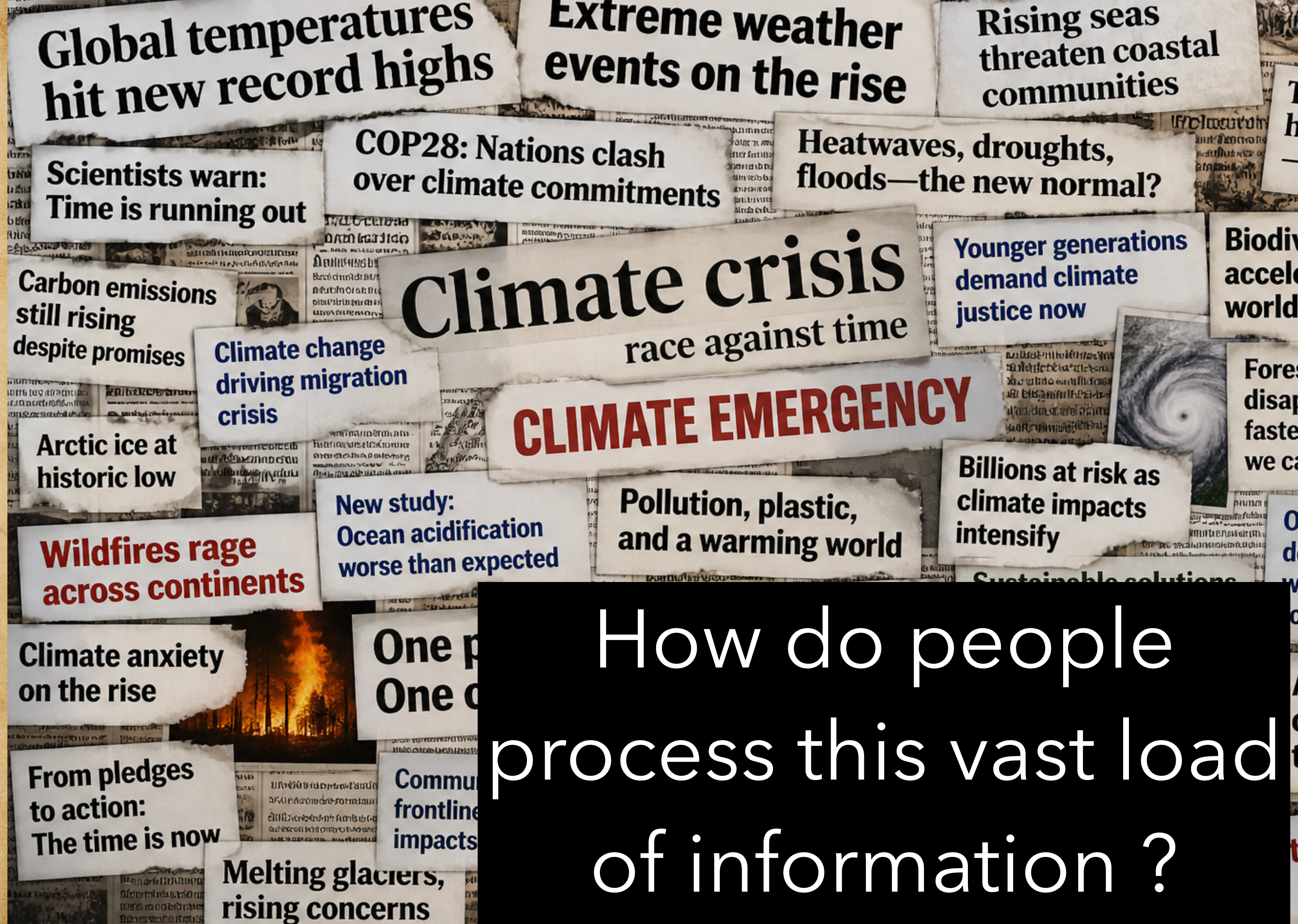


# The Persuasion Paradox: How Expertise and Linguistics Shape Climate Communication

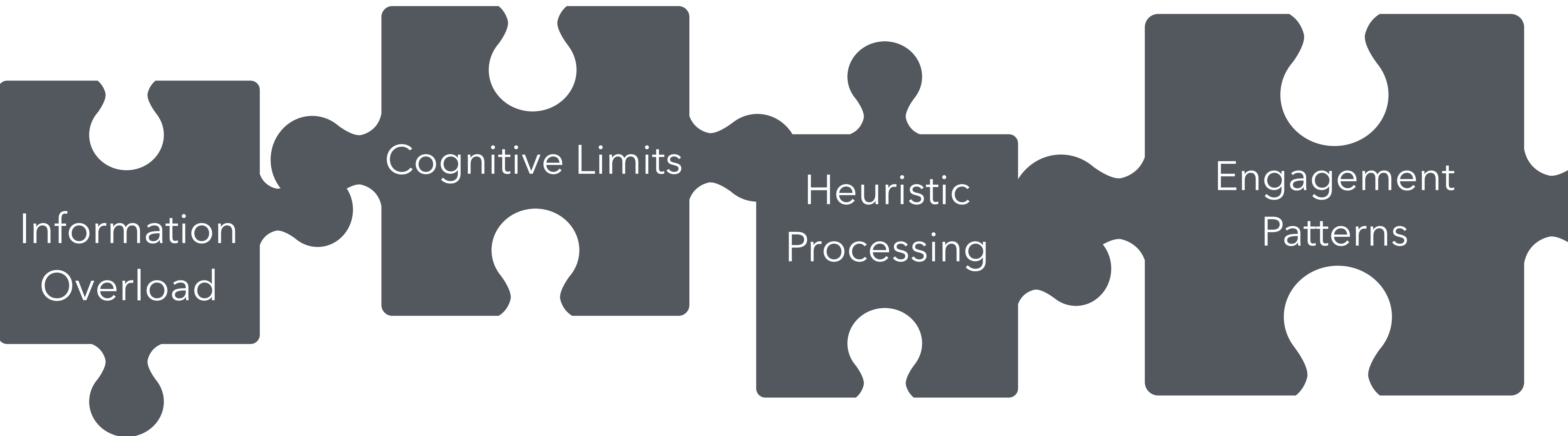
Chayasmita Deka, Or Elroy, Abraham Yosipof, Nadejda  
Komendantova



How do people process this vast load of information ?

# From information overload to persuasion

**Constant information overload impairs ability to evaluate deeply → people rely on heuristics/ shortcuts**



What drives engagement in an environment of information overload?

# How do people process information?

## The Elaboration Likelihood Model (ELM)

The degree of elaboration activates different types of persuasion process.

Two routes to persuasion process: the central route and the peripheral route

Central Route (Think deeply/  
critical analysis)

- Focus on message content
- Requires effort and attention

Driven by:

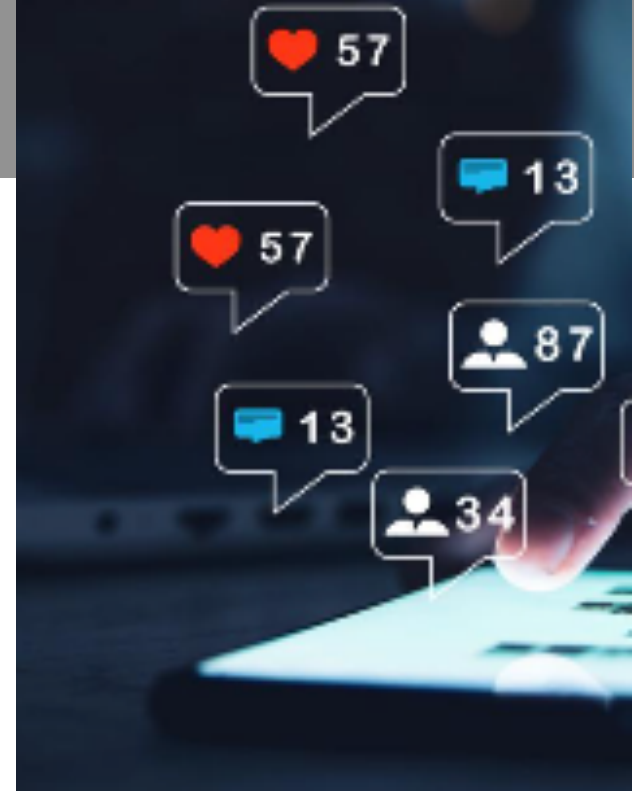
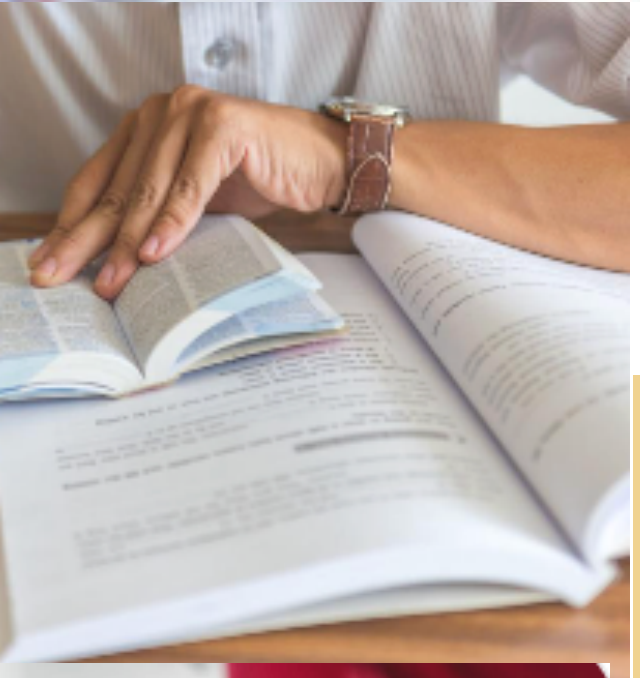
- Argument strength
- Personal relevance

Peripheral Route (Use of shortcuts/  
heuristics)

- Rely on heuristics and external cues
- Occurs under low elaboration (low effort/  
attention)

Driven by:

- Source credibility
- Receiver preference
- Social validation (other's approval)



## What do **we know**?

- Tailored and value-aligned messages → more persuasive
- Simplicity & accessibility → higher engagement
- Low attention environments → heuristics processing dominates
- Credibility & emotional cues → key drivers of response

## What is **missing**?

- Expertise and language examined separately
- Limited evidence on their interaction
- Unclear how expertise & language jointly shape engagement outcomes

## What **question** do we ask?

- How do readability of anthropogenic climate change tweets differ between climate-science experts and the general population?
- To what extent do engagement metrics (likes, replies, retweets) vary between climate science experts and the general population?

# Data and Method

## Data

- Platform: X
- Time Period: Jan 2022 - May 2023
- Focus: Anthropogenic climate change tweets
- 333,635 original tweets (no retweets)

## Identifying Experts

- Source: "Scientist Who Do Climate" list
- 2454 climate experts identified
- Sample used: 277 experts; 1079 tweets

## Key Variables

Linguistic features (central cues): readability (reading ease) & complexity (grade level)

- Higher readability = easier to process
- Higher complexity = more effort required

Source feature (peripheral cue)

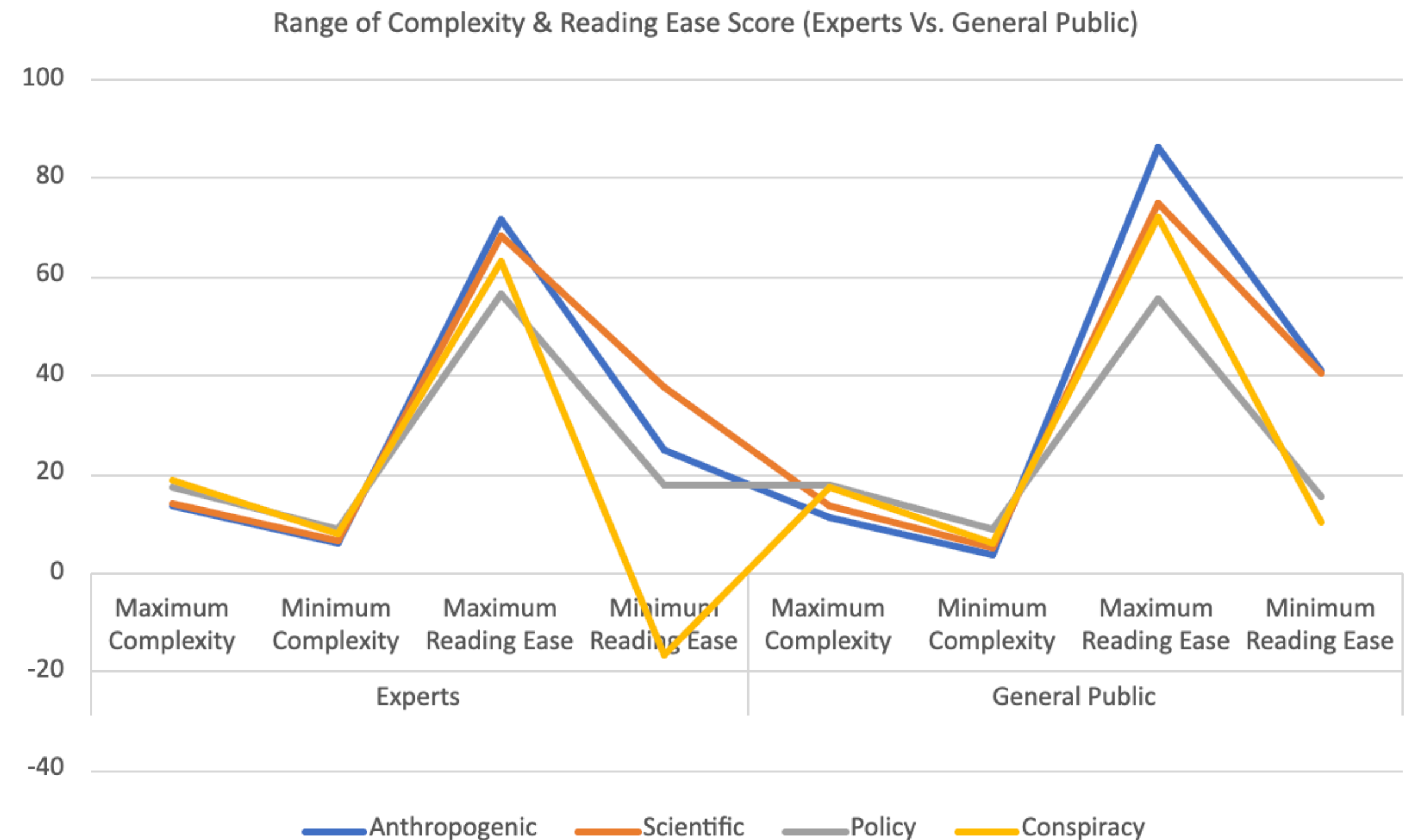
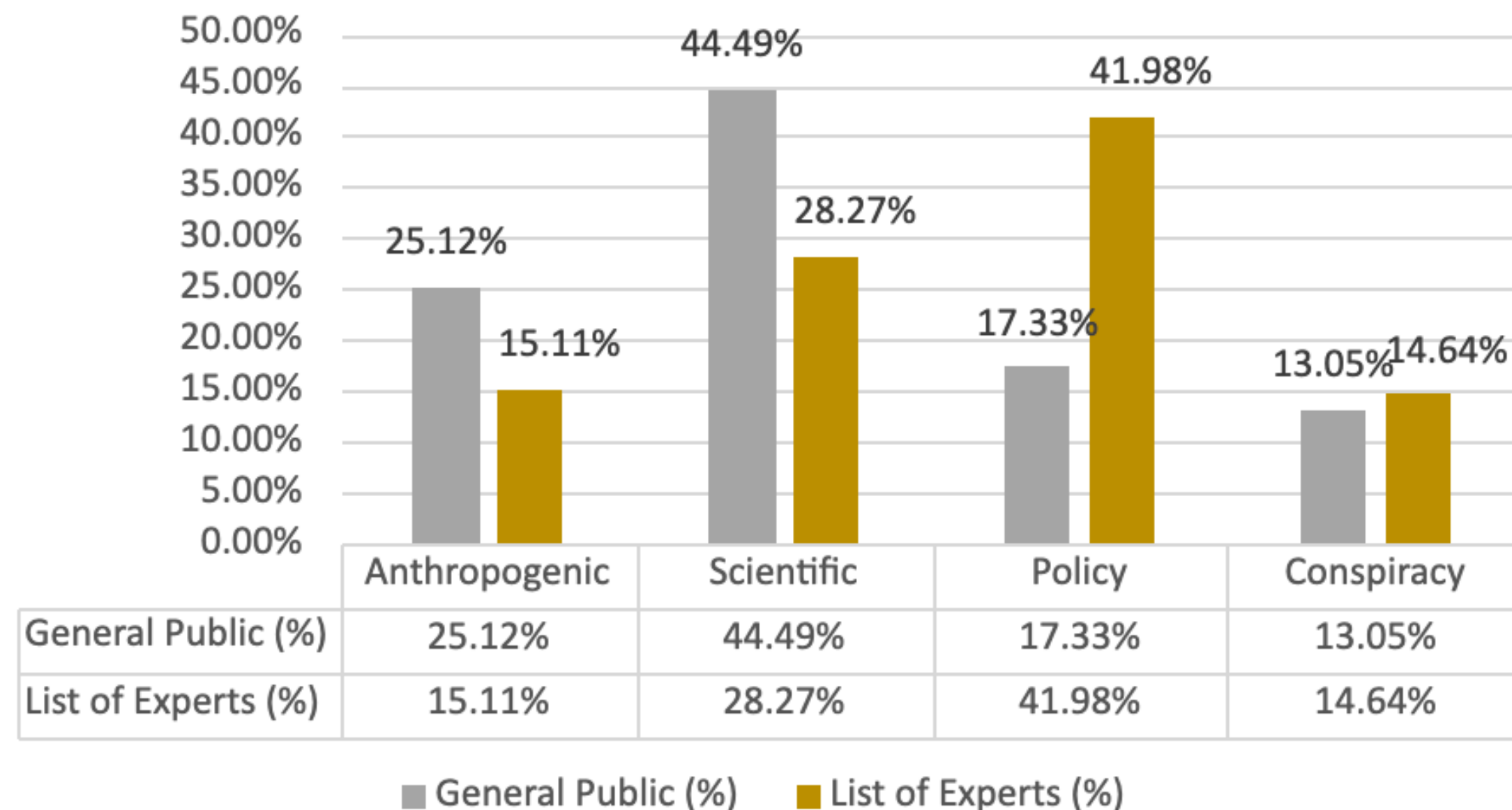
- Expert vs non-expert

## Outcome Measure

- Engagement: Likes, Retweets, Replies

# Result-1 Focus, Complexity & Reading Ease

Distribution of tweets by thematic cluster

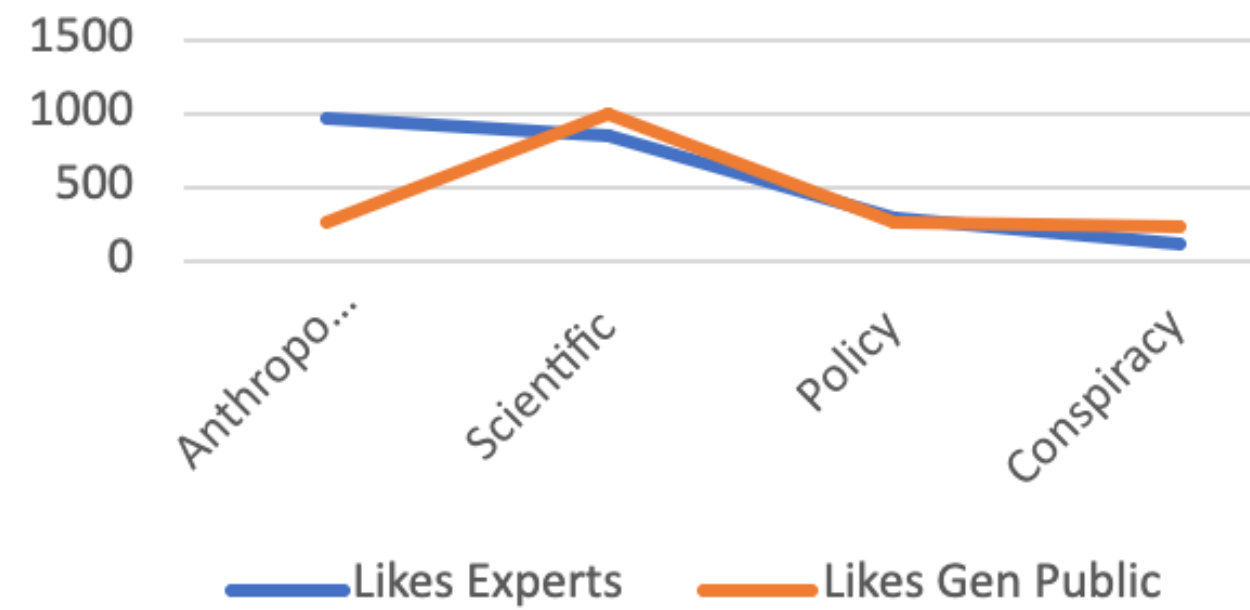


- Experts and general public focus on different themes
- Experts focus more on policy (42%)
- Public focus more on scientific (44%) and anthropogenic (25%) content

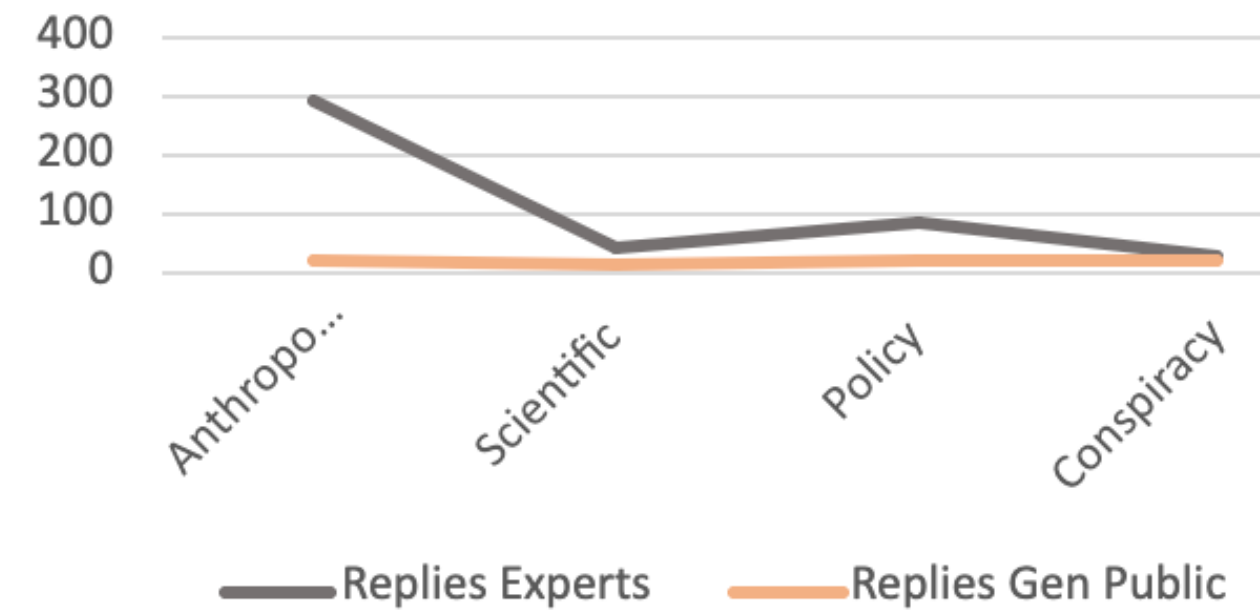
- Experts communicate with higher complexity
- Expert messages are more complex and less readable compared to general public across clusters

# Result 2. Engagement Pattern Using Expertise & Language

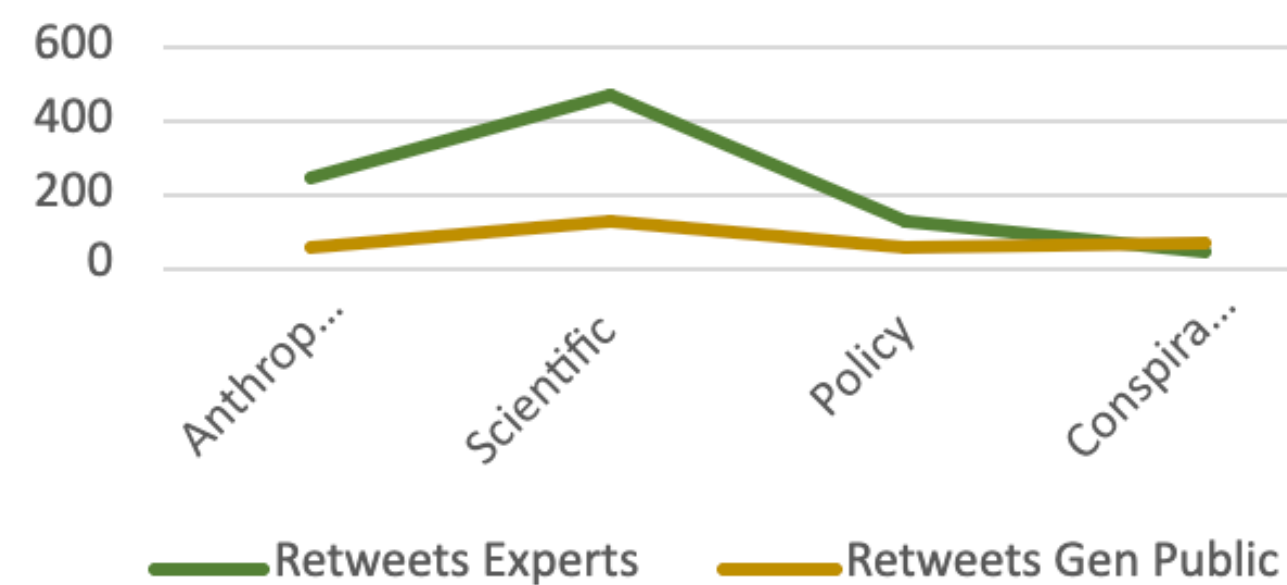
Engagement- Likes



Engagement Replies



Engagement Retweets



Experts receive significantly higher engagement despite complexity

- Reading ease x Expert → Positive (simpler language amplifies expert impact)
- Complexity x Expert → Negative (for likes) (complexity weakens the advantage of expertise)

	Model 1	Model 2	Model 3
	Likes	Replies	Retweets
Intercept	0.3807***	-0.6779***	0.3681***
Expert	1.7368***	1.3435***	0.9205**
Reading Ease	0.0114***	0.0047***	-0.0015***
Expert × Reading Ease	0.0204***	0.0243***	0.0320***
Complexity	0.1272***	0.0459***	0.0633***
Expert × Complexity	-0.0508***	-0.0235	0.0082
Pseudo R-squared	0.1631	0.03755	0.1181

# Conclusion

## The Persuasion paradox in Climate Communication

Expertise drives engagement - but only when communication is accessible

Expertise drives engagement - but only when communication is accessible

- Expertise (peripheral cue) strongly increases engagement
- Simpler language amplifies the impact of experts
- Higher complexity weakens the advantage of expertise

*Effective climate communication requires credible voices using accessible language*

**Thank you for your attention**