

The Differential Impact of Metaphor on Climate Doomism

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Introduction: Developing hypotheses from existing research

- **Climate doomism:** The belief that catastrophic climate change is now inevitable, and that no ameliorative action can be taken to avert this
- Doomism now poses a greater barrier to action than scepticism
 - Significant drop in the number of individuals who describe themselves as 'dismissive' or 'doubtful' regarding the existence of global warming
 - Of those who oppose mitigation efforts, more say that their opposition is motivated by doomism than say it is due to scepticism
- It is necessary to address doomism as a potential barrier to climate change mitigation efforts
- **Research question:** Is there a relationship between the metaphors used to describe climate change, and feelings of climate doomism?
 - No existing studies have examined a potential link between metaphor and climate doomism
Coffey et al. (2021); de Pinto et al. (2019); Gustafson et al. (2019); Leiserowitz et al. (2018); Mann (2021)

Introduction: Developing hypotheses from existing research

- Source domains that suggest a binary impacted/non-impacted view of the climate crisis, e.g., TIPPING POINT, CRASH BARRIER, GUARD RAIL, THRESHOLD
 - (1) World on brink of five 'disastrous' climate **tipping points**, study finds (Carrington, 2022)
 - (2) The IPCC Fifth Assessment Report outlined the inconsistencies of the previously stated tourism emissions rising trend with the prerequisites to stay within the +2 °C **crash barrier**. (Anbar, 2022)
 - (3) the scenarios described are stringent and likely to keep average temperatures either below the 1.5°C **guard rail** or overshoot it and then return below it by the end of the century. (Rajan & Byravan, 2019)
 - (4) Earth likely to cross critical climate **thresholds** even if emissions decline, Stanford study finds (Garthwaite, 2023)
- It is not scientifically accurate to view climate change as a sudden switch from non-impacted to impacted

Lowe et al. (2006); Moser & Dilling (2004); O'Neill & Nicholson-Cole (2009); Shaw & Nerlich (2015)

Introduction: Developing hypotheses from existing research

- The choices offered to us by this metaphor are the status quo, or something worse – this places limits on our ability to conceptualise alternative futures
- A problem when discrete points of danger are passed
- Fear appeals that are not accompanied by clear opportunities to channel the fear into action
- However, these concerns have largely been speculative rather than empirical

Introduction: Hypotheses

1. There is a statistically significant relationship between the metaphorical presentation of the climate crisis, and feelings of climate doomism
2. Metaphors that suggest climate change to be a binary 'switch' from a non-impacted to an impacted world are more likely to promote climate doomism than metaphors that suggest climate change to be an ongoing process
3. Metaphorical presentations that foreground the role of human agents are less likely to promote climate doomism than metaphors that omit human agency

Methodology: Metaphor selection

- CLIMATE CHANGE IS A CLIFF EDGE VS. CLIMATE CHANGE IS A MINEFIELD
- 5) We are continuing to head for a **precipice** — we say our eyes are open to the risks, but when you look at global emissions, if anything, we are **accelerating towards the cliff edge**. (Associated Press, 2022)
 - 6) **Driving Headlong Toward The Climate Change Cliff** (Honolulu Civil Beat, 2019)
 - 7) It's a **minefield**. And we're **walking farther and farther out** onto that **minefield**. And the farther we walk out onto that minefield, the more danger that we are going to encounter. (Economic Principals, 2022)
 - 8) The disappearance of summer sea ice in the Arctic is one of the first **landmines** in this **minefield** (Watts Up With That?, 2021)

Methodology: Metaphor selection

- CLIMATE CHANGE IS A CLIFF EDGE VS. CLIMATE CHANGE IS A MINEFIELD
- Why these metaphors?
 1. Exemplifies the distinction between metaphors that inhere a binary impacted/non-impacted view of climate change, and those that do not inhere this view
 2. Can be further manipulated to foreground human agency, or omit this agency
 3. Does not compromise on communicating the urgent nature of the climate crisis
 4. In use outside of academic contexts

Methodology: Narrative stimuli and participants

- Survey-based experimental approach to assessing the relationship between metaphor and doomism
- Participants in one of five test conditions, presented with a short paragraph which presents the climate crisis using either the metaphor CLIMATE CHANGE IS A MINEFIELD, OR CLIMATE CHANGE IS A CLIFF EDGE
- Human agency is either foregrounded, or omitted
- This results in five conditions:
 - Condition 1: Cliff edge + Agency
 - Condition 2: Cliff edge + No agency
 - Condition 3: Minefield + Agency
 - Condition 4: Minefield + No agency
 - Condition 5: Control

Methodology: Narrative stimuli example

Climate change is a **cliff edge** – and **we are driving** the earth towards it

When will Americans realise that **we are driving** the earth towards a climate change **cliff edge**? **We** must solve this problem before **we push** the earth over the cliff. In the United States **we** are working to avoid disaster by reducing our carbon footprint in the next few decades. The US has approved dozens of projects as part of an effort to reach net zero greenhouse gas emissions by 2050. **We** will leverage scientific expertise and take individual action to improve the energy efficiency of cars and buildings, reduce personal energy use, and increase the use of renewable energies such as wind and solar. Experts say that if we do not lower emissions soon, **we** will experience an increase in extreme weather conditions, more public health problems like a rise in cancer and other diseases, as well as severe economic challenges. **We** must act fast to avoid **falling over this cliff!**

Methodology: Participants and survey design

- American English speakers/US Nationals
 - In line with principles of climate justice
 - Reflective of previous research in this area
- Exclusion of climate change sceptics
- ~1500 participants divided across the five test conditions
- Distributed via Prolific
- Pre-screening question designed to identify participants who had not read the narrative stimuli carefully

Methodology: Survey questions

- Key questions - adapted from Flusberg et al. (2017)
 1. How urgent is it for the US to implement energy reduction programs right away?
 2. How likely is it that the US will be able to avoid the worst-case scenario of catastrophic climate change?
 3. To what extent do you believe that your individual actions can help efforts to address the problem of climate change?
- Responses on a Likert scale from 1-6
 - 1-3 coded as 'Low', 3-6 coded as 'high'
 - **Doomism is defined as a high report of urgency, paired with a low report of feasibility and agency**
- Questions to assess existing attitudes to climate change shown to impact awareness and risk perception

Results: Cliff Edge vs. Minefield and Feasibility

- There was no significant difference in survey questions between the cliff edge and minefield metaphors
- Both minefield and cliff edge metaphors acted to increase the probability of participants reporting high feasibility as compared to the control
- The predicted probability of observing a low feasibility score was 0.64 for the control condition, compared to 0.57 for the cliff edge condition (logit difference: -0.32, SE = 0.164, $z = -1.97$, $p < 0.05$) and 0.55 for the minefield condition (logit difference: 0.38, SE = 0.163, $z = -2.34$, $p < 0.05$).

Results: Agency and Feasibility

- Correlations between high urgency and low feasibility suggest that participants were generally feeling doomist ($\chi^2 = 13.041, p < 0.001$)
- Presentation of agency acted to significantly increase the probability of participants reporting high feasibility
 - The predicted probability of observing a low feasibility score was 0.64 for the control condition, falling to 0.54 for conditions containing human agency (difference: -0.43, SE = 0.16, $z = -2.62, p < 0.001$).
- There was no significant effect of metaphor presentation or agency presentation on agency scores
- Metaphorical presentation only affected feasibility scores when it appeared alongside agency

Discussion: Hypothesis 1

Hypothesis 1: There is a statistically significant relationship between the metaphorical presentation of the climate crisis, and feelings of climate doomism

- Empirical evidence to support this hypothesis:
 - Metaphorical presentation of the climate crisis acts to significantly increase feasibility scores as compared to the control condition
- This suggests that metaphorical presentation has the ability to reduce doomism
- This is not an unexpected result, given previous research has demonstrated the role of metaphor in reasoning in relation to the climate crisis

Discussion: Hypothesis 2

Hypothesis 2: Metaphors that suggest climate change to be a binary 'switch' from a non-impacted to an impacted world are more likely to promote climate doomism than metaphors that suggest climate change to be an ongoing process

- Results were less conclusive in relation to this hypothesis
- The impact of minefield metaphor on feasibility scores was greater than the impact of the cliff edge metaphor as compared to the control condition
- However, there was no significant difference between the two metaphors
- No effect of either metaphor on agency scores
- Neither metaphor is acting to exacerbate doomism

Discussion: Hypothesis 3

Hypothesis 3: Metaphorical presentations that foreground the role of human agents are less likely to promote climate doomism than metaphors that omit human agency

- Agency acts to significantly increase the probability of participants reporting high feasibility as compared to the control
- Metaphorical presentation only affects feasibility scores when it appears alongside human agency
- However, once again no effect on agency scores

Conclusion: Questions answered and questioned raised

- Is the relationship between metaphor and feasibility scores part of a wider pattern in binary/process metaphors? Or is it peculiar to these metaphors?
- Why is agency a requirement for metaphorical presentation to affect feasibility scores?
 - Is this result peculiar to English, or is it common cross-linguistically?
- Is the agency score an effective measure of climate doomism?
 - Individual vs. collective agency
- We do have empirical evidence of a relationship between metaphor and climate doomism

Future plans: Climate doomism in French

Using the English study as a template, we are currently developing a similar survey for climate doomist metaphor usage in French.

How do feelings of climate doomism in Canadian French compare to those in American English, in terms of metaphor?

Who can participate?

- This survey will focus on dialects of French spoken across Canada
- Participants can be either monolingual or multilingual, but French must be their first and primary language.

Will the metaphors be the same?

- We will follow a similar process as the English survey to select metaphors that have been found in the literature and in popular Canadian French news sources

Future plans: Climate doomism in French

- Investigate the role of agency:
 - Does the English study assess feelings of individual agency, or collective agency?
 - What can *we (nous)* do, vs. what can *I (je)* do?
- What is the impact of political and religious ideologies on feelings of doomism?
 - Collect additional demographics information
- Metaphorical presentation only affects agency scores when human agency is also presented. Is this a peculiarity of the English language?

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