

Developing climate resilience and emotional adaptability in youth

Submission date 13/08/2026	Recruitment status No longer recruiting	☐ Prospectively registered ☐ Protocol
Registration date 18/08/2026	Overall study status Completed	☐ Statistical analysis plan ☐ Results
Last Edited 18/08/2026	Condition category Other	☐ Individual participant data ☒ Record updated in last year

Plain English summary of protocol

Background and study aims

Climate change is a global crisis that has environmental as well psychological and social consequences, to which young adults such as college students are more vulnerable. To address this challenge, a contemplative, skills-based climate resilience course was developed to improve emotional adaptability pertaining to climate change in college young adults.

Who can participate?

Students enrolled in the University of California San Diego (UCSD) Climate Resilience (CR) course hosted in the Global Health department, and students who were attending a non-CR UCSD Global Health course in the same academic quarter.

What does the study involve?

All participants had two visits at the start and again 3 months later after course completion, where they completed surveys and the EEG Nature Nod(NN) task. Participants performed the NN task delivered on a laptop with simultaneous EEG recording. For both the Climate Resilience course and the control group, visits were scheduled 3 months apart, at the beginning of the quarter when the course was offered and at the end of the course quarter.

What are the possible benefits and risks of participating?

Participants from both groups were monetarily compensated with e-gift cards for completing surveys and neurocognitive assessments. The potential benefit of the current study is that a climate resilience university course can reduce maladaptive climate emotional outcomes (hopelessness, loneliness) and improve key protective resources (community, self-compassion, emotion regulation). The Climate Resilience course may promote a perspective shift in Gen Z/a through experiential, mindfulness-based learning, empowering youth to view themselves as capable of collective action toward climate solutions. There are no known potential risk of implementing climate resilience course.

Where is the study run from?

University of California San Diego (USA)

When is the study starting and how long is it expected to run for?
March 2025 to July 2025

Who is funding the study?
Mind and Life Institute (USA)

Who is the main contact?
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Contact information

Type(s)
Principal investigator, Public, Scientific

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Study information

Scientific Title
Developing objective measurements of climate resilience and emotional adaptability in youth

Study objectives
Climate change is a global crisis that has environmental as well psychological and social consequences, to which young adults such as college students are more vulnerable. To address this challenge, a contemplative, skills-based climate resilience course was developed to improve emotional adaptability pertaining to climate change in college young adults.

Ethics approval required
Ethics approval required

Ethics approval(s)

Approved 25/01/2025, UC San Diego Institutional Review Board (9500 Gilman Drive UC San Diego, San Diego, 92093, United States of America; +1 (0) (858) 534-2230; irb@ucsd.edu), ref: #180140

Primary study design

Observational

Secondary study design

Longitudinal study

Study type(s)

Health condition(s) or problem(s) studied

Climate resilience and emotional adaptability

Interventions

Participants were recruited during Spring quarter 2025. We recruited 20 students enrolled in the CR course group consisted (14 males; mean age = 20.5 ± 1.6 years) and the 20 control group students (16 males; mean age = 20.4 ± 2.1 years) who were attending general climate education without any experiential psychosocial training. There were no significant differences between groups in age ($p = 0.6$), self-reported gender ($p = 0.5$), education ($p = 0.6$). Informed consent were obtained from all the participants.

We implemented a cluster-controlled design in which students were recruited from the UC San Diego campus and assigned to two groups, a CR course and other environmental studies control courses.

All participants had two visits at the NEATLabs at baseline and again 3 months later after course completion, wherein they completed a battery of surveys and the EEG NN task. Participants performed the Nature Nod task delivered on a laptop with simultaneous EEG recording. For both the CR course and the control group, visits were scheduled 3 months apart, at the beginning of the quarter when the course was offered and at the end of the course quarter. Participants from both groups were monetarily compensated with e-gift cards for completing surveys and neurocognitive assessments.

The UC Climate Resilience Course consists of ten weekly in-person classes delivered across all UC campuses (including UC San Diego) by university faculty and certified mindfulness instructors. Each weekly session integrates approximately 30 minutes of contemplative practices and teachings, 20 minutes of group discussion centered on pre-class climate action expert video interviews, 30 minutes of experiential activities reinforcing the session theme, and 20 minutes of group climate action project planning. Several class sessions are held outdoors to heighten the nature-immersion experience, and the final two sessions are dedicated to student presentations on climate-related group projects.

Instructors are trained to model and cultivate mindfulness, compassion, and psychological flexibility, while creating a supportive classroom environment. Students are encouraged to share personal reactions to the didactic material (e.g., interviews with international climate leaders), connect it to their own lives, and engage in constructive dialogue. To ensure quality and consistency, we have established a network of expert facilitators who collaborate on training, group facilitation strategies for sensitive topics, and mutual support. Course faculty brings

extensive teaching experience, and the meditation instructors are mindfulness-certified with years of practice in contemplative education. The program has already been implemented within the UC-wide Center for Climate, Health, and Equity, with a mission is to develop climate resilience education and resources within the UC and to distribute them widely for public benefit nationally and internationally. Additional details of the CR course can be found at <https://www.climate resilience.online/>.

Intervention Type

Behavioural

Primary outcome(s)

1. Response time, source localized activity and late positive potential measured using electroencephalography (EEG) at baseline (pre) and again 3 months later after course completion (post)

Key secondary outcome(s)**Completion date**

02/07/2025

Eligibility**Key inclusion criteria**

1. Students enrolled in the University of California San Diego (UCSD) Climate Resilience (CR) course hosted in the Global Health department
2. Control group students who were attending a non-CR UCSD Global Health course in the same academic quarter

Healthy volunteers allowed

Yes

Age group

Adult

Lower age limit

18 Years

Upper age limit

27 Years

Sex

All

Total final enrolment

40

Key exclusion criteria

Does not meet the inclusion criteria

Date of first enrolment

31/03/2025

Date of final enrolment

30/04/2025

Locations

Countries of recruitment

United States of America

Sponsor information

Organisation

Mind and Life Institute

ROR

<https://ror.org/0243m8266>

Funder(s)

Funder type

Funder Name

Mind and Life Institute

Alternative Name(s)

Mind & Life, Mind & Life Institute, The Mind & Life Institute, MLI

Funding Body Type

Government organisation

Funding Body Subtype

Research institutes and centers

Location

United States of America

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Not expected to be made available