

Development and Initial Validation of the Climate Action Readiness Index (CARI)

Kenna Ebert^a, David Valentiner^b, Allison Graham^b, Kae Heroldt^b, Nina Mounts^b, and Holly Jones^b

^a Department of Psychology, Cornell College, ^b Department of Psychology, College of Liberal Arts & Sciences, Northern Illinois University



Northern Illinois University



Cornell College

Introduction

- A consensus regarding the importance of climate change would support the social processes that lead to behavior change (Levine & Strube, 2011).
- The transtheoretical stages of change model provides a meaningful framework for examining attitudes toward climate change (Simpkins, 2015).
- Measure of climate attitudes are needed to facilitate research.
- Existing measures of climate change attitudes rely upon an endorsement method using leading questions and limited response options.
- Production measures allow for spontaneous expression with less leading questions.



Purpose

- The purpose of the current study is to create a verbal production measure of climate change attitudes, called the Climate Action Readiness Index (CARI).

Methods

Participants

Participants consisted of 72 introductory psychology students, ages 18.45 to 51.25 ($M = 20.77$, $SD = 4.54$), predominantly identifying as female (52.8%), White (69.4%), and Democrat (34.7%).

Self-Report Questionnaires

- Revised Climate Change Denial Scale (RCCDS; Valentiner et al., 2022)
- Positive and Negative Affect Scale (PANAS; Watson et al., 1988)
- Environmental Sacrifice (Liu & Sibley, 2012)
- Climate Change Anxiety Scale- Behavioral Engagement (Clayton & Karazsia, 2020)
- Climate Change Self-Efficacy Scale (CCES; Li & Monroe, 2018)

Procedures

- Participants were sent a link to a Qualtrics Survey that included a variety of self-report questionnaires. Participants watched a brief (3:43) video about the problem of climate change and the need for immediate and coordinated action (Davies, 2019). Following the video, participants were then asked five open-ended questions that were coded using the Climate Action Readiness Index (CARI).



	1	2	3	4	5	6	7
1. CARI							
2. Climate Change Acceptance	.548**						
3. Climate Change Denial	-.532**	-.724**					
4. Positive Affect	-.099	-.101	.180				
5. Negative Affect	.062	.208	-.129	.018			
6. Environmental Sacrifice	.403**	.653**	-.529**	-.071	.147		
7. Behavioral Engagement	.417**	.666**	-.650**	-.086	.101	.615**	
8. Climate Change Self-Efficacy	.445*	.525**	-.388**	.158	-.44	.531**	.632**

The Climate Action Readiness Index

The CARI consists of five open-ended questions:

- 1) Did you like this video? Why or why not? Please write at least 5 sentences.
- 2) What did you like most about the video you watched? Please write at least 3 sentences.
- 3) What did you like least about the video you watched? Please write at least 3 sentences.
- 4) What was the main point or message of the video? Please write at least 2 sentences.
- 5) Do you agree with this point? Why or why not? Please write at least 2

- Responses to each question were compiled into a single answer. This answer was coded using a system based on the stages of change model (Prochaska et al., 1992; Simpkins, 2015). A prototype of a response aligning with each of the five stages of change was created.
- Coders rated the relevance of each of the five prototypes to the participant's response using a scale ranging from '1' (certainly not relevant) to '5' (certainly relevant).
- Coders also made a global rating, assigning the participant's responses to one stage (i.e., with '1' representing precontemplation and '5' representing maintenance).

Results and Discussion

The three-rater average of the CARI exhibited excellent reliability ($\alpha = .92$). The single rater index exhibited good reliability ($\alpha = .78$).

The CARI was significantly correlated with Climate Change Acceptance and Denial, exhibiting appropriate convergent validity. The CARI was not significantly correlated with positive or negative affect, exhibiting discriminant validity. The CARI exhibited significant relationships with environmental sacrifice, behavioral engagement, and climate change self-efficacy, demonstrating criterion validity.

The CARI, a new verbal production measure of climate change attitudes using the stages of change model,exhibita good reliability and appropriate convergent, divergent, and criterion validity. It is a promising measure of climate attitudes and an alternative to endorsement-based assessments. Furthermore, the CARI may be more representative of the environments in which individuals have conversations about climate change (i.e., face-to-face or social media), improving its ecological validity.

One limitation is the use of a sample of undergraduate students, which may limit the generality of the current findings. Furthermore, this study used a linear model to investigate relationship between the CARI and related measures, and relied upon criterion measures related to the early stages of change.

Future research should evaluate the validity of the CARI using a community-based sample; consider non-linear models, and consider criterion variables that include climate change action.