	**Effect size**	**Plain interpretation**
I feel that I am deeply connected with the Earth and with nature.	254 / 71 / 543 29% / 8% / 63%	Increase	Yes ($p < .001$)	Medium ($r = 0.35$)	More participants (29%) felt a stronger connection, while few (8%) felt less, and most others (63%) stayed the same.
I am connected to others who are able to support me in my climate change aspirations, in my personal and/or professional life.	346 / 130 / 392 40% / 15% / 45%	Increase	Yes ($p < .001$)	Medium ($r = 0.34$)	More participants (40%) felt more connected to others, while a smaller number (15%) felt less connected, and others (45%) felt the same.
I feel hopeful that our collective human family will find ways to navigate climate change.	355 / 137 / 376 41% / 16% / 43%	Increase	Yes ($p < .001$)	Medium ($r = 0.34$)	More participants (41%) felt hopeful, while a smaller number (16%) felt less hopeful, and many (43%) did not change their view.
I feel empowered to take action in response to climate change.	368 / 94 / 406 42% / 11% / 47%	Increase	Yes ($p < .001$)	Medium ($r = 0.43$)	Many participants (42%) felt more empowered, while relatively few (11%) felt less empowered, and many (47%) did

					not change their view.
I feel well equipped with the inner resources I need to cope with climate change and related changes in the world.	547 / 42 / 279 63% / 5% / 32%	Increase	Yes ($p < .001$)	Large ($r = 0.67$)	Most participants (63%) felt more equipped with inner resources, with very few (5%) reporting a decline, and others (32%) did not change their view.
I struggle to handle my thoughts and feelings about the climate crisis. (R) [a]	390 / 75 / 403 45% / 9% / 46%	Increase	Yes ($p < .001$)	Medium ($r = 0.48$)	Many participants (45%) reported struggling less, while few (9%) felt worse, and most (46%) remained the same.

Table 3: *Summary of item-level changes in participants' responses after completing the course for items on the Plum Village Scale*

Note. Cases are shown in absolute and relative terms. Positives = number/percentage of participants whose scores increased after the course; negatives = number/percentage of participants whose scores decreased; ties = number/percentage of participants whose scores remained the same. a: This item is negatively worded so it is reverse (R) coded, which means positives are understood as improvements.

Brief Resilience Scale

Findings indicate that the ZASP course had a positive effect on participants' resilience levels. On average, resilience scores increased by nearly 10% after the course. Most participants showed an improvement and only about a quarter showed a decrease. Overall, the shift in scores was meaningful and suggests that the course helped improve participants' ability to bounce back from challenges.

In statistical terms, tests revealed a significant improvement ($z = -12.99$, $p < .001$) in the median score from pre-course ($Md = 3.17$; $IQR = 2.83$–3.67) to post-course ($Md = 3.50$; $IQR = 3.00$–3.83), with a medium effect size ($r = 0.44$). The null hypothesis was rejected. Of the 868 participants, 516 (59.4%) reported an increase in scores post-course, 139 (16.0%) showed no change, and 213 (24.5%) reported a decrease. In sum, median scores of resilience increased by 10.4% from pre- to post-course. Figures 3–4 display the distribution of mean scores of the *Brief Resilience Scale* before and after course.

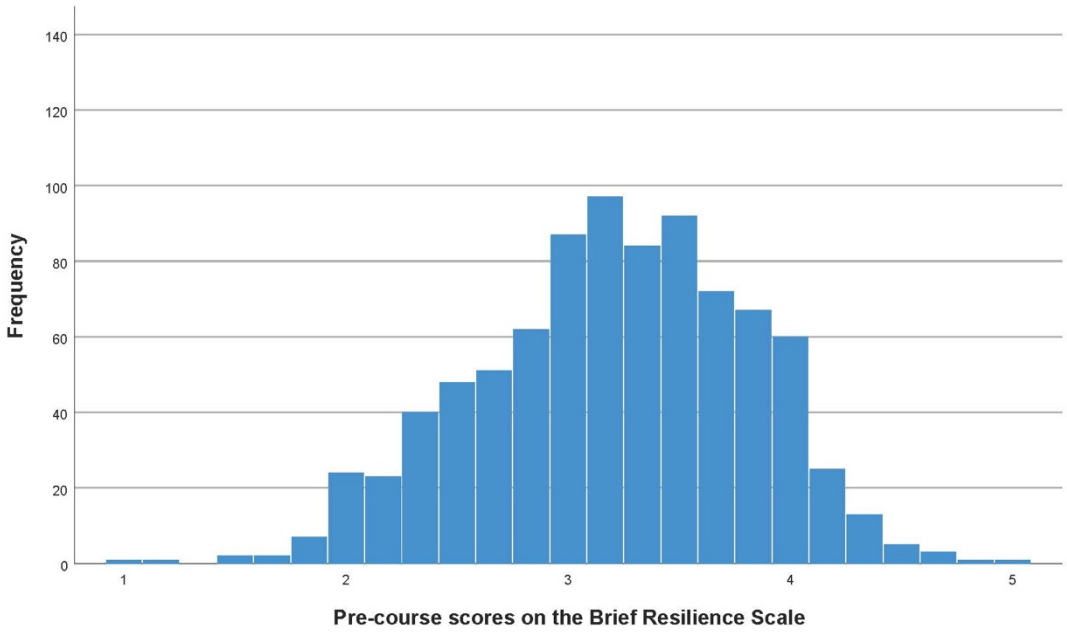

***Figure 3**: Distribution of mean scores of the Brief Resilience Scale before the course.*

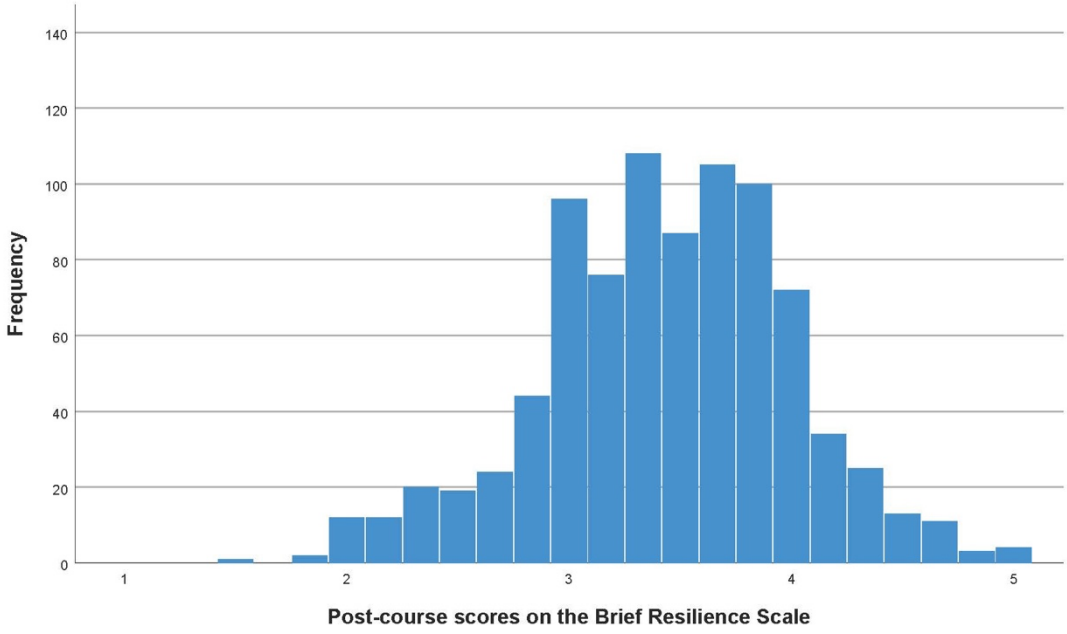

***Figure 4:** Distribution of mean scores of the Brief Resilience Scale after the course.*

Findings from item-level data align descriptively with the overall scale results. Results showed statistically significant improvements in responses from pre- to post-course when analyzed individually. A summary of all item-level changes is shown in Table 4. Effect sizes ranged from small to medium. Figure A2 in the Appendix presents paired bar plots of the response distributions for each item on this scale, comparing the relative frequencies of responses before and after the course.

Item	Cases [a]: Positives / Negatives / Ties	Direction of change	Statistically significant?	Effect size	Plain interpretation
I tend to bounce back quickly after hard times.	311 / 114 /443 36% / 13% / 51%	Increase	Yes ($p < .001$)	Medium ($r = 0.30$)	More participants (36%) felt better able to bounce back after hard times, while a smaller number (13%) felt less able, and most others (51%) stayed the same.
I have a hard time making it through a stressful event. (R) [a]	300 / 152 / 416 35% / 18% / 48%	Increase	Yes ($p < .001$)	Small ($r = 0.24$)	More participants (35%) reported having an easier time coping with a stressful event, while a smaller number (18%) reported difficulties, and most others (48%) stayed the same.
It does not take me long to recover from a stressful event.	312 / 125 / 431 36% / 14% / 50%	Increase	Yes ($p < .001$)	Small ($r = 0.26$)	More participants (36%) felt quicker to recover from a stressful event, while a smaller number (14%) felt the opposite, and most others (50%) stayed the same.
It is hard for me to snap back when something bad happens. (R) [a]	248 / 101 / 519 29% / 12% / 60%	Increase	Yes ($p < .001$)	Small ($r = 0.27$)	More participants (29%) felt it was easier to recover from setbacks, while a smaller number (12%) experienced the opposite, and the majority (60%) stayed the same.
I usually come through difficult times with little trouble.	307 / 118 / 443 35% / 14% / 51%	Increase	Yes ($p < .001$)	Small ($r = 0.28$)	More participants (35%) felt they usually come through difficult times easily, while a smaller number (14%) experienced the opposite, and

					most others (51%) felt the same.
I tend to take a long time to get over set-backs in my life. (R) [a]	234 / 127 / 507 27% / 15% / 58%	Increase	Yes ($p < .001$)	Small ($r = 0.20$)	More participants (27%) felt they recovered from setbacks more quickly, while a smaller number (15%) experienced the opposite, and most others (58%) felt the same.

Table 4: *Summary of item-level changes in participants' responses after completing the course for items on the Brief Resilience Scale.*

Note. Cases are shown in absolute and relative terms. Positives = number/percentage of participants whose scores increased after the course; negatives = number/percentage of participants whose scores decreased after the course; ties = number/percentage of participants whose scores remained the same after the course. A: These items are negatively worded so they are reverse (R) coded, which means positives are understood as improvements.

Climate Anxiety Scale

The results indicate that the ZASP course had a positive effect on participants' levels of climate anxiety. On average, climate anxiety scores decreased by approximately 9% after the course. Most participants reported lower scores after the course, while only about a third reported an increase. Overall, the shift in scores was meaningful and suggests that the course helped reduce participants' climate anxiety.

In statistical terms, tests revealed a significant decrease ($z = -9.29$, $p < .001$) in the median score from pre-course ($Md = 2.92$; $IQR = 2.23–3.62$) to post-course ($Md = 2.65$; $IQR = 2.08–3.38$), with a medium effect size ($r = 0.32$). The null hypothesis was rejected. Of the 868 participants who responded to both surveys, 517 (59.6%) reported a decrease in scores post-course, 49 (5.6%) showed no change, and 302 (34.8%) reported an increase. In sum, median scores of climate anxiety decreased by 9.3% from pre- to post-course. Figures 5 and 6 display the distribution of mean scores of the Climate Anxiety Scale before and after course.

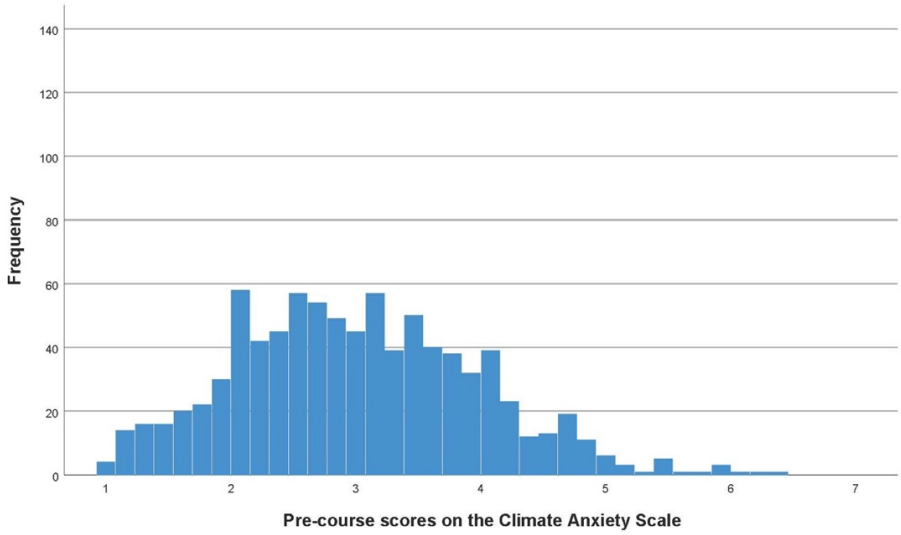

Figure 5: *Distribution of mean scores of the Climate Anxiety Scale before the course.*

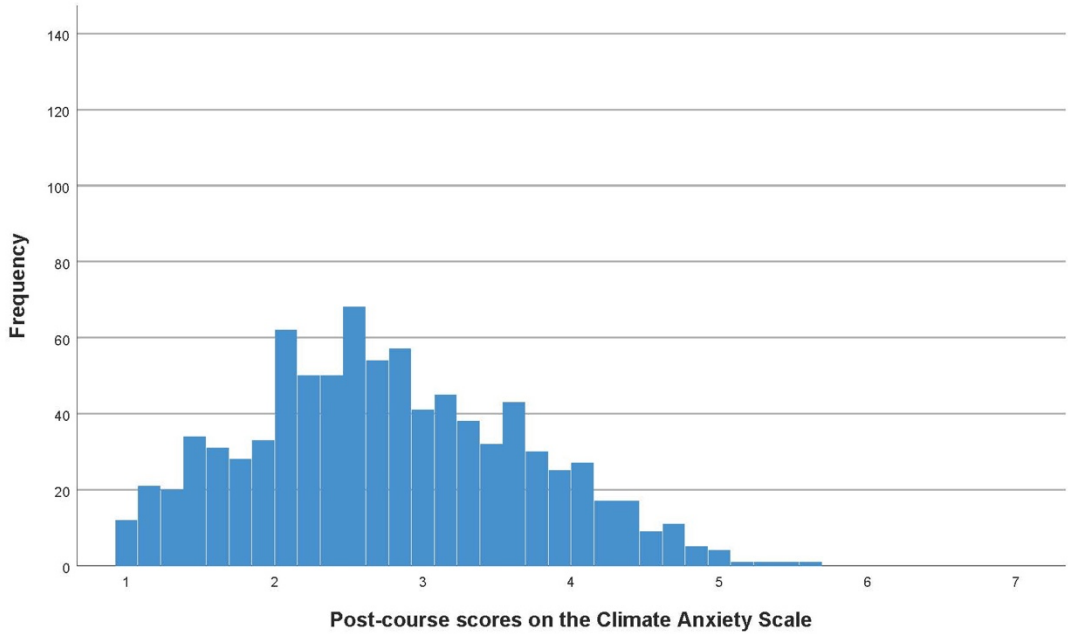

Figure 6: *Distribution of mean scores of the Climate Anxiety Scale after the course.*

When the items from the *Climate Anxiety Scale* were analyzed individually, the responses showed slightly more variation compared with the previous scales. One item exhibited no statistically significant change, while another ("I have nightmares about climate change") showed a change in the opposite direction. Effect sizes ranged from negligible to medium. A summary of all item-level changes is shown in Table 5. Figure A3 in the Appendix presents paired bar plots of the response distributions for each item on this scale, comparing the relative frequencies of responses before and after the course. These paired bar plots allow visual comparison of how participants' responses changed over time.

Item	Cases: Positives / Negatives / Ties	Direction of change	Statistically significant?	Effect size	Plain interpretation
Thinking about climate change makes it difficult for me to concentrate.	139 / 433 / 296 16% / 50% / 34%	Decrease	Yes ($p < .001$)	Medium ($r = 0.39$)	About half of the participants (50%) found it less difficult to concentrate when thinking about climate change, a smaller group (16%) found it more difficult, and 34% reported no change.
Thinking about climate change makes it difficult for me to sleep.	119 / 368 / 381 14% / 42% / 44%	Decrease	Yes ($p < .001$)	Medium ($r = 0.37$)	More participants (42%) found it less difficult to sleep when thinking about climate change, while a smaller number (14%) found it more difficult, and 44% reported no change.
I have nightmares about climate change.	408 / 164 / 296 47% / 19% / 34%	Increase	Yes ($p < .001$)	Medium ($r = 0.37$)	More participants (47%) reported having more nightmares about climate change, while a smaller number (19%) had fewer, and 34% reported no change.
I find myself crying because of climate change.	177 / 353 / 338 20% / 41% / 39%	Decrease	Yes ($p < .001$)	Small ($r = 0.25$)	More participants (41%) found themselves crying less because of climate change, while a smaller number (20%) found themselves crying more, and 39% reported no change.
I think, "why can't I handle climate change better?"	177 / 390 / 301 20% / 45% / 35%	Decrease	Yes ($p < .001$)	Small ($r = 0.27$)	More participants (45%) found themselves thinking less

					about "why can't I handle climate change better?", while a smaller number (20%) found themselves thinking this more often, and 35% reported no change.
I go away by myself and think about why I feel this way about climate change.	236 / 338 / 294 27% / 39% / 34%	Decrease	Yes ($p < .001$)	Small ($r = 0.14$)	More participants (39%) said they spent less time alone thinking about climate change, while a smaller number (27%) did this more often, and 34% reported no change.
I write down my thoughts about climate change and analyze them.	258 / 221 / 389 30% / 25% / 45%	Increase	Yes ($p = .008$)	Negligible ($r = 0.09$)	More participants (30%) wrote and analyzed their thoughts about climate change more often, while a smaller number (25%) did so less often, and 45% showed no change.
I think, "why do I react to climate change this way?"	246 / 288 / 334 28% / 33% / 39%	Decrease	No ($p = .051$)	Negligible ($r = 0.07$)	About a third (33%) thought less often about this issue, 28% thought about it more often, and 39% reported no change. However, this change is statistically insignificant.
My concerns about climate change make it hard for me to have fun with my family or friends.	157/ 317 / 394 18% / 37% / 45%	Decrease	Yes ($p < .001$)	Small ($r = 0.26$)	More participants (37%) found it easier to have fun with family or friends despite climate concerns, while a smaller number (18%) found it harder, and 45% reported no change.

I have problems balancing my concerns about sustainability with the needs of my family.	204 / 340 / 234 24% / 39% / 37%	Decrease	Yes ($p < .001$)	Small ($r = 0.20$)	More participants (39%) found it less difficult to balance their concerns, while a smaller number (24%) found it more difficult, and 37% reported no change.
My concerns about climate change interfere with my ability to get work or school assignments done.	163 / 282 / 423 19% / 32% / 49%	Decrease	Yes ($p < .001$)	Small ($r = 0.21$)	More participants (32%) found their concerns about climate change interfered less, while a smaller number (19%) found it interfered more, and 49% reported no change.
My concerns about climate change undermine my ability to work to my potential.	153/ 321 / 394 18% / 37% / 45%	Decrease	Yes ($p < .001$)	Small ($r = 0.28$)	More participants (37%) felt climate concerns got in the way of their work less often, while a smaller number (18%) felt it happened more often, and 45% reported no change.
My friends say I think about climate change too much.	160/ 289 / 419 18% / 33% / 48%	Decrease	Yes ($p < .001$)	Small ($r = 0.16$)	More participants (33%) said they heard this comment less often, while a smaller number (18%) heard it more often, and 48% reported no change.

Table 5: *Summary of item-level changes in participants' responses after completing the course for items on the Climate Anxiety Scale.*

Note: Cases are shown in absolute and relative terms. Positives = number/percentage of participants whose scores increased after the course; negatives = number/percentage of participants whose scores decreased after the course; ties = number/percentage of participants whose scores remained the same after the course. Given the nature of the Climate Anxiety Scale, higher scores indicate greater climate anxiety, and lower scores indicate less climate anxiety. Therefore, when the number of "negatives" exceeds the number of "positives," the overall direction of change (i.e., a decrease) is interpreted as an improvement.

Reported Aha! Moments and Most Significant Changes

Qualitative responses to the post-course survey supported the quantitative findings, indicating the ZASP course's potential for transformative impact. Approximately 85% of respondents reported powerful Aha! moments, often describing shifts in their relationships with self (body, mind, emotions), others, nature, and time. Similarly, when reflecting on changes related to their "cows"—habitual patterns of thinking, being, and acting (e.g., internal or external attachments, identifications, or comforts) that may hinder engagement and deeper transformation—around 80% described positive developments. In both cases, participants most frequently reported reduced anxiety and despair, alongside increased presence, connection, resilience, self-care, joy, hope, agency, and engagement. A smaller group (≈5–10%) reported limited change or ongoing struggles, while others left the questions unanswered (≈10–15%).

Analysis of participant reflections yielded four overarching thematic categories—meaning-making, hope, sense of agency, and engagement—within which resilience, connection, and anxiety (and suffering more broadly) emerged as cross-cutting dimensions. Within each overarching theme, distinct patterns emerged, which are presented in the following sections. Each theme begins with a bullet-point summary of key patterns, followed by brief explanations, and concludes by highlighting related tensions or challenges. The final subsection presents the spiritual concepts that participants repeatedly mentioned across all themes as helpful in their transformative journey, without being prompted.

Changes in Meaning-Making

Within the theme of meaning-making, analysis of participant reflections identified five key patterns of change:

- Reframing identity through interconnectedness and interbeing
- Shifting toward relational values and worldviews
- Embracing suffering as transformative
- Reframing understandings of time, mortality, and continuity
- Integrating contradiction and complexity

A recurring pattern across responses was a shift in participants' understanding of their identity and associated meaning-making systems, moving toward a more expanded sense of interconnectedness. This shift was described not only intellectually but also as a felt, embodied sense. Participants reported experiencing themselves as more than individual selves and described a deepened sense of unity with oneself, the Earth, and all beings. Several participants used phrases such as "being nature" or "more than human," and reported powerful experiences of "coming back to their bodies." Insights emerged through practices such as mindful breathing, eating and walking, alongside reflection on everyday objects and interactions. For example, some participants

noted that even artificial materials, such as concrete and plastic, could be understood as originating from the Earth, suggesting a collapse of perceived boundaries between the natural and artificial.

Participants' expanded sense of identity supported a shift from individualistic interpretations of life toward more systemic and relational values and worldviews. Several participants described how perceiving themselves not as separate individuals but as interconnected nodes within a wider web of life influenced their attitudes and actions, expressed for example as "treating living and non-living beings with more love."

Participants also reflected on how experiences of suffering, including climate-related grief, anxiety, and personal challenges, provided a pathway to resilience and transformation. Rather than viewing suffering as something to avoid, they increasingly perceived it as an essential aspect of life and development. In addition, several participants noted that they came to understand suffering and the cultivation of joy as complementary aspects of the same developmental process. Suffering was described as "important for learning, healing, and for transformation to occur," a potential catalyst for care, compassion, and engagement in the world.

In addition, participants described transformations in their understanding of time, mortality, and impermanence. Gaining a broader, more "cosmic" perspective was said to enable participants to cultivate a sense of continuity and peace, allowing them to act from awareness and meaning rather than from fear and reactivity.

Finally, participants highlighted the complexity and contradictions inherent in their learning. While some insights brought clarity and empowerment, others surfaced emotional tension, partial change, or lingering confusion. Many acknowledged that they had not fully understood or embodied certain teachings, but recognized their significance and the need for ongoing practice. These reflections point to the dynamic, unfolding nature of deep meaning-making, illustrating that transformation is an ongoing process rather than a fixed endpoint.

Changes in Hope

Key patterns of change identified include:

- Experiencing renewed hope through presence and connection
- Letting go of false or future-oriented hope
- Accepting despair coexisting with hope
- Increasing engagement alongside both diminished and renewed hope
- Navigating tensions between renewed hope and ongoing distress

Hope, as expressed by participants, became less about specific outcomes and more about grounded presence, connection, and relational commitment. In this sense, several conveyed that simply being alive in a time of great uncertainty and change was itself a meaningful opportunity. This perspective seemed to have fostered a renewed sense of hope and agency, as participants recognized that many aspects of their lives—including thoughts, emotions, ethical choices, and interpersonal engagement—remain within their control, even amid broader systemic decline.

Several participants described releasing attachment to what can be seen as conventional or future-oriented hope, and experiencing a sense of relief in accepting impermanence. For some, acknowledging the inevitability of death and the possible end of civilization was perceived as letting go of illusion or false hope. This shift served as a new motivating force, prompting reflection on intrinsic values and on what is truly worth preserving and fighting for—namely, being present with and caring for others and the natural world. A reduction in old patterns of hope appeared to be linked to reduced anxiety and more embodied, value-driven engagement. By letting go of unrealistic or overwhelming expectations tied to hopes and visions of the future, participants noted that they were better able to focus on the present and take actions aligned with their values. Several shared that, for example, although they are "no longer feeling responsible for saving the planet," they nonetheless felt "more committed without despair," enabling them to "show up differently" and "act with more heart."

For some participants, despair and hope were increasingly experienced as coexisting rather than mutually exclusive. Recognizing and allowing space for despair enabled a deeper, more sustainable form of hope, and even joy, to take root. Several shared that the course provided tools for "holding joy and hope at the same time as feeling anxiety and despair," helping them stay emotionally open and engaged rather than shutting down in the face of difficulty.

These tools also helped participants navigate tensions between renewed hope and ongoing experiences of grief, anxiety, and despair. Hope was not static or consistently held. Some participants described periods of renewed hope that were subsequently tested by ongoing anxiety or systemic realities. Others spoke of moments of connection and optimism followed by days when hope felt distant or absent.

These reflections suggest that hope is not a singular state but a dynamic process, often marked by contradiction, renewal, and re-evaluation of one's beliefs, values, and worldviews. The course appears to have provided a space within which these emotional complexities could be held and explored.

Changes in Sense of Agency

Key patterns of change identified include:

- Shifting from paralysis to agency
- Embodying awareness and presence as pathway to agency
- Gaining empowerment through self-care and emotional regulation
- Exercising deliberate, values-driven agency
- Building agency through action

A shift from paralysis to resilience and an increased sense of agency was a recurrent pattern. Many participants described a renewed sense of agency, often emerging after confronting long-held feelings of anxiety, powerlessness or overwhelm.

Participants shared how embodied awareness and presence, cultivated through breath, movement, and attention, helped them feel more grounded and capable of engaging. Rather than a purely conceptual practice, mindfulness was experienced physically and emotionally, with some noting that even simple acts, such as sitting with the breath, rekindled a sense of aliveness and agency. Several participants described a shift in recognizing that their ways of being and thinking, rather than just their actions, also constitute expressions of agency.

Other participants described how learning to better take care of themselves, regulate emotions, and manage mental energy enabled them to face climate-related and other stressors without becoming overwhelmed. As one participant expressed, "Caring for myself is also caring for the earth—my activism before lacked that aspect, so I burned out very quickly." This cultivation of inner resilience served as a foundation for sustained engagement and more hopeful, intentional action toward sustainability and transformation. In this context, participants also highlighted practices of rest and self-care as forms of resistance to dominant cultures of urgency, consumption, and overproduction, referring to this as "rest as resistance."

Similarly, rather than seeing agency as control over external conditions, many participants spoke of increasingly aligning with their values and making deliberate choices, linking personal change with broader systemic awareness and transformation. In this context, one participant described feeling "more empowered to change myself and to be more aware and empathetic of ways that climate change is a perpetuation of many generations of violence, colonialism, and racism … that all need to be unknotted together at the levels of self, relationships, and society."

Several described a turning point in which they moved from despair to action, not necessarily through grand gestures, but through quiet, steady acts rooted in integrity and clarity. Small actions appeared to foster feelings of agency and, in turn, appeared to support increasing and wider engagement.

Still, some participants expressed doubt about the reach of their agency in a world shaped by complex systemic challenges. While many felt more self-aware and internally aligned, they acknowledged ongoing uncertainty about how to best translate these insights into transformative activism or public engagement.

Changes in Engagement Across Levels

Key patterns identified include:

- Integrating mindfulness into day-to-day activities
- Making ethical lifestyle changes
- Strengthening relationships and social engagement
- Connecting personal, societal, and professional engagement

A tangible shift for many participants was the integration of mindfulness into everyday activities. Simple acts such as breathing, walking, and eating became opportunities for spiritual practice. For instance, several participants reported that practices such as mindful walking became part of their daily routines and helped them cope with everyday challenges.

Others described making explicit lifestyle changes to better align with their ethical and ecological values. Participants reevaluated their consumption habits, with some choosing to reduce meat consumption, minimize plastic use, or limit unnecessary purchases, illustrating a transition from internal insight to concrete individual behavioral change.

Mindfulness also became a meaningful resource for improving interpersonal relationships and broader social engagement. The course fostered participants' belief in the possibility of deep community and (re)connection with oneself and others, supporting their capacity to face challenging situations without being overwhelmed by panic or doom thinking. Participants described navigating difficult encounters in social, professional, and climate-related contexts more effectively through deep listening, mindful attention, and compassionate conflict resolution, leading to more constructive and transformative outcomes. In this context, participants reflected that their "quality of being and presence are also forms of activism," and that it helped them gain a broader understanding of how "different issues such as climate, animal rights, and human rights are interconnected" and "shaped by our consumer capitalist society."

Although the survey questions did not specifically ask about engagement at individual, collective, and systemic levels, related actions were mentioned in several responses, highlighting the intertwined nature of inner and outer transformation. Concrete examples supporting the survey responses can be drawn from in-depth discussions with a small *Breathe* cohort, conducted six months after the course concluded (Álvarez Pereira & Salomone, 2026). In this context, participants reported gaining new courage to speak up and engage across societal and professional contexts, producing wide-ranging effects. Some

initiated communities of practice, reading groups, or activist networks that fostered mutual support and outreach. Within their workplaces, participants started to articulate new visions of cultural and structural change, initiating dialogues on sustainability and wellbeing, power dynamics, and ethical decision-making. Participants also described integrating sustainability into their professional work, for instance through launching eco-conscious projects or incorporating concepts of inner and outer transformation into teaching and writing. In our study, among participants who reported concrete actions, the majority (≈65%) described personal-level changes, followed by broader societal or systemic shifts (≈25%). An additional 10% reported targeted initiatives related to sustainability and climate activism.

Without being prompted, participants acknowledged the difficulty of sustaining new practices and translating personal learnings into societal and work contexts. Several reported relapsing into prior habits but emphasized an enhanced resilience and the capacity to recognize this and return to their practices. These reflections underscore the ongoing, imperfect, and resilient nature of transformative engagement, and highlight the importance of communities of practice. In addition, they point to the need for practical guidance to support transformation that integrates inner (individual and collective) and outer (behavioral and systemic) change.

Spiritual Concepts Supporting Transformation

Across all themes, participants repeatedly mentioned the following spiritual ideas and concepts as helpful in their transformative journey:

- Interbeing
- Diamond Sutra
- Five Remembrances
- Historical and Ultimate Dimensions
- Meditator, Artist, and Warrior
- The metaphor of the seeds[5]

The concept of *interbeing* (Hanh, 2021)—the interdependence of all beings and phenomena—was mentioned most frequently and explicitly connected to the insights and changes described above. Some participants regarded their learnings as an antidote to capitalism, colonialism, consumerism, individualism, and other *-isms*, which are increasingly understood as manifestations of growing

[5] For more information, see plumvillage.org/daily-contemplations-on-impermanence-interbeing; plumvillage.org/library/dharma-talks/free-from-notions-the-diamond-sutra; plumvillage.org/podcast/bringing-the-ultimate-dimension-down-to-earth-episode-40; plumvillage.org/podcast/the-meditator-the-artist-and-the-warrior-episode-22

disconnection from self, others, and nature—the roots of today's polycrisis (Hanh, 2021; cf. Theoretical and Contextual Grounding Section). Interbeing opened a gateway to deeper understanding and to alternative ways of being, thinking, and acting in the world. Related practices and additional spiritual concepts deepened these insights.

The *Diamond Sutra* (Hanh, 2021) teaches that all phenomena—including the self, objects, and thoughts—are impermanent and lack inherent, independent existence. Understanding this impermanence and emptiness can support non-attachment, which the text presents as essential for reducing suffering. In line with this, one participant reflected, "My attachment to an individual self, and individual needs, really loosened."

The *Five Remembrances* (Hanh, 2021) help cultivate an embodied understanding of the deep interconnectedness and impermanence of all beings by inviting reflection on aging, illness, death, the changing nature of relationships, and the consequences of one's actions. By encouraging conscious engagement with these inevitable aspects of life, the practice helped participants foster acceptance and reduce the tendency to respond to climate change with denial, anxiety, or fear.

The *Historical and Ultimate Dimensions* (Hanh, 2021) describe where things appear distinct, separate, and subject to time and change (*Historical Dimension*), and where we can perceive the interbeing and timeless nature of all phenomena (*Ultimate Dimension*). Bringing the ultimate dimension into the present moment was described by one participant as "opening a spaciousness inside," which helped sustain action.

On this basis, the *Meditator, Artist, and Warrior* teaching (Hanh, 2021) invited participants to balance their inner capacities in order to foster more sustainable action grounded in presence and compassion, creativity and joy, and courage in service of the Earth.

Together with the Buddhist theory of mind (Hanh, 2006), which highlights the importance of nurturing wholesome inner capacity ("wholesome seeds") and ways of transforming greed, anger, and delusion, these teachings offered many participants a conceptual framework and vocabulary for understanding processes of inner–outer transformation, along with embodied practices that enabled them to work with difficult emotions without compromising their wellbeing or engagement.

Discussion and Conclusions

This study highlights the often less visible dimensions of social and relational reality creation: the dynamics, processes, and, in particular, the dimensions of awareness that underlie and shape individual and collective behavior, culture, and system transformation. This section summarizes the key findings and limitations, explores the interplay among the identified change processes,

considers the role of spirituality, and concludes with the broader significance of the work.

Summary of Key Findings and Limitations

The purpose of this study was to provide a mixed-methods evaluation of the ZASP online course, examining pre- and post-course responses from participants across three cohorts. The quantitative analysis focused on participants (n_1 = 868) who completed both surveys, employing a within-subjects design to measure changes over time. The qualitative analysis comprised a thematic review of all post-course responses (n_2 = 1,526), including participants who had not completed the pre-course survey.

Overall, the findings indicate that the ZASP course achieved its intended aims. Participants' scores on the *Plum Village Scale* increased by 15.8%, and scores on the *Brief Resilience Scale* rose by 10.4%, while *Climate Anxiety Scale* scores decreased by 9.3%. Statistically significant changes were observed across all three scales, with effect sizes ranging from medium to large.

Notably, 76% of participants reported feeling more connected, hopeful, empowered, and able to cope with climate change; approximately 60% reported increased resilience; and approximately 60% reported decreased climate anxiety. In addition, 63% of participants felt more equipped with the inner resources they need to deal with climate change.

Qualitative data supported these findings and revealed key underlying processes, including shifts in meaning-making, hope, agency, and engagement across individual, collective, and systemic levels. The results underscore the value of combining quantitative and qualitative evaluation to capture both measurable outcomes and the processes that enable sustainability and transformation.

Analysis of individual items provided additional insights while also highlighting certain limitations. Some responses suggested potential ceiling effects where participants already scored highly on pre-course measures (e.g., "I feel that I am deeply connected with the Earth and with nature"), which may have limited measurable change. Other results, such as increased reports of climate-related nightmares and greater engagement in writing about climate change-related thoughts, may reflect heightened emotional awareness and engagement rather than negative outcomes. These observations underscore the complexity of psychological responses to climate change and the value of nuanced evaluation.

Other methodological limitations of this study include its single, within-group pre–post design. While statistically significant changes were observed across most outcomes, these changes cannot be definitively attributed to the course, as alternative explanations cannot be ruled out. Potential confounding factors include external or private events that may have influenced participants' wellbeing or anxiety levels. In addition, variation in engagement with the course

(e.g., participation in structured activities, interaction with peers, and use of course materials) may have contributed to the magnitude of observed changes. These factors are integral components of the course itself and may reflect differences in how participants experienced the intervention.

Another limitation was the incomplete demographic data for participants who did not complete both surveys, which means potential differences between included and excluded participants cannot be assessed. However, the within-subject design reduces variability due to stable individual differences, and the observed effects remain statistically robust among the analyzed participants.

Future studies using randomized controlled or quasi-experimental designs would help reduce potential bias and establish causal effects more rigorously. These could be complemented by qualitative approaches that allow participants to narrate their experiences and perceived processes of change over time in greater depth. Follow-up studies would also be valuable to assess the sustainability of participants' increased engagement across levels. To date, only a small, experiential qualitative follow-up study has been conducted six months after the last of the three courses (Álvarez Pereira & Salomone, 2026). While it indicates sustained engagement, supported through continued involvement in the course community and alumni gatherings, quantitative and representative studies are needed for deeper insights.

Interplay of Inner-Outer Transformation Processes and Spirituality

The findings of this study illuminate how inner transformation and spiritual frameworks can support outward engagement across multiple levels. The analyses indicate that participants' change processes are not discrete but deeply interwoven, involving shifts in meaning-making, hope, agency, and engagement. Variations in resilience, sense of connection, and anxiety emerged as important cross-cutting factors interacting with these processes.

Changes in meaning-making, for instance, were described as fostering hope and resilience, reducing anxiety, and expanding agency, with such shifts potentially extending into interpersonal and systemic forms of engagement. At times, engagement itself was linked to strengthening hope, resilience, and a sense of agency, highlighting the dynamic and entangled nature of these processes (cf. Everard et al., 2016; Macy & Johnstone, 2022). The results further indicate non-linear, cascading ripple effects, ranging from shifts in personal identity and lifestyle to initiating difficult conversations, challenging dominant social paradigms, and contributing to workplace sustainability dialogues aimed at systems change.

By addressing inner change processes, the ZASP program engaged with both participants' immediate needs and challenges and the root causes of today's polycrisis. It initiated transformative change by "rattling" mindsets, behaviors, relationships, processes, power dynamics, cultural norms, and structures that constitute the systems driving climate change, rather than merely addressing its

observable impacts and surface-level manifestations. If such inner change processes are not addressed, climate change and prevailing policy approaches risk undermining wellbeing and contributing to a vicious cycle of deteriorating mental, physical, collective, and planetary health (Wamsler & Bristow, 2022).

Participants' qualitative survey responses illustrate that climate change can generate mental distress, hamper adequate responses across levels, and reinforce paradigms and feelings of separation that both underlie and further drive the crisis itself (cf. Scott et al., 2021; Wamsler & Bristow, 2022). Addressing these entangled layers of the mind–sustainability nexus through targeted practices and ethically grounded spiritual approaches supported participants in increasing awareness and, to varying degrees, engaging in efforts to interrupt this reinforcing cycle.

Within this context, spirituality appeared to function both as a catalyst and a container for transformation, nurturing participants inner resources and ethical orientation (cf. Rowson, 2014; Woiwode et al., 2021). Practices and concepts such as interbeing enabled participants to engage with complex global challenges by acknowledging and working with difficult emotions, cultivating sustainable forms of hope, and acting meaningfully without being driven by anxiety.

For many participants the ZASP course represented an encounter between interbeing and the dominant Western economic mindset, embedded in beliefs, values, worldviews, inner capacities, cultures, and institutional structures (Henderson, 2020; Scott et al., 2021). Broadly speaking, the Western economic mindset and paradigm can be traced to the 19th-century emergence of political economy as a distinct discipline, increasingly separated from moral philosophy (Mill, 2006; Schumpeter, 1954; Sen, 1987). It is grounded in an understanding of humans as rational, self-interested, and independent agents operating within an anthropocentric framework that privileges human primacy over both nature and others (e.g., Henderson, 2020; Raworth, 2017, 2025). This model is performative in that it shapes who we become (Raworth, 2017, 2025), yet its underlying abstraction is increasingly misaligned with contemporary insights across the natural sciences, social sciences, and humanities (e.g., Escobar et al., 2024; Frymann, 2023; Siegel, 2022; Varela, 2000; Wilson, 1984). In practice, it means that human behavior is often reduced to individual preference maximization, thereby neglecting relational and ethical dimensions of decision-making.

In Buddhist philosophy of mind, comparable self-centered tendencies are described through the concept of *manas*, referring to ego-consciousness and the appropriation of experience through an "I," "me," and "mine" orientation that related practices explicitly seek to transform (Hanh, 2006). This perceptual mode generates attachment and cognitive distortion, reinforcing a perceived separation between self, others, and nature. It thereby contributes to forms of distress, discrimination, and appropriation that can manifest in the internalization and reproduction of dominant *-isms*, including individualism, materialism, consumerism, racism, elitism, and extractivism, which in turn reinforce patterns

of distress, loss of meaning, and feelings of insignificance (Brother Spirit, 2025; Hanh, 2006, 2021).

Aimed at addressing the root causes of suffering, interbeing and mindfulness can therefore be understood as both inherently relational and political. Interbeing, as articulated by Thích Nhất Hạnh, is a core principle and meta-ethic of mindfulness that connects and underpins related practices and teachings offered in the ZASP course (Hanh, 2021). These practices supported participants, among other things, in relinquishing affective states that give rise to processes of "othering," including fear, anxiety, anger, and feelings of superiority.

Rather than being confined to private experience, mindfulness thus shapes how individuals act and interact within broader social and political contexts. Accordingly, the dominant Western economic paradigm and associated power-related *-isms* that lie at the root of today's polycrisis were frequently questioned and challenged through participants' learning processes. At the same time, participants seemed to struggle with how to support change across sectors and scales. In translating learning into their social and work contexts, they lacked practical guidance for linking personal, behavioral, cultural, and systemic transformation (Bentz et al., 2022; O'Brien, 2021; Wamsler et al., 2021, 2026).

Participants described their experiences as non-linear and marked by ambivalence, regression, and tension, highlighting the ongoing, and relational nature of change. At the same time, spiritual concepts and practices helped participants express, experience, and navigate related complexities, enabling them to connect personal insights with broader ecological, ethical, and systemic perspectives. Although not all participants resonated equally with specific spiritual framings, the broader psychological and relational dimensions of the teachings appear central to the observed shifts toward more relational beliefs, values, worldviews, and the inner capacities that underpin them.

Taken together, the findings shed light on the dynamics and processes involved in such shifts. In doing so, they contribute to the growing fields of Inner Transformation and Awareness-Based Systems Change (Koenig et al., 2021; Ives et al., 2023b), and they inform related approaches such as Mindful Eco-Wellness and Mindfulness-Based Sustainable Transformation (Barrett et al., 2024; Wamsler et al., 2018, 2026). In this context, the findings align with and extend existing research identifying relationality and the integration of diverse knowledge systems as cornerstones of transformative systems change (Koenig et al., 2024; IPBES, 2024; Ives et al., 2023b; Walsh et al., 2021). Specifically, they provide empirical evidence for the potential of spiritually informed, awareness-based practices to foster resilience, (re)connection, and engagement. In addition, they highlight the importance of supporting a comprehensive understanding—and practical guidance—of the "how" of integrative inner–outer transformation. This involves addressing alienation from self, others, and nature, and supporting (re)connection across multiple levels, including individual mindsets, behaviors, cultures, and systems—thereby engaging deep leverage points. Supporting transformative capacities, including mindfulness or the Inner Development

Goals, therefore needs to be embedded within such broader systemic and institutional processes of change. At the same time, it requires attending to more shallow but still crucial levers that can address proximate causes, as well as immediate impacts and needs (e.g., biophysical drivers, loss and damage, and mental health).

Concluding Remarks

This study indicates that the ZASP course provided participants with mindfulness practices, concepts, and ethical orientation that supported changes across inner (individual and collective) and outer (behavioral and systemic) dimensions. Associated spiritual teachings, such as *interbeing*, offered participants a narrative through which to understand their lives and their relationship to broader societal and systemic challenges.

The impact may, however, lie less in the specifically spiritual grounding of these teachings and more in their universal character and psychological and relational resonance (Bucher, 2007; Rowson, 2014; Woiwode et al., 2021). They appear to have helped participants restore a long-sought balance between spirituality and utility, the spiritual and the material, and the intrinsic and the extrinsic—as fundamentally interconnected aspects of life and purpose (Rowson, 2014).

The findings also indicate that interbeing and mindfulness can be understood as political concepts and practical approaches that offer an alternative to dominant economic models and sustainability approaches that are grounded in a paradigm of separation. Not all participants, however, felt equally connected to the spiritual framing, highlighting the need to consider spirituality within a complex, religiously hybrid world (Ng & Walsh, 2019; Stacey, 2024). These tensions point to the importance of flexibility and inclusivity in the design of transformative learning environments—spaces that can accommodate both spiritual and secular forms of reflection and that validate complex, non-linear journeys of change. They also suggest that there are multiple, individual and context-specific entry points for transformation.

The findings align with the recent IPBES Transformative Change Assessment Report, which emphasizes the urgency of transformative change to address interconnected crises (IPBES, 2024). The report identifies disconnection from nature, others (e.g., reflected in inequitable power structures), and self (e.g., manifested in short-term materialism) as key drivers of these crises, and calls for fundamental shifts in individual and collective views. It further underscores the need to integrate inner development with external systemic change processes. The present study provides empirical support for these perspectives. In addition, by fostering meaning, resilience, hope, and ethical engagement, it suggests that spiritually informed approaches such as ZASP can contribute to catalyzing awareness-based cultural and systemic transformations needed for a sustainable future.

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Conflict of Interest Statement

The author declares no competing interests related to this work.

Ethics Statement

The study fulfills ethical and GDPR requirements of Lund University and Sweden, in accordance with the Research Ethics Advisor and Research Integrity Office. The study was conducted as part of a course evaluation, and the associated data collection adhered to established ethical standards. All participants provided informed consent at the beginning of each survey; participation was voluntary and anonymous, and responses were stored and analyzed in compliance with GDPR regulations, in accordance with guidance from the Lund University Research Data Support Team.

Generative AI and AI-assisted technologies

Generative AI and AI-assisted technologies were not used during the analysis or writing process; they were employed only at the final stage for grammar checks.

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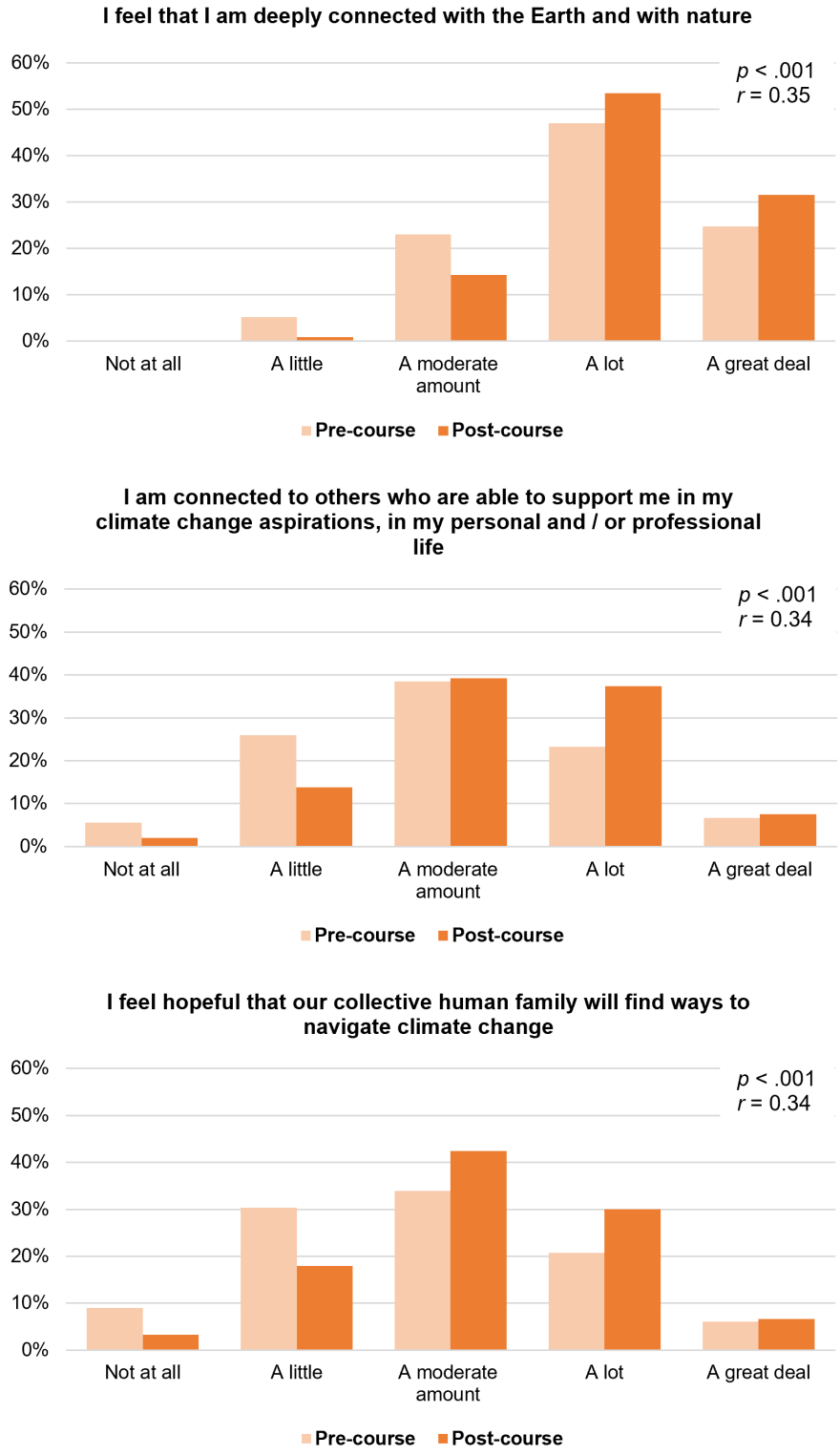
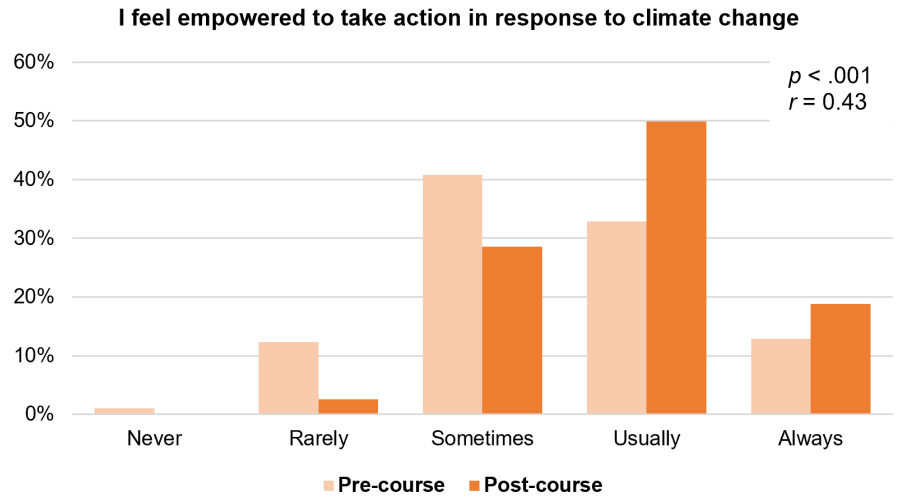
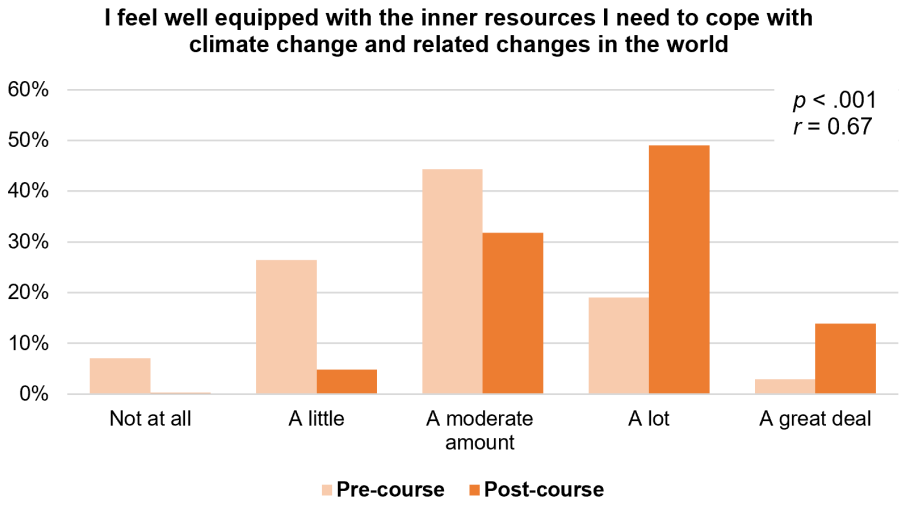
Appendix

Figure A1: *Pre- and post-course response distributions for each item under the Plum Village Scale.*




I feel empowered to take action in response to climate change
60%
50%
40%
30%
20%
10%
0%
p < .001
r = 0.43
Never
Rarely
Sometimes
Usually
Always
Pre-course
Post-course


I feel well equipped with the inner resources I need to cope with climate change and related changes in the world
60%
50%
40%
30%
20%
10%
0%
p < .001
r = 0.67
Not at all
A little
A moderate amount
A lot
A great deal
Pre-course
Post-course

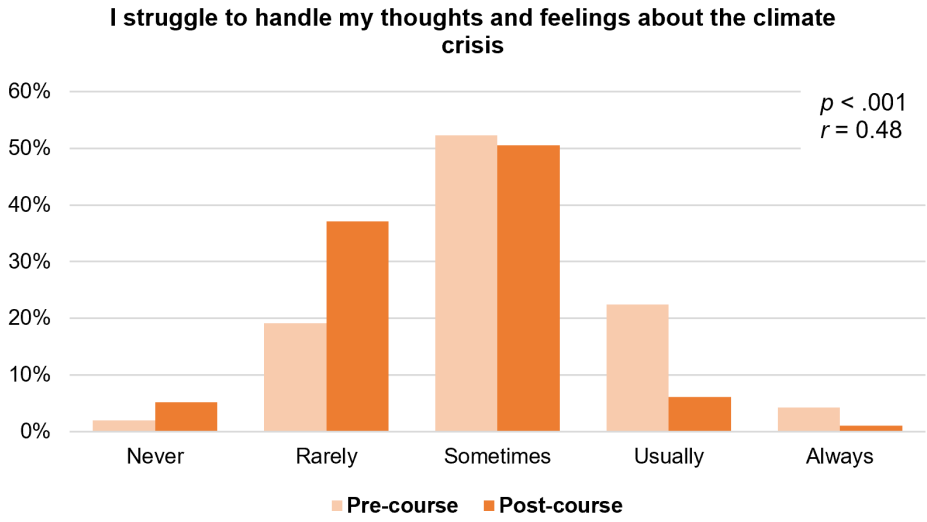
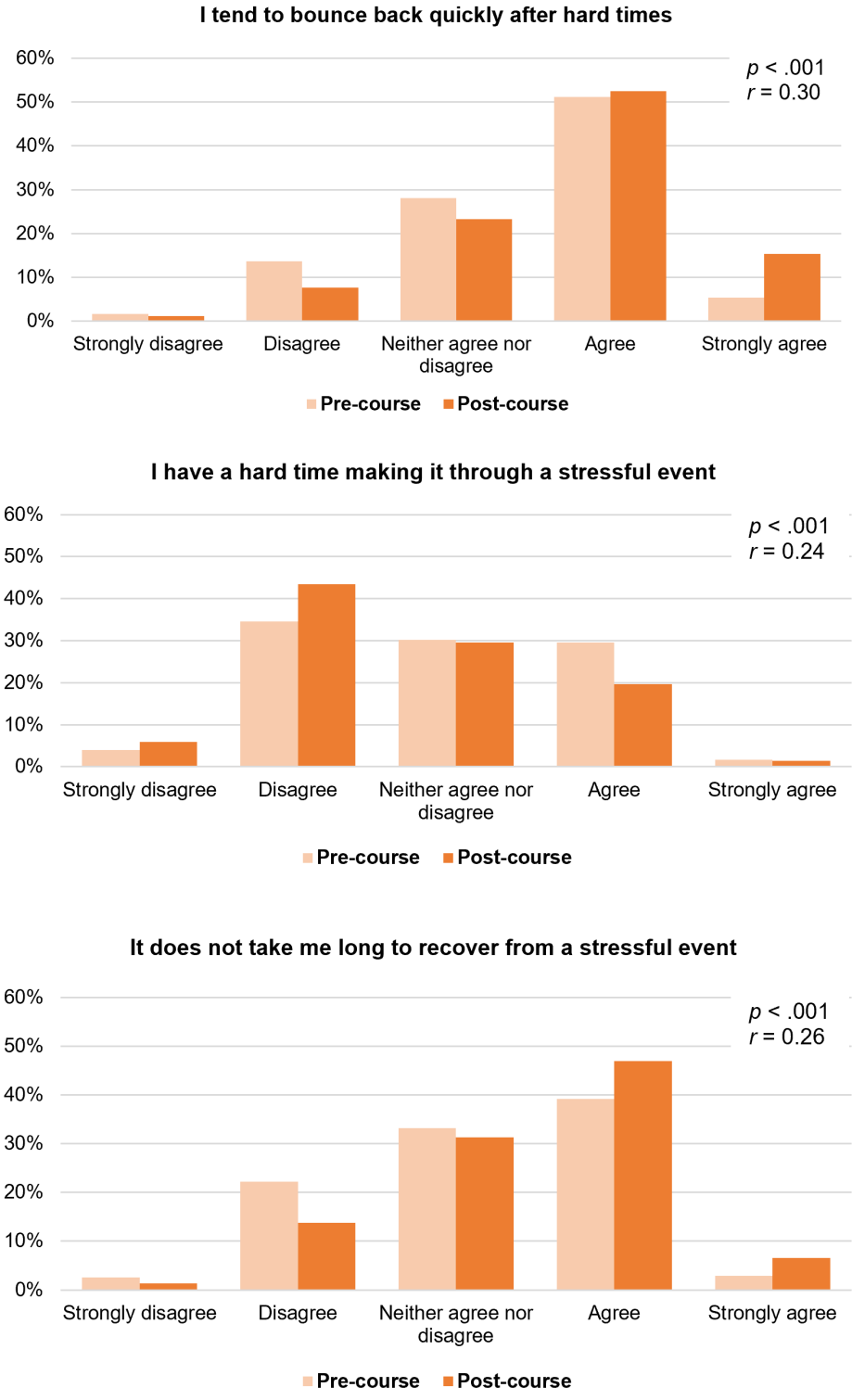
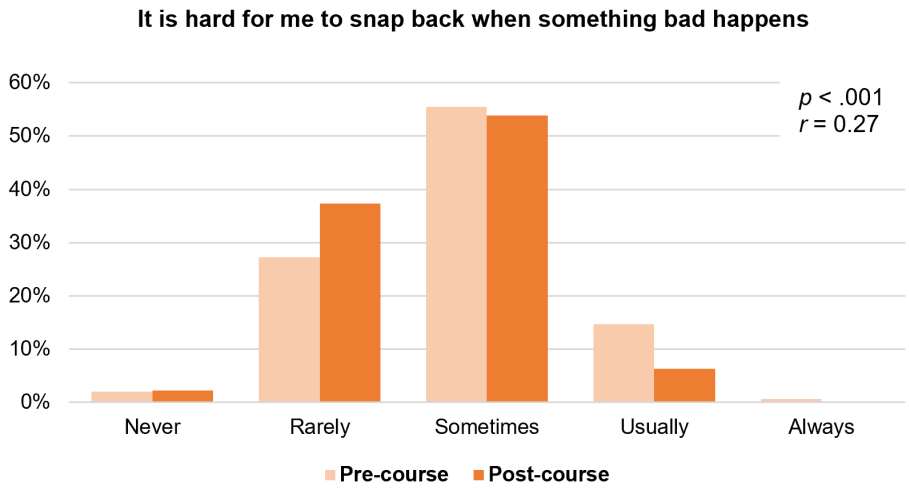
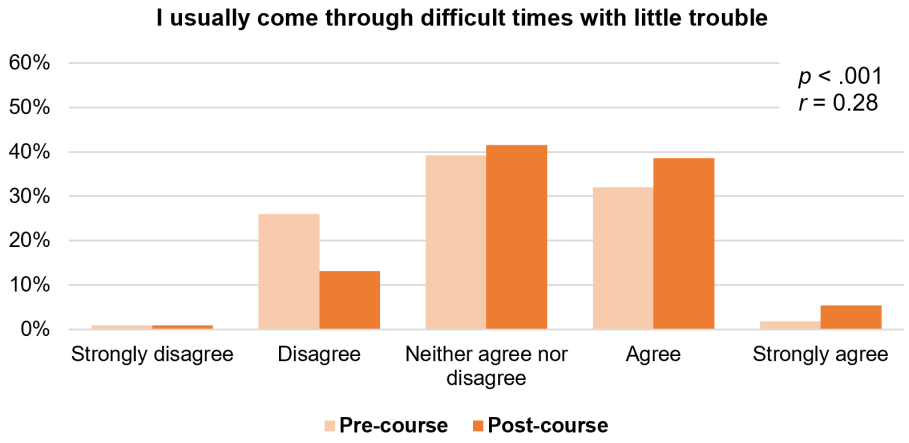

I struggle to handle my thoughts and feelings about the climate crisis
60%
50%
40%
30%
20%
10%
0%
p < .001
r = 0.48
Never
Rarely
Sometimes
Usually
Always
Pre-course
Post-course

Figure A2. *Pre- and post-course response distributions for each item under the Resilience Scale.*




It is hard for me to snap back when something bad happens
60%
50%
40%
30%
20%
10%
0%
p < .001
r = 0.27
Never
Rarely
Sometimes
Usually
Always
Pre-course
Post-course


I usually come through difficult times with little trouble
60%
50%
40%
30%
20%
10%
0%
p < .001
r = 0.28
Strongly disagree
Disagree
Neither agree nor disagree
Agree
Strongly agree
Pre-course
Post-course

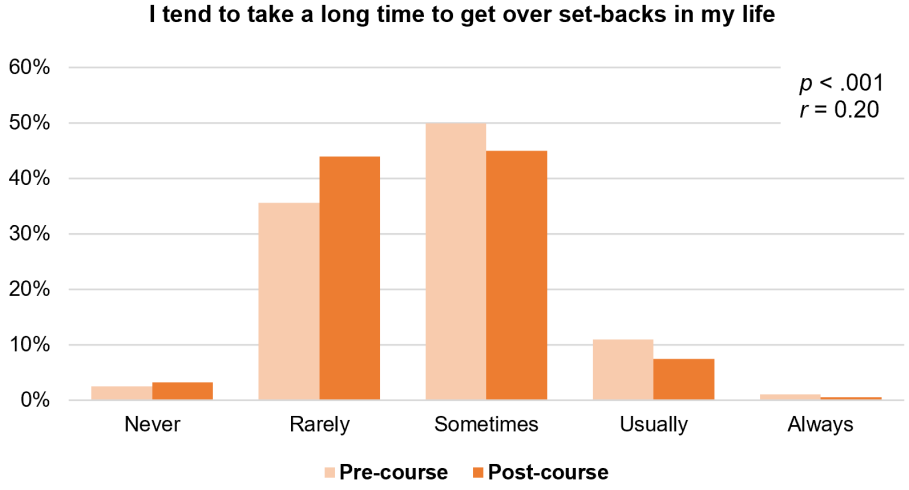
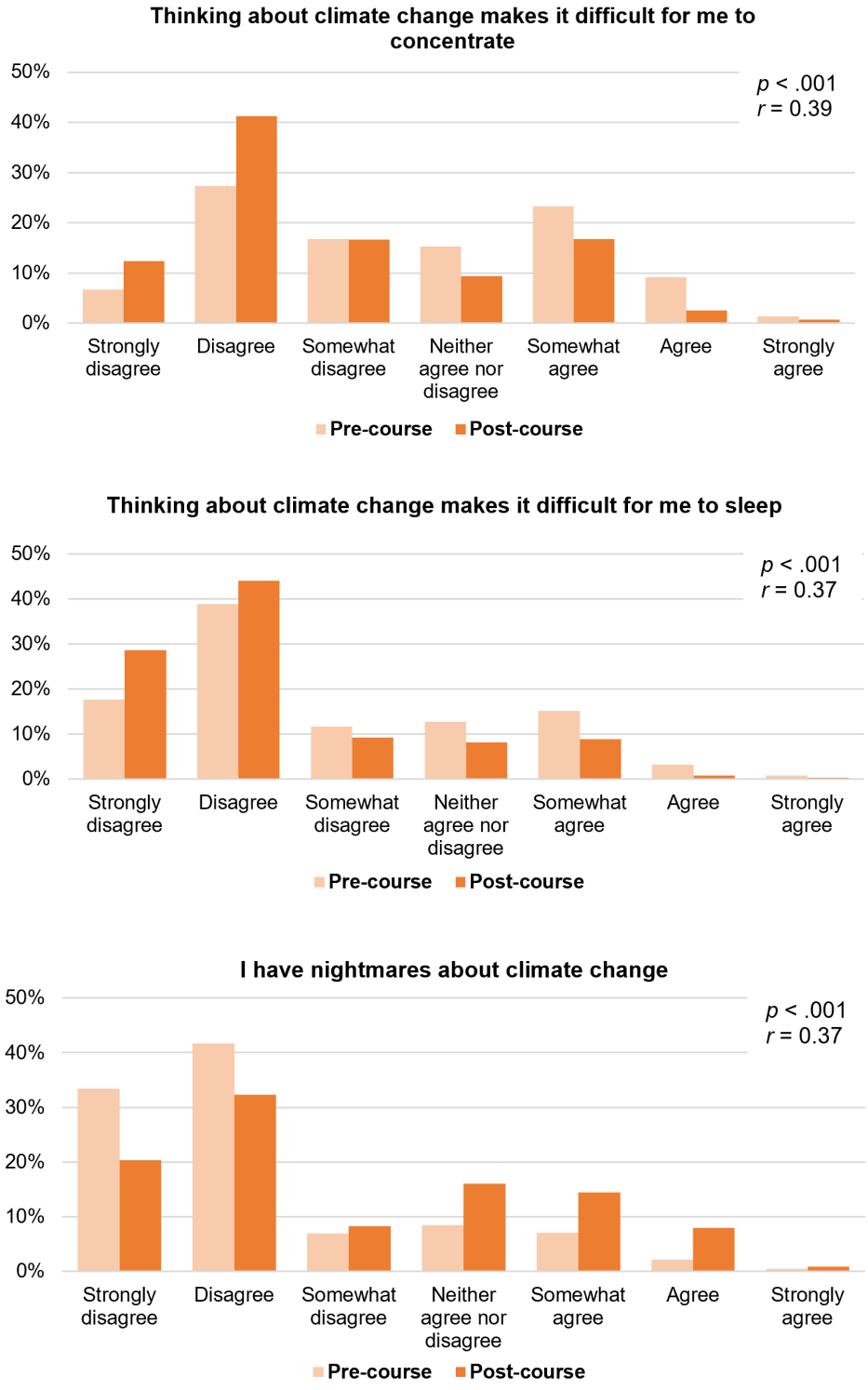
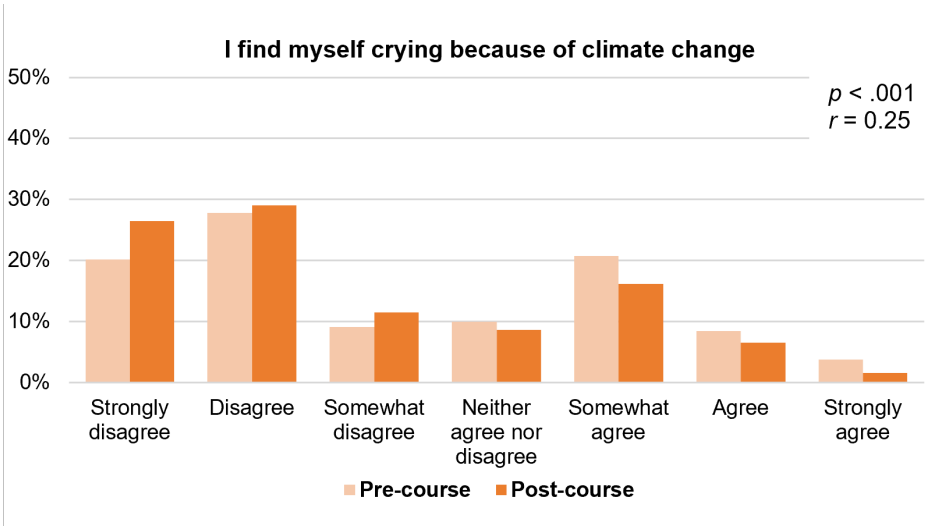
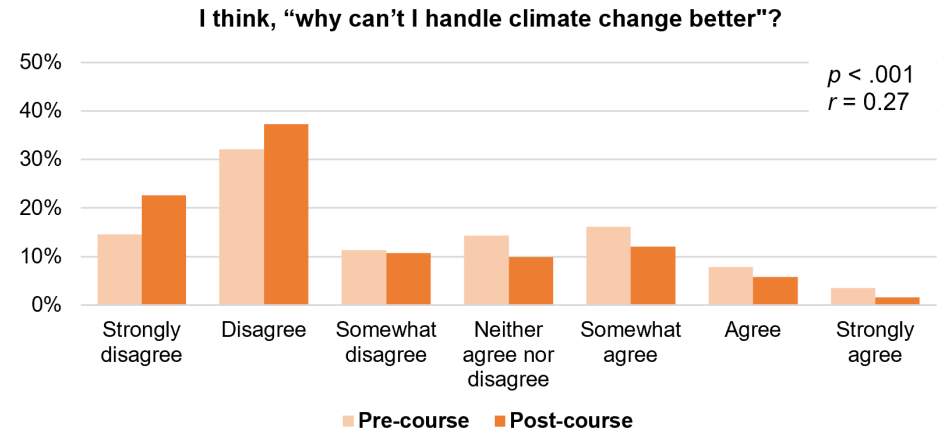
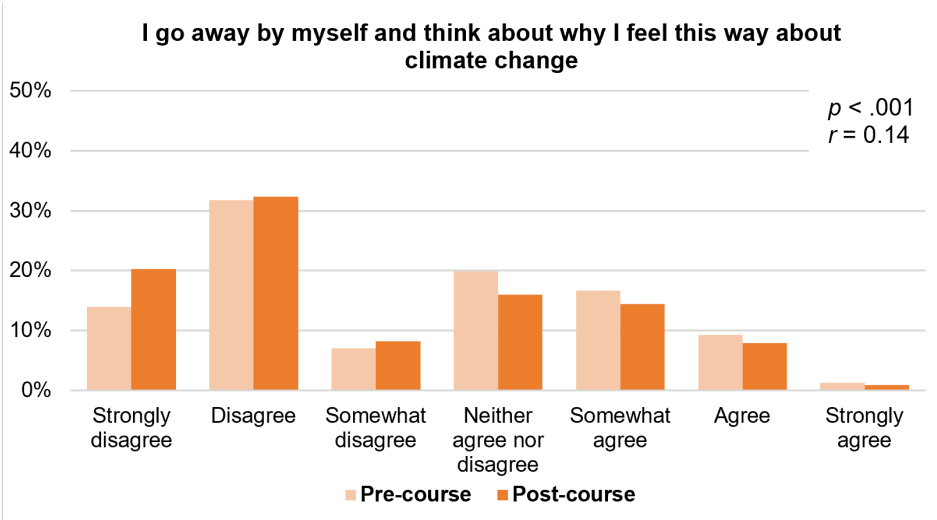

I tend to take a long time to get over set-backs in my life
60%
50%
40%
30%
20%
10%
0%
p < .001
r = 0.20
Never
Rarely
Sometimes
Usually
Always
Pre-course
Post-course

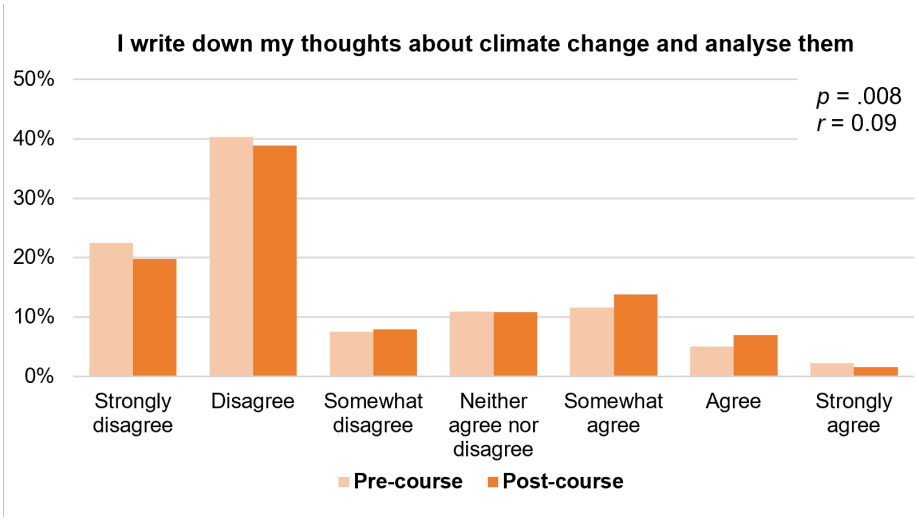
Figure A3. *Pre- and post-course response distributions for each item under the Climate Anxiety Scale.*

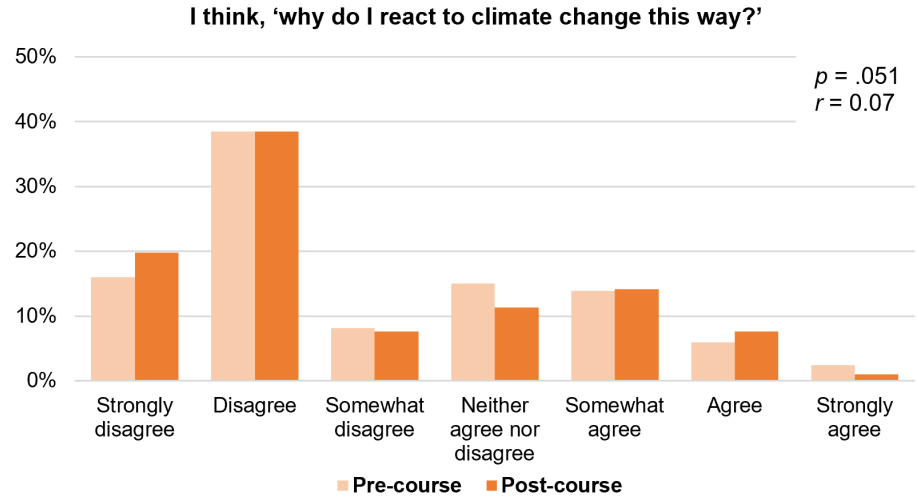


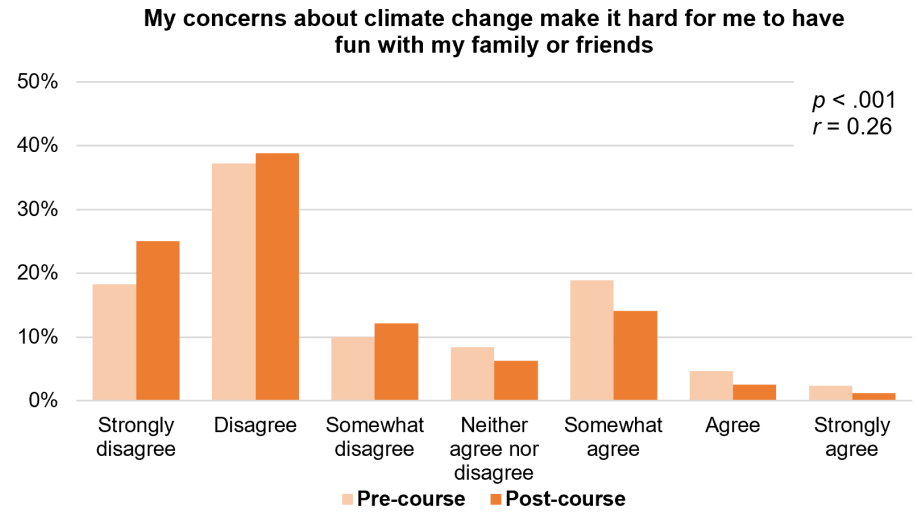

I find myself crying because of climate change
50%
40%
30%
20%
10%
0%
p < .001
r = 0.25
Strongly disagree
Disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Agree
Strongly agree
Pre-course
Post-course

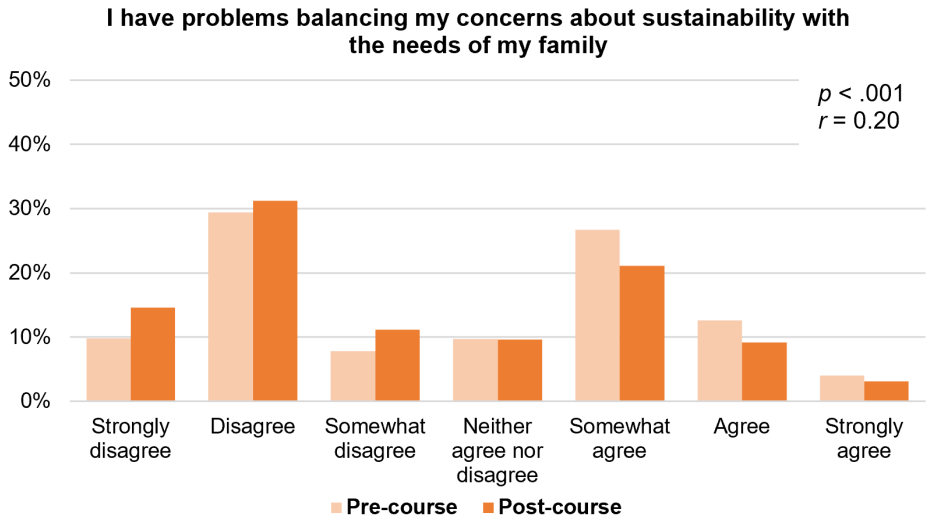

I think, “why can’t I handle climate change better"?
50%
40%
30%
20%
10%
0%
p < .001
r = 0.27
Strongly disagree
Disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Agree
Strongly agree
Pre-course
Post-course

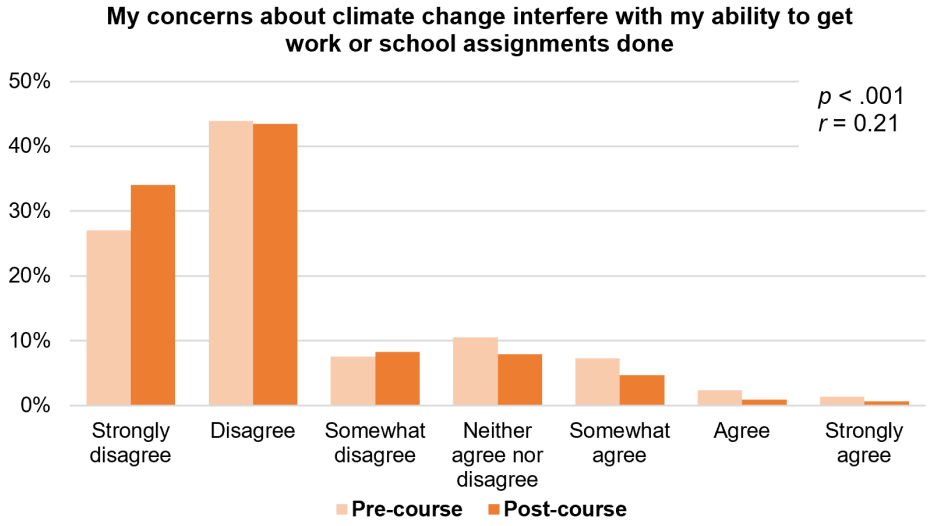

I go away by myself and think about why I feel this way about climate change
50%
40%
30%
20%
10%
0%
p < .001
r = 0.14
Strongly disagree
Disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Agree
Strongly agree
Pre-course
Post-course

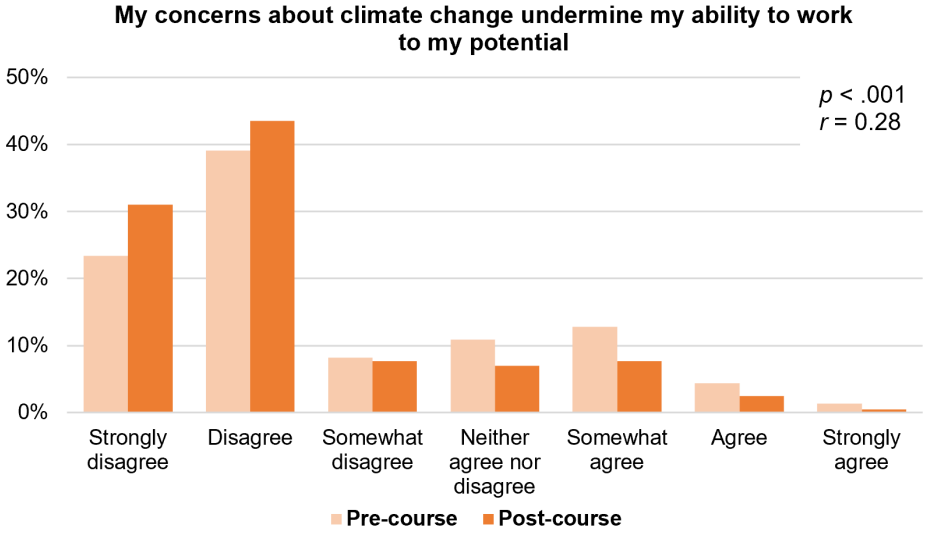

I write down my thoughts about climate change and analyse them
50%
40%
30%
20%
10%
0%
p = .008
r = 0.09
Strongly disagree
Disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Agree
Strongly agree
Pre-course
Post-course

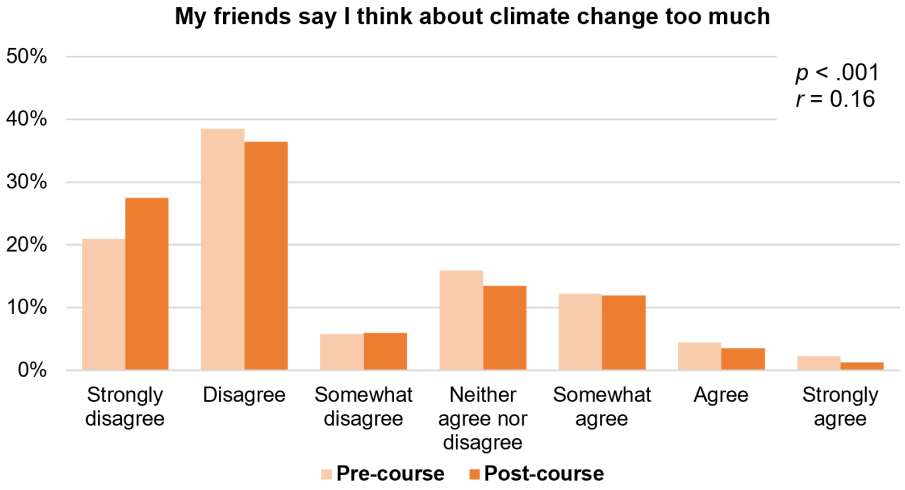

I think, 'why do I react to climate change this way?'
50%
40%
30%
20%
10%
0%
p = .051
r = 0.07
Strongly disagree
Disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Agree
Strongly agree
Pre-course
Post-course


My concerns about climate change make it hard for me to have fun with my family or friends
50%
40%
30%
20%
10%
0%
p < .001
r = 0.26
Strongly disagree
Disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Agree
Strongly agree
Pre-course
Post-course


I have problems balancing my concerns about sustainability with the needs of my family
p < .001
r = 0.20
50%
40%
30%
20%
10%
0%
Strongly disagree
Disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Agree
Strongly agree
Pre-course
Post-course


My concerns about climate change interfere with my ability to get work or school assignments done
p < .001
r = 0.21
50%
40%
30%
20%
10%
0%
Strongly disagree
Disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Agree
Strongly agree
Pre-course
Post-course


My concerns about climate change undermine my ability to work to my potential
p < .001
r = 0.28
50%
40%
30%
20%
10%
0%
Strongly disagree
Disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Agree
Strongly agree
Pre-course
Post-course


My friends say I think about climate change too much
50%
40%
30%
20%
10%
0%
p < .001
r = 0.16
Strongly disagree
Disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Agree
Strongly agree
Pre-course
Post-course

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