



Environmental Discourse on Social Media Messages, Networks, and Actors

Shreya Dubey (she/her)

PhD candidate, Amsterdam School of Communication Research
University of Amsterdam, the Netherlands

Outline

❖ Social Media as a research Tool

- Selecting content
- Recruiting participants

Selecting Content on Social Media

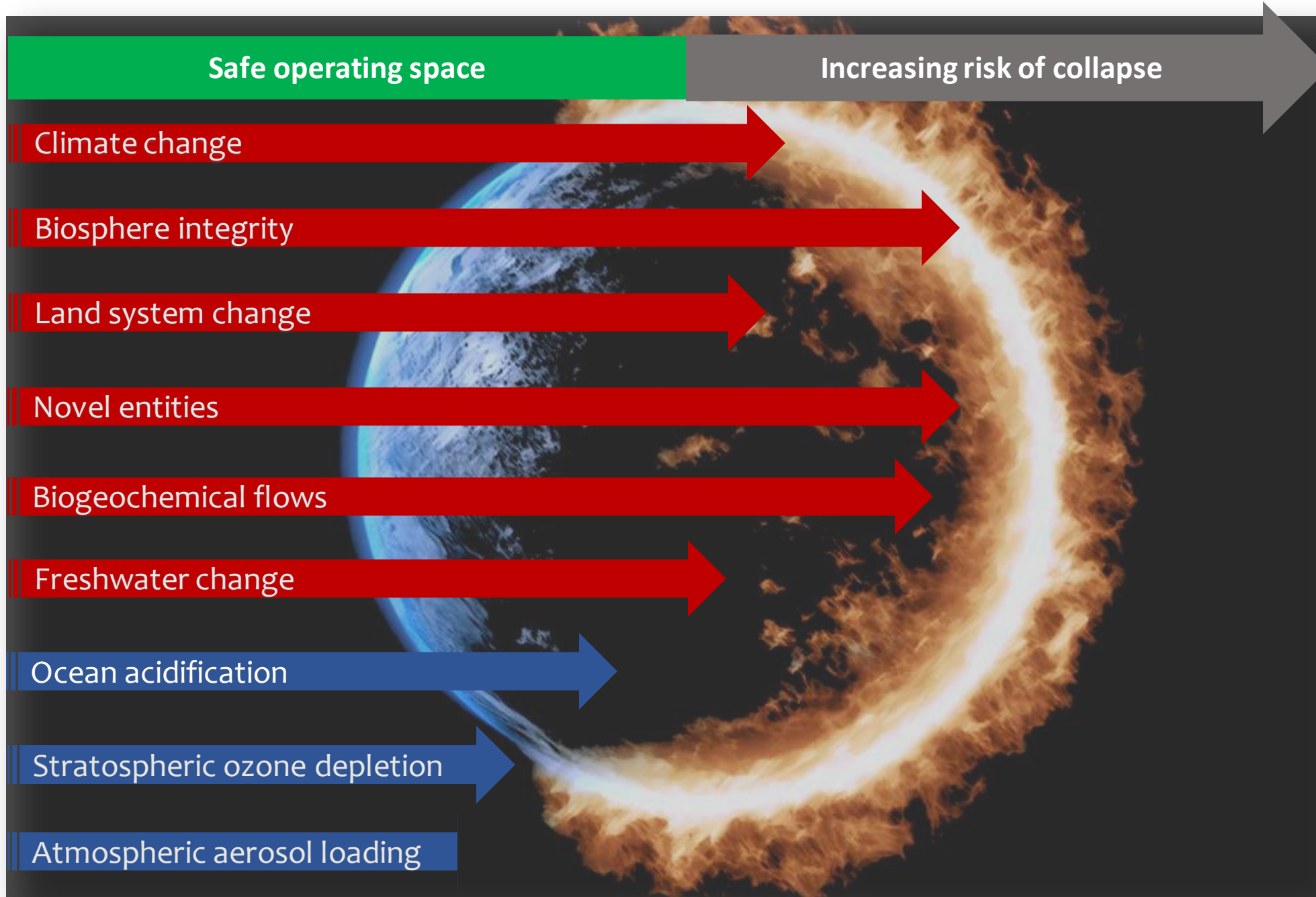
Environmental Discourse on Social Media

Messages, Networks, and Actors

Supervisors: Marijn Meijers, Eline Smit, & Edith Smit

Environmental communication research on social media:

- is largely about climate change
(Pearce et al., 2019)
- reveals more sceptical content
(Chen et al., 2019)
- finds polarised communities
(Veltri & Atanasova, 2017; Williams et al., 2015)
- focuses on Global North perspectives
(Liu & Zhao, 2017; Vu et al., 2020)



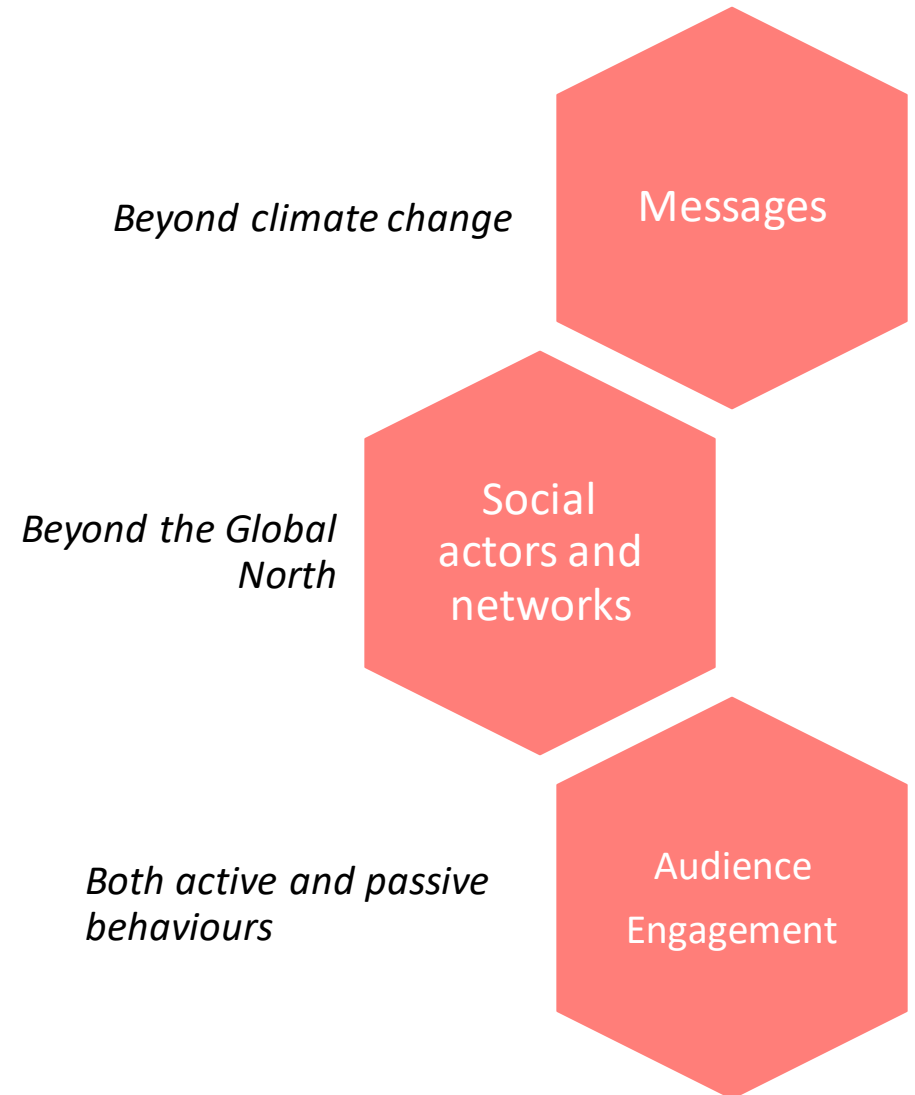
Environmental Discourse on Social Media



Planetary boundaries are inclusive of **global** threats of environmental issues.



Planetary boundaries are more **relatable** to people's lived experiences.



Study

Identifying “Green” Communities on Twitter (now X)

Climatic Change (2024) 177:73
<https://doi.org/10.1007/s10584-024-03729-y>

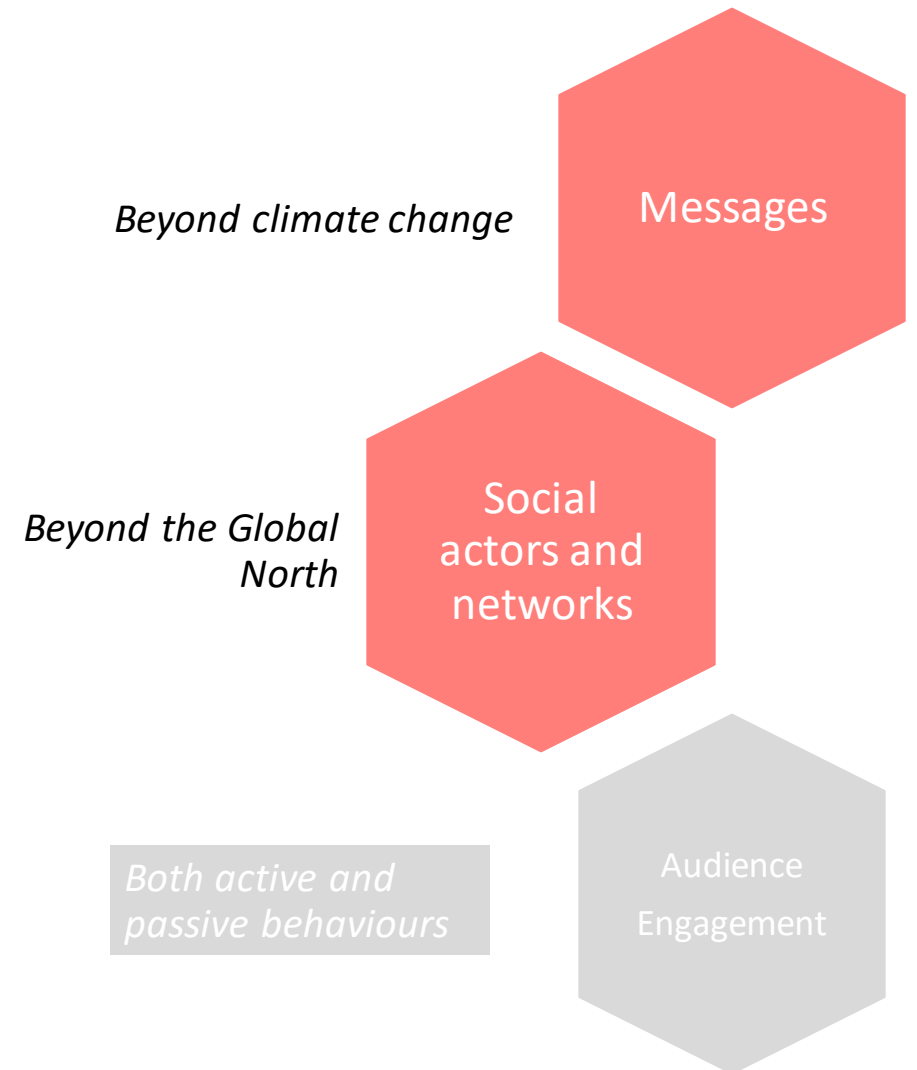
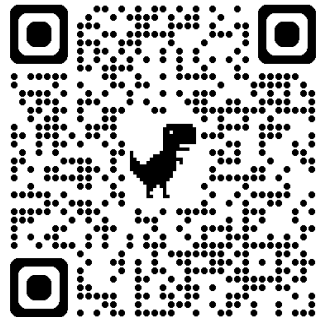


Beyond climate change? Environmental discourse on the planetary boundaries in Twitter networks

Shreya Dubey¹  · Marijn H. C. Meijers¹  · Eline S. Smit¹  · Edith G. Smit¹ 

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Available open access:



List of Open Keywords for retrieving the Tweets

("sustainab*", "environment*", "sdg", "nature", "eco*", "pollution", "planetary boundaries", "greenwashing", "vegetarian", "vegan", "plant based", "circular economy", "donut economy", "reuse", "recycl*", "climate*", "agw", "global warming", "plastic soup", "oil spill*", "toxic", "ozone layer", "ozone depletion", "pollutants", "smog", "ocean acidification", "coral bleaching", "algal blooms", "drought", "food waste", "agricultur*", "water stress", "biodivers*", "biospher*", "overfish*", "greenhouse gas", "emissions", "fossil fuel", "methane", "carbon", "garbage", "solar energy", "renewable energy", "biodegradable", "plastic free", "zero waste", "CO2", "nitrogen fertiliser OR fertilizer", "freshwater use", "water conservation", "rainforest", "organic", "deforestation", "forest", "palm oil", "renewable*", "innovation", "net zero")

Validation of the search terms

Performance metrics of the search terms used in the pilot study

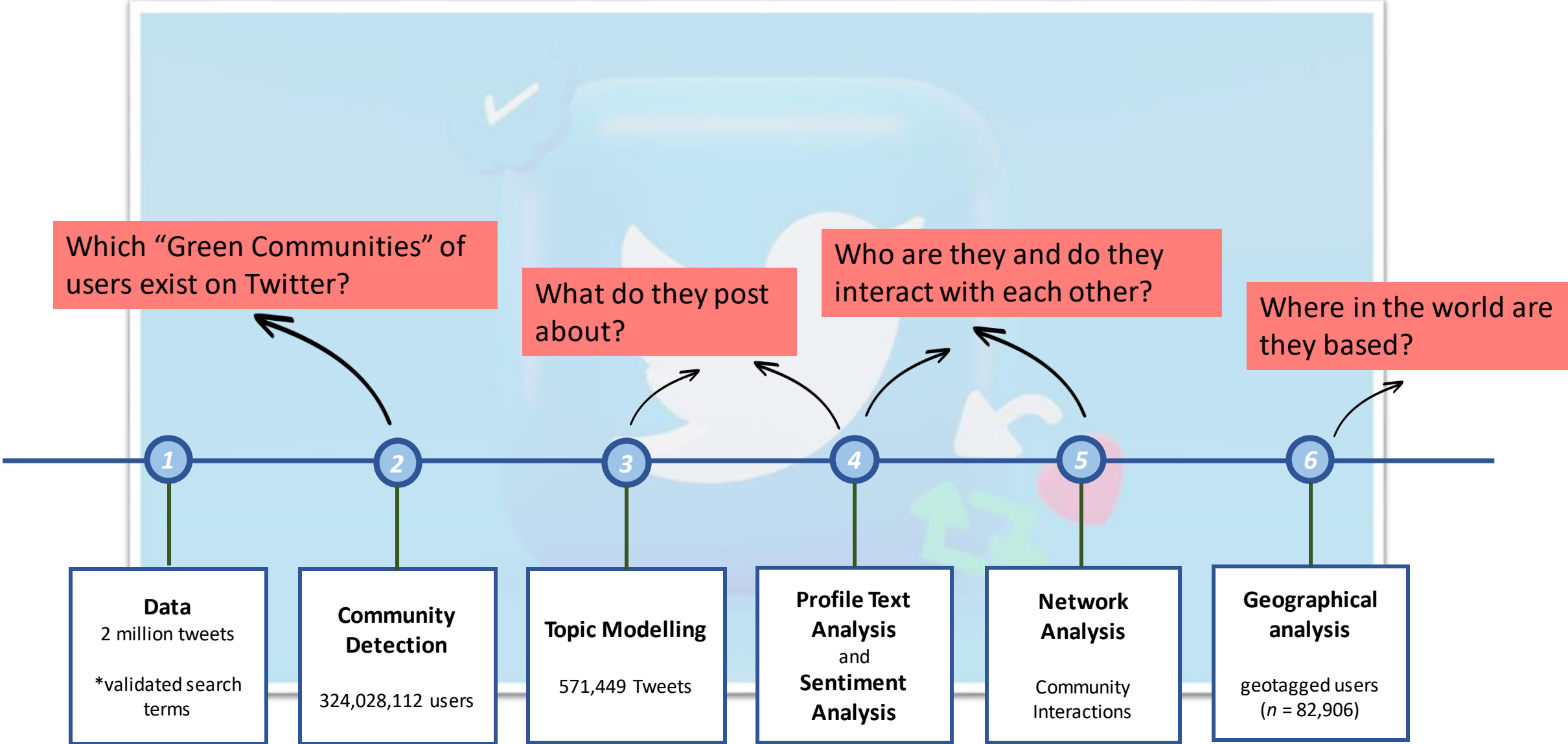
Search term	Number of tweets	Recall proportion	Precision
climate	959	19.2%	99%
toxic	610	12.2%	4%
garbage	383	7.7%	3%
nature	363	7.3%	22%
environment	359	7.2%	60%
fossil fuel	168	3.4%	100%
forest	161	3.2%	65%
vegan	148	3.0%	93%
emissions	146	2.9%	100%
carbon	146	2.9%	94%
innovation	102	2.0%	29%
sustainable	93	1.9%	50%

The selection of search terms can impact textual analysis of the retrieved data (Mahl et al. [2022](#); Stryker et al. [2006](#)),

So,

we measured the efficiency of search terms used in this study as previously recommended (Lacy et al. [2015](#); Stryker et al. [2006](#)).

Green Communities on Twitter



Twitter Environmental Discourse: Key Conclusions



Climate change is the most popular environmental threat, others are discussed to a lesser extent



Environmental content is largely pro-environmental, and there is little evidence for polarisation



Global North dominates the English language discourse related to environmental issues

Since this study

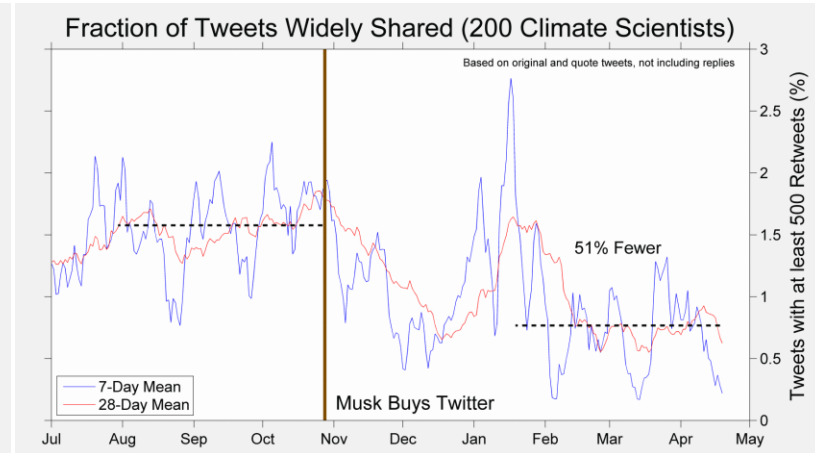
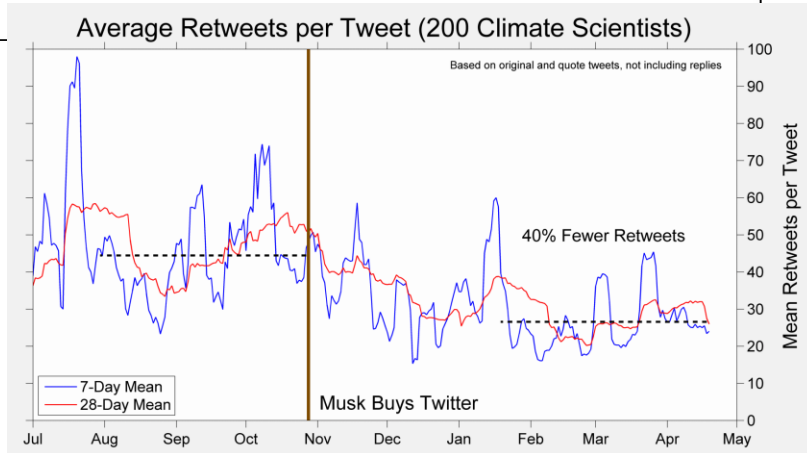


Research opportunity area:
intersections between
environmental/climate justice
(EJ-CJ) and digital rights (DR)
movements

The Guardian

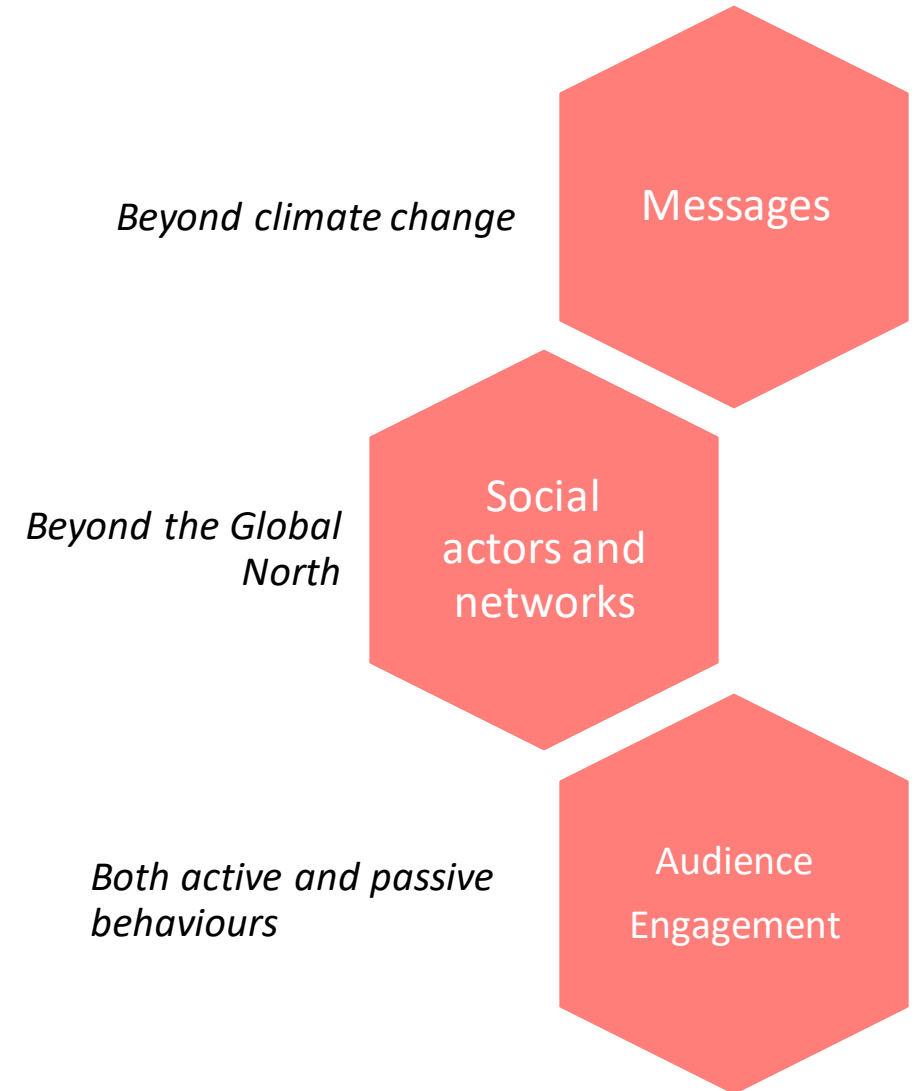
Climate crisis deniers target scientists for vicious abuse on Musk's Twitter

Abusive, often violent tweets denying the climate emergency have become a barrage since Elon Musk acquired the platform, say UK experts



Talking Environment on TikTok

- Message characteristics of TikTok videos about the environment
- Social actors on Environmental TikTok
- Engagement (in terms of views, likes, comments, and shares)



List of most popular environmental hashtags on TikTok

List of Open Keywords for retrieving the Tweets

("sustainab*", "environment*", "sdg", "nature", "eco*", "pollution", "planetary boundaries", "greenwashing", "vegetarian", "vegan", "plant based", "circular economy", "donut economy", "reuse", "recycl*", "climate*", "agw", "global warming", "plastic soup", "oil spill*", "toxic", "ozone layer", "ozone depletion", "pollutants", "smog", "ocean acidification", "coral bleaching", "algal blooms", "drought", "food waste", "agricultur*", "water stress", "biodivers*", "biospher*", "overfish*", "greenhouse gas", "emissions", "fossil fuel", "methane", "carbon", "garbage", "solar energy", "renewable energy", "biodegradable", "plastic free", "zero waste", "CO2", "nitrogen fertiliser OR fertilizer", "freshwater use", "water conservation", "rainforest", "organic", "deforestation", "forest", "palm oil", "renewable*", "innovation", "net zero")

English:

1. #vegan
2. #agriculture
3. #climatechange
4. #zerowaste
5. #sustainability
6. #forest
7. #plantbased
8. #recycle
9. #vegetarian
10. #biodiversity
11. #carbon
12. #climate
13. #solarenergy
14. #smog
15. #reuserecycle
16. #reuse
17. #renewableenergy
18. #fossilfuels
19. #oilspill
20. #rainforestfacts
21. #rainforest
22. #pollution
23. #plantbasedrecipes
24. #innovation
25. #globalwarming
26. #foodwaste
27. #environment
28. #emission
29. #eco
30. #biodegradable

Spanish:

1. #medioambiente
2. #agua
3. #vegano
4. #energiarenovable
5. #sostenible
6. #cambioclimatico
7. #calentamientoglobal
8. #solar
9. #planeta
10. #contaminacion
11. #energia
12. #sustentable
13. #sostenibilidad
14. #panelessolares
15. #biodiversidad
16. #zerowaste
17. #reutilizar
18. #selva
19. #naturaleza
20. #vegetariano
21. #ecologico
22. #biodegradable
23. #contaminantes
24. #animales
25. #biosfera
26. #metano
27. #emisiones
28. #energiaasolar
29. #renovable
30. #bosque

Data collection

Predetermined search terms

Utilise a list of 50 environment related search terms based on literature and the planetary boundaries framework, validated in a previous Twitter study.

List of search terms: ("sustainab**", "environment**", "sdg", "eco**", "pollution", "planetary boundaries", "greenwashing", "vegetarian", "vegan", "plant based", "circular economy", "donut economy", "reuse", "recycl**", "climate**", "agw", "global warming", "oil spill**", "ozone layer", "ozone depletion", "pollutants", "smog", "ocean acidification", "coral bleaching", "algal blooms", "drought", "food waste", "agricultur**", "water stress", "biodivers**", "biospher**", "greenhouse gas", "emissions", "fossil fuel", "methane", "carbon", "solar energy", "renewable energy", "biodegradable", "plastic free", "zero waste", "freshwater use", "water conservation", "rainforest", "deforestation", "forest", "palm oil", "renewable**", "innovation", "net zero")

Environment related hashtags on TikTok

Use each search term to select 10 environment-related videos on TikTok main page (the so called For You Page)

Retrieve all hashtags in the captions of 500 selected videos (10 videos each from 50 search terms)



Popular environment related hashtags on TikTok

(n = 30)

Select 100 most common hashtags

Examine the number of views for these hashtags

Add trending environment related hashtags from TikTok (trending = highest number of views)

Perform K-means clustering on the 100 most common and most viewed (i.e., popular) environment related hashtags to obtain the top 30 popular hashtags

Environment related videos on TikTok

(N = 4800)

Translate top 30 hashtags to Spanish and collect environment related TikTok videos (using a third-party TikTok API)

Spanish hashtags

English hashtags

Select top 5 TikTok Accounts per hashtag

Retrieve 10 latest TikTok videos per account
(n = 1500)

Retrieve 30 TikTok videos per hashtag
(n = 900)

2400 environment related TikTok videos in English and Spanish each
(N = 4800)

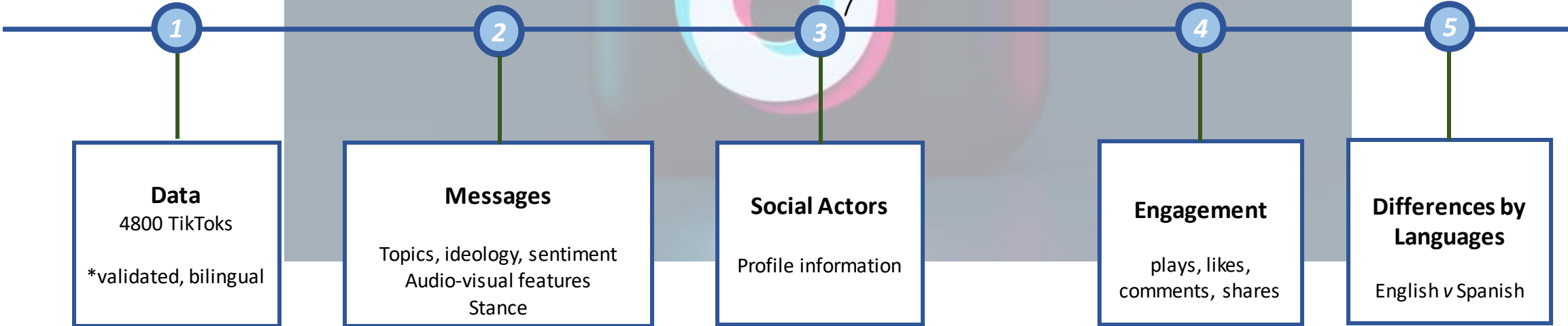
Talking Environment on TikTok

How does the audience engage with different types of message characteristics and social actors?

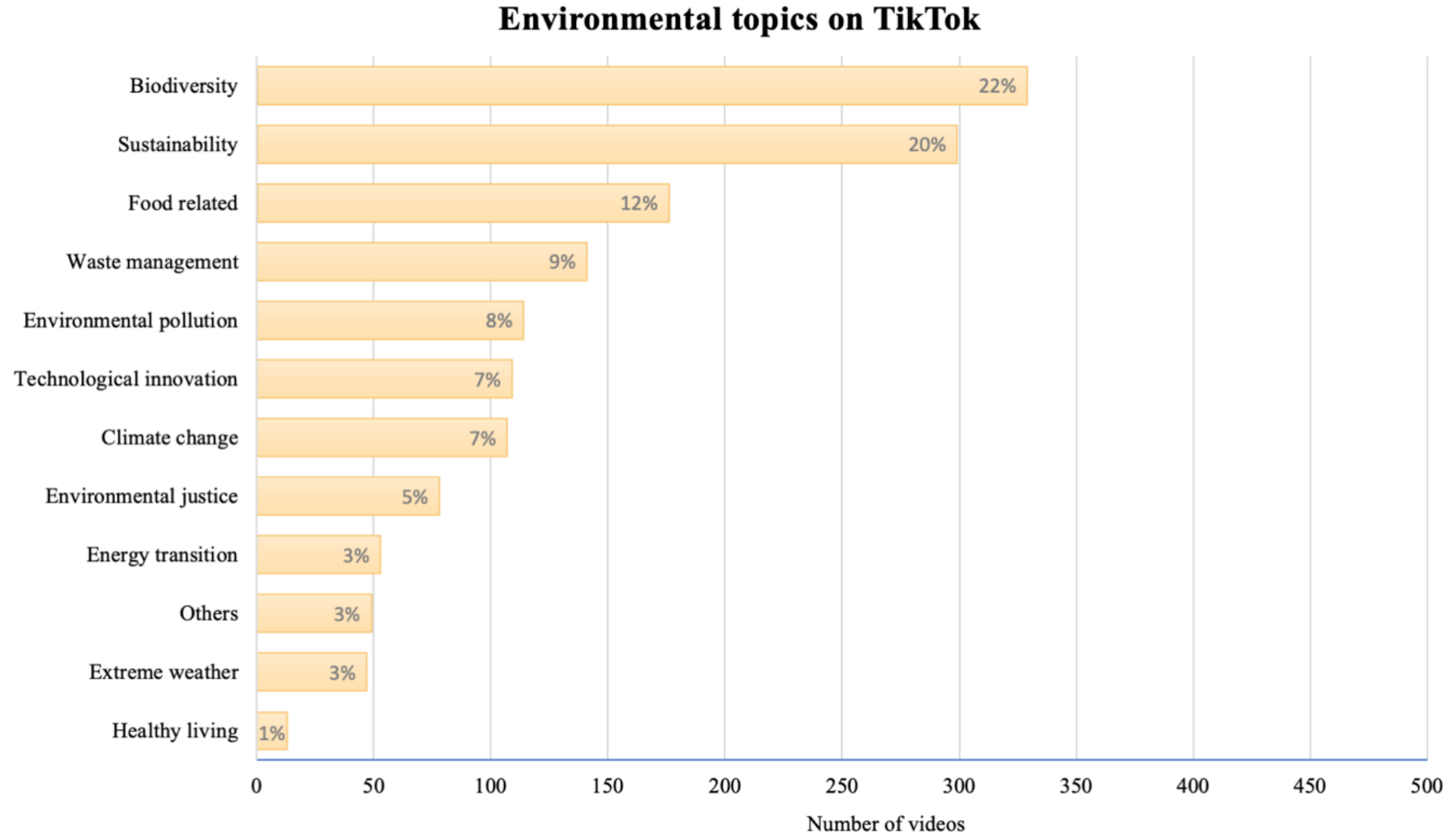
What are the message characteristics of environmental TikTok videos?

How does the engagement vary by language?

Who are the social actors?

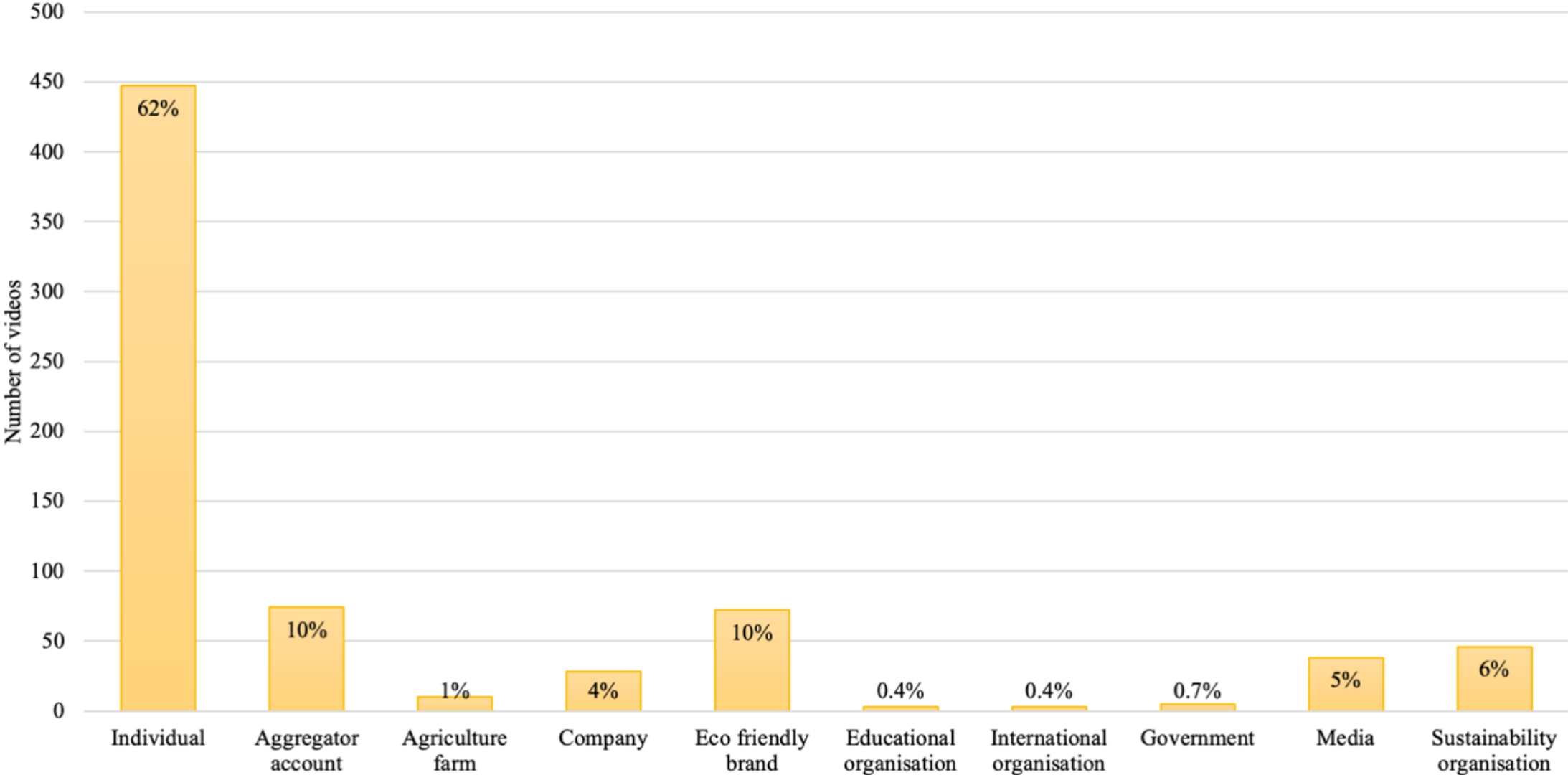


Topics discussed on Environmental TikTok



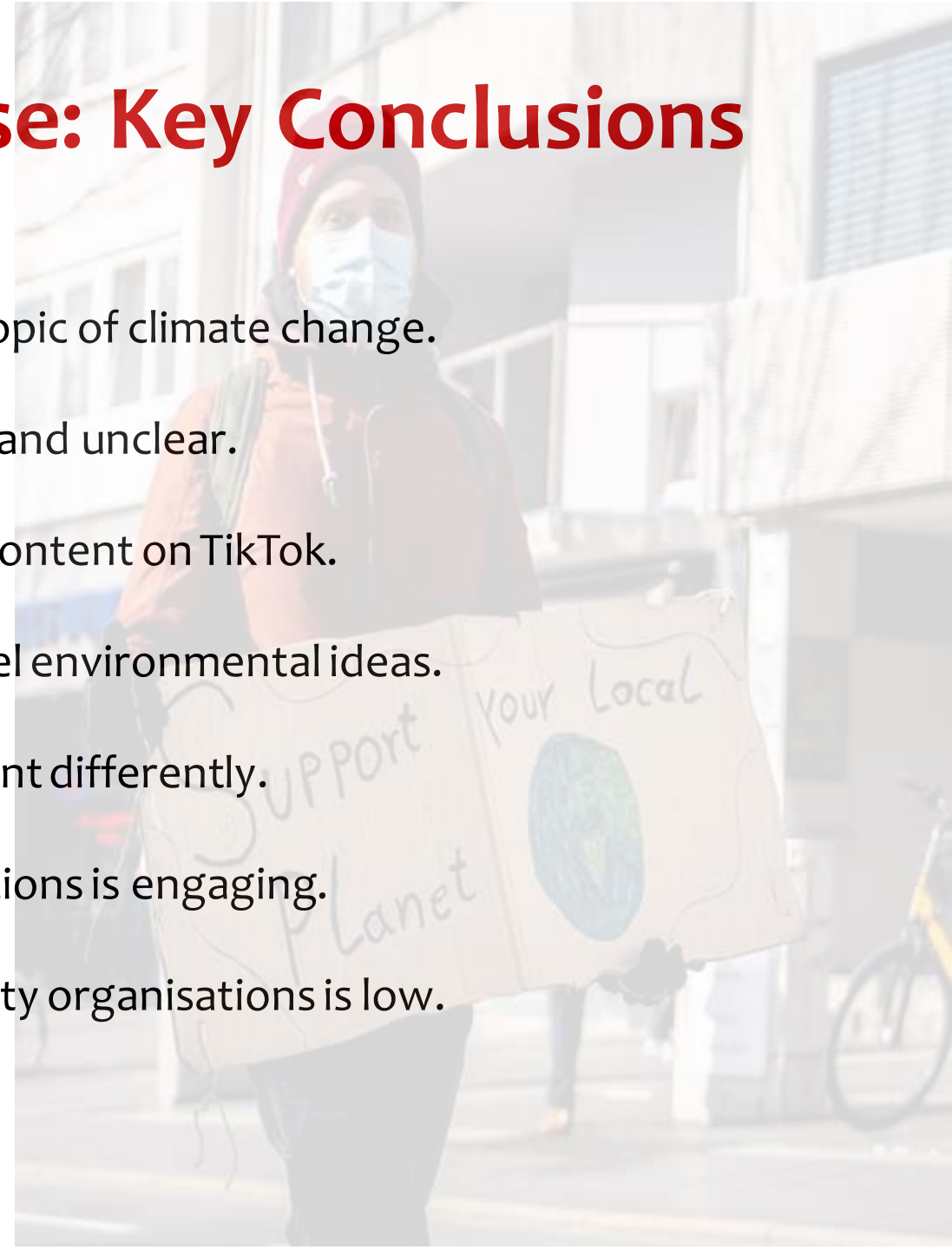
Social Actors on Environmental TikTok

Social actors on environment-related TikTok



TikTok Environmental Discourse: Key Conclusions

- Environmental discourse on TikTok is diverse beyond the topic of climate change.
- Environmental messaging in TikTok videos is largely vague and unclear.
- Individual social actors create most of the environmental content on TikTok.
- Engagement is greater for videos discussing relatively novel environmental ideas.
- Audio-visual features of TikTok videos influence engagement differently.
- Conveying global context, personal experiences, and emotions is engaging.
- On TikTok, engagement with governments and sustainability organisations is low.



Recruiting Participants on Social Media

Data collection via Facebook Ads - India

SCIENCE ADVANCES | RESEARCH ARTICLE

SOCIAL SCIENCES

Addressing climate change with behavioral science: A global intervention tournament in 63 countries

Madalina Vlasceanu^{1,*†}, Kimberly C. Doell^{1,2,*†}, Joseph B. Bak-Coleman^{3,4,†}, Boryana Todorova², Michael M. Berkebile-Weinberg¹, Samantha J. Grayson^{5,†}, Yash Patel¹, Danielle Goldwert¹, Yifei Pei¹, Alek Chakroff⁶, Ekaterina Pronizius², Karlijn L. van den Broek⁷, Denisa Vlasceanu⁸, Sara Constantino^{9,10}, Michael J. Morais¹¹, Philipp Schumann¹², Steve Rathje¹, Ke Fang¹, Salvatore Maria Aglioti^{13,14}, Mark Alfano¹⁵, Andy J. Alvarado-Yepe¹⁶, Angélica Andersen¹⁷, Frederik Anseel¹⁸, Matthew A. J. Apps¹⁹, Chillar Asadli²⁰, Fonda Jane Awuor²¹, Flavio Azevedo²², Piero Basaglia²³, Jocelyn J. Bélanger²⁴, Sebastian Berger²⁵, Paul Bertin^{26,27}, Michał Białek²⁸, Olga Bialobrzeska²⁹, Michelle Blaya-Burgo³⁰, Daniëlle N. M. Bleize³¹, Simen Bø³², Lea Boecker³³, Paulo S. Boggio³⁴, Sylvie Borau³⁵, Björn Bos³⁶, Ayoub Bouguettaya³⁷, Markus Brauer³⁸, Cameron Brick^{39,40}, Tymofii Brik⁴¹, Roman Briker⁴², Tobias Brosch⁴³, Ondrej Buchel⁴⁴, Daniel Buonauro⁴⁵, Radhika Butalia⁴⁶, Héctor Carvacho⁴⁷, Sarah A. E. Chamberlain⁴⁸, Hang-Yee Chan⁴⁹, Dawn Chow⁵⁰, Dongil Chung⁵¹, Luca Cian⁵², Noa Cohen-Eick^{53,54}, Luis Sebastian Contreras-Huerta^{19,55}, Davide Contu⁵⁶, Vladimir Cristea⁵⁷, Jo Cutler¹⁹, Silvana D'Ottone⁵⁸, Jonas De Keersmaecker^{59,60}, Sarah Delcourt⁶¹, Sylvain Delouvé⁶², Kathi Diel⁶³, Benjamin D. Douglas³⁸, Moritz A. Drupp^{23,64}, Shreya Dubey⁶⁵, Jānis Ekmanis⁶⁶, Christian T. Elbaek⁶⁷, Mahmoud Elsherif^{68,69}, Iris M. Engelhard⁷⁰, Yannik A. Escher⁷¹, Tom W. Etienne^{57,72}, Laura Farage⁷³, Ana Rita Farias⁷⁴, Stefan Feuerriegel⁷⁵, Andrej Findor⁷⁶, Lucia Freira⁷⁷, Malte Friese⁶³, Neil Philip Gains⁷⁸, Albina Gallyamova⁷⁹, Sandra J. Geiger⁸⁰, Oliver Genschow⁸¹, Biljana Gjoneska⁸², Theofilos Gkinopoulos⁸³, Beth Goldberg⁸⁴, Amit Goldenberg^{85,86,87}, Sarah Gradidge⁸⁸, Simone Grassini^{89,90}, Kurt Gray⁹¹, Sonja Grelle⁹², Siobhán M. Griffin⁹³, Lusine Grigoryan⁹⁴, Ani Grigoryan⁹⁵, Dmitry Grigoryev⁷⁹, June Gruber⁹⁶, Johnrev Guilaran⁹⁷, Britt Hadar⁹⁸, Ulf J.J. Hahnel⁹⁹, Eran Halperin⁵³, Annelie J. Harvey⁸⁸, Christian A. P. Haugestad¹⁰⁰, Aleksandra M. Herman^{101,102}, Hal E. Hershfield¹⁰³, Toshiyuki Himichi¹⁰⁴, Donald W. Hine¹⁰⁵, Wilhelm Hofmann⁹², Lauren Howe¹⁰⁶, Enma T. Huaman-Chulluncuy¹⁰⁷, Guanxiong Huang¹⁰⁸, Tatsunori Ishii¹⁰⁹, Ayahito Ito¹¹⁰, Fanli Jia¹¹¹, John T. Jost¹, Veljko Jovanović¹¹², Dominika Jurgiel¹¹³, Ondřej Kácha¹¹⁴, Reeta Kankaanpää^{115,116}, Jaroslaw Kantorowicz¹¹⁷, Elena Kantorowicz-Reznichenko¹¹⁸, Keren Kaplan Mintz^{119,120}, Ilker Kaya¹²¹, Ozgur Kaya¹²¹, Narine Khachatryan⁹⁵, Anna Klas¹²², Galia Klein¹²³, Christian A. Klöpper¹²⁴, Lisa Koppel¹²⁵, Alexander L. Kross¹²⁶

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**Participate in our survey
about general beliefs and
win an Amazon voucher
worth ₹100!**

We are a team of researchers at the University of Amsterdam in the Netherlands. If you are an Indian resident aged 18 or above, please help us in our research by filling out this survey. To thank you for your time, we will provide you with an Amazon voucher worth ₹100!

Only for Indian citizens who are at least 18 years of age

Item	Description	INR	EUR
Meta ads	Participant recruitment advertisements on Facebook	--	31,33
Gift vouchers	Amazon (India) gift vouchers worth INR 100 for 444 participants	44.400	506,63 (1 EUR = 87,64 INR)
Total			537,96

Request for reimbursement – MANY LABS CLIMATE STUDY, NYU

We recruited 444 participants from India via Meta (Facebook) advertising and provided Amazon India vouchers for participation in a study.

Campaigns

[11/12/2022] Promoting https://uva.fra1.qualtrics.com/jfe/form/SV_4GCzrMdB2GluDoG

€10.20

From 13 Dec 2022, 00:00 to 14 Dec 2022, 23:59

[11/12/2022] Promoting https://uva.fra1.qualtrics.com/jfe/form/SV_4GCzrMd... 91,406 Impressions

€10.20

[12/13/2022] Promoting https://uva.fra1.qualtrics.com/jfe/form/SV_4GCzrMdB2GluDoG

€5.03

From 13 Dec 2022, 00:00 to 14 Dec 2022, 23:59

[12/13/2022] Promoting https://uva.fra1.qualtrics.com/jfe/form/SV_4GCzrMd... 28,697 Impressions

€5.03

Post: "We are a team of researchers at the University of..."

€1.09

From 13 Dec 2022, 00:00 to 14 Dec 2022, 23:59

Post: "We are a team of researchers at the University of..."

6,305 Impressions

€1.09

Campaigns

Post: "We are a team of researchers at the University of..."

€1.29

From 12 Dec 2022, 00:00 to 13 Dec 2022, 23:59

Post: "We are a team of researchers at the University of..."

10,788 Impressions

€1.29

[11/12/2022] Promoting https://uva.fra1.qualtrics.com/jfe/form/SV_4GCzrMdB2GluDoG

€10.35

From 12 Dec 2022, 00:00 to 13 Dec 2022, 23:59

[11/12/2022] Promoting https://uva.fra1.qualtrics.com/jfe/form/SV_4GCzrMd... 131,487 Impressions

€10.35

[12/13/2022] Promoting https://uva.fra1.qualtrics.com/jfe/form/SV_4GCzrMdB2GluDoG

€3.37

From 12 Dec 2022, 00:00 to 13 Dec 2022, 23:59

[12/13/2022] Promoting https://uva.fra1.qualtrics.com/jfe/form/SV_4GCzrMd... 21,928 Impressions

€3.37

Data collection via Facebook Ads – Indian Women

Recruiting non-Western samples via Facebook

Since Prolific does not currently allow citizens from non-OECD countries on its panel, we used Facebook to recruit our sample of Indian women. Facebook advertising can be used to target audiences defined by a wide range of demographic variables including location, education, language, political views, ethnicity, sexual orientation, income, etc. There is some evidence that in India, Facebook offers broad geographical coverage to recruit participants, more so than mTurk and Qualtrics (Boas et al., 2020). We created a Facebook page for our study and targeted Indian women aged 18-65 years through an advertisement with a Qualtrics link to our experiment (see Figure below). Within 3 days, this advertisement reached a total of 72, 221 women across all 34 States and Union Territories in India. A total of 1,238 women clicked on the survey link and 279 attempted the survey (*incidence rate* = 22.5%).



The image shows a screenshot of a Facebook advertisement. At the top, it says "Social media study" with a "Sponsored" tag and a three-dot menu icon. The main text reads: "Take part in a 15-minute research study and earn an Amazon Voucher worth ₹150!". Below this, it asks: "Are you an Indian woman aged between 18-65 years and currently residing in India? Then help us with our research by answering some questions about social media and gender relations and receive an Amazon Gift Card." The advertisement features a background image of Radboud University with its logo. A pink banner over the image says "Participate in a Research Study and Win ₹150 Amazon Voucher!" with a green bar below it stating "(For Indian Women aged 18-65 years only)". At the bottom, it provides the URL "FMRU.AZ1.QUALTRICS.COM", the text "Participate in Research social media study", and a "LEARN MORE" button. The bottom of the screenshot shows the standard Facebook interaction icons: Like, Comment, and Share.

Breakdown of costs

Expenditure	Amount (in euros)	Amount (in INR)
Facebook advertising	25,67	-
Participant fees (Amazon India vouchers)	368,73	32.550
Donation to NGO	20,00	-
TOTAL	414,40	

* currency conversion rate: 1 EUR = 88,39 INR
(as on July 8, 2021)

Participant recruitment – upcoming projects

Environment-related Values and Perceptions of Social Media

Content Creators in India

Recruitment via Meta

Experimental study on values in environmental messaging on social media

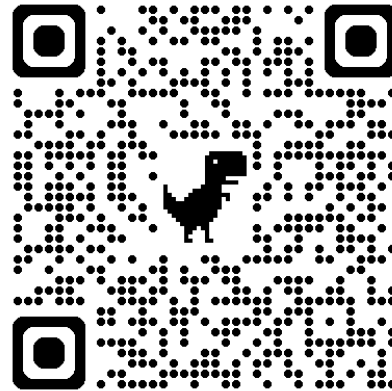
Experiment conducted on Instagram

Recruitment via Meta



Thank You!

Keep in touch:



s.dubey3@uva.nl