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Being green or being nice?

People are more likely to share nicer but potentially less impactful green messages

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Abstract. Citizens can play an important role in disseminating scientific information about climate change, if motivated to do so. However, expressing green positions has the potential to negatively affect people's reputation, by making them look judgmental for instance. In three experiments among US and UK participants (N = 1197) we investigate the reputational costs of sharing statements about climate change that vary in accuracy and in potential impact. In Experiment 1, we show that participants judge more negatively someone sharing a bleak (but arguably more accurate) statement about climate change (e.g., calling it "climate breakdown"), compared to a control statement. Experiment 2 replicates this finding with control statements (e.g. "The richest 1% in the world is responsible for most of the greenhouse gas emissions") compared to accusatorial statements (adding "because most citizens in countries like the United States consume too much energy"). Experiment 3 shows that participants are less willing to share more accusatorial statements—even though they are thought to exert a greater effect on their audience. Our results further show that the fear of appearing judgmental and unfriendly might make people less likely to share bleaker or more accusatorial—even if more accurate or potentially effective—statements about climate change.

Keywords. Climate change; Reputation; Expressive behavior; Two-step process.

Citizens play a crucial role in relaying messages from the media, politicians, or scientists to other citizens. This two-step flow process has been well studied in the context of political information (Katz & Lazarsfeld, 1955), and it has been suggested that the same process could fuel the diffusion of climate change-related opinions (Nisbet & Kotcher, 2009; see also: Anderson, 2017; Geiger et al., 2017; Swim et al., 2018). Similarly, word-of-mouth has been shown to be an important driver in the diffusion of technological innovations (Czepiel, 1974; Mazzarol, 2011; Parry et al., 2012). Recent studies have demonstrated the importance of interpersonal discussions in the domain of environment-related technology—for example, people talking to each other is a crucial vector in the adoption of solar panels (Baranzini et al., 2017, 2019)—and of opinions—discussions with friends and family allows people to learn about the scientific consensus on global warming, which leads to increased acceptance of that consensus view (Geiger et al., 2019; Goldberg et al., 2019).

In this article, we investigate one factor that might slow the spread of accurate beliefs about climate change in the population: sharing some of these beliefs might make the sender appear less friendly. Consider the statement "The richest 1% in the world is responsible for most of the greenhouse gas emissions," variants of which became widely shared in 2020, following an Oxfam report (Oxfam, 2020). In wealthy countries, many people who hear that statement might not realize that they are likely part of the richest 1%, considered across the world. Instead, they might blame the superrich from their own country, and not see why they would need to change their own behavior. People exposed to this statement might also find the source agreeable, as they point out morally reprehensible behavior by others. By contrast, consider "The richest 1% in the world is responsible for most of the greenhouse gas emissions, because most citizens in countries like the United States consume too much energy." This statement is, arguably, more accurate, since it makes people in wealthy countries realize they are likely part of the problem which might lead them to change their behavior. However, such a statement is more directly accusatorial, and might make those who hear it dislike its source. This is an example of the tradeoffs between accuracy of the statement and likeableness of the source that we explore in this article. Note that although we focus here on members of the public (given our participants pool), similar effects might be observed in the media (see, e.g., Feldman & Hart, 2021, 2018; O'Neill & Nicholson-Cole, 2009). After briefly reviewing the literature on the perception of people who are environmentally conscious, we introduce our hypotheses and the three experiments that test them.

Much research has been dedicated to the impact of green behavior (including expressive behavior) on reputation, and "social status is emerging as an important variable in studies of [these behaviors]" (Brooks & Wilson, 2015; De Nardo et al., 2017; Sturman et al., 2017; Uren et al., 2021, p.). On the one hand, many studies have established that engaging in some green behaviors—such as buying green products—can make people appear more altruistic, warm, cooperative, and even better romantic prospects (Aagerup & Nilsson, 2016; Barclay & Barker, 2020; Griskevicius et al., 2010; Johnson et al., 2018; Palomo-Vélez et al., 2021). On the other hand, people who engage in *expressive* green behaviors—activists, people who go to protests—are often perceived negatively (Bashir et al., 2013; Geiger & Swim, 2016; Klas et al., 2019). In particular, people who are thought to be alarmists about climate change are perceived as ""whiny", "nagging", and "complainers" (Swim & Geiger, 2016, cited in: Geiger & Swim, 2016, p.81) (at least in some US universities in the early 2010s).

Why would people who try to alert others of environmental issues be perceived negatively? They might be perceived as 'cheap talkers,' people who only talk about the issue, without engaging in personally costly actions to address it. A recent review noted that proenvironmental behavior is more likely to be perceived positively when it is "costly, effortful, and visible" (Uren et al., 2021): expressive behavior might be visible, but many might not see it as costly or effortful. Moreover, expressive behavior can be more directly accusatorial than other types of behavior, as it allows people to explicitly point out moral failures in others. Whatever the causes of these negative perceptions, they might hamper the spread of accurate information about climate change, since such information would often be perceived as alarmist, or accusatorial. Ironically, a recent study even suggests that using arguably more accurate language (i.e. "climate emergency" instead of "climate change") led to decreased credibility (Feldman & Hart, 2021).

Here, we study how sources are perceived as a function of the type of climate change-related statements they make. Some statements are, arguably, more accurate, but also bleaker, or pointing more explicitly at the role played by the audience. We expect that these statements would lead their source to being evaluated more negatively—as less friendly and more judgmental. We focus on perceptions of warmth because it tends to prime over perceptions of competence, as people appear to be, as a rule, more worried about appearing unlikeable than incompetent (Abele & Wojciszke, 2014; Leary, 1995; Sedikides et al., 2003). Finally, we also test whether such statements (in particular statements that point fingers at the audience) are less

likely to be shared, plausibly because they would lead to negative perceptions of those who share them.

In Experiment 1, we compare how the source of a bleak and of a control climate change statement is perceived. One statement describes climate change and its effects in a very neutral manner (inspired by descriptions found on media such as the BBC), while the other presents a much bleaker view (for instance by talking about 'climate breakdown' instead of 'climate change'). We hypothesize that sources who share the bleaker statement will be perceived as more committed to pro-environmental causes, but also as being more judgmental and less friendly.

In Experiment 2, we compare how the source of an accusatory and of a control climate change statement is perceived. We make the same predictions as in Experiment 1, but regarding statements such as that provided above, about "The richest 1% in the world is responsible for most of the greenhouse gas emissions," with, or without specifying that this is "because most citizens in countries like the United States consume too much energy." These stimuli were chosen such that the full statements (with the latter clause added) are perceived as having more effect on their audience (by making the audience think the statement applies to them, making them feel guilty, and prompting them to change their behavior). Finally, in Experiment 3, we test whether people are less likely to share the more accusatorial statement.

General Methods

We pre-registered the experiments' sample size, exclusion criteria, hypotheses, research questions, and statistical analyses. In all but the first experiment, we use linear mixed effect models with participants as random effect to account for the non-independence of the observations. We refer to 'statistically significant' as the p-value being lower than an alpha of 0.05. All the betas reported in this article have been standardized. The Confidence Intervals (CI) reported are 95%. All statistical analyses were conducted in R (v.4.0.3), using R Studio (v.1.3.1093). Preregistrations, data, materials, ESM, and the scripts used to analyze the data are available on the Open Science Framework at https://osf.io/stbeq/?view_only=07251875767d4ce1811dbe77c87a01fb

Experiment 1

In Experiment 1, participants (from the UK, then replicated in the US) were presented with one of two statements describing climate change, either a control statement, or a bleaker (but also, arguably, more accurate) statement, and they were asked to evaluate the source of the statement. Based on the literature reviewed above, we formulated two hypotheses:

H₁: Participants perceive people sharing the bleak statement about climate change more negatively than people sharing the control statement.

Since the bleaker statement was based on vocabulary used by institutions more explicitly committed to pro-environmental causes, we formulated a second hypothesis:

H₂: Participants perceive people sharing the bleak statement about climate change as more committed to pro-environmental causes than people sharing the control statement.

Participants

Based on a pre-registered power analysis, we recruited 200 UK participants on Prolific Academic, paid £0.38. We removed one participant who failed the attention check, leaving 199 participants (144 women, $M_{Age} = 38.94$, SD = 12.29). We recruited 200 US participants on Prolific Academic, paid £0.38. We removed one participant who failed the attention check, leaving 199 participants (86 women, $M_{Age} = 34.71$, SD = 12.65).

Materials, Design, and Procedure

We wrote two statements on climate change. One stressed the dangers of climate change and its human causes (bleak statement), the other was more descriptive, used more neutral words, and did not attribute climate change exclusively to humans (control statements). The control statement was inspired by definitions of climate change from mainstream media such as *BBC News*¹ or *Nature*², while the bleak statement was inspired by sources more explicitly committed to fighting climate change.

¹ "Climate Change: What Do All the Terms Mean?". BBC News. (1 May 2019)

² "Climate Change - Latest Research and News". Nature. (undated)

Control statement: "Climate change is a pattern of change affecting global or regional climate. It is measured by average temperature and rainfall, and the frequency of extreme weather events. Scientists believe climate change may be caused by both natural processes and by humans."

Bleak statement: "Climate breakdown is a pattern of abrupt changes affecting global or regional climate. It results in vast swings in temperature and in rainfall, as well as more hurricanes, tornados or droughts. Scientists have shown that humans are responsible for climate breakdown."

After having completed a consent form, participants were randomly presented with one of the two statements and asked (i) how judgmental (6-point scale, from 1[Not at all] to 6[Extremely judgmental]), (ii) how likeable (6-point scale, from 1[Not at all] to 6[Extremely likeable]), and (iii) how friendly (6-point scale, from 1[Not at all] to 6[Extremely friendly]) the individual who shared the statement was. These questions were aggregated in a composite measure of 'Negativity' defined as the mean of the 'Judgmental,' 'Likeable' (reverse coded), and 'Friendly' (reverse coded) questions. Then, participants were asked to estimate the proenvironmental commitment of the individual who had shared the statement (6-point scale, from 1[Not at all] to 6[Extremely committed]). Before finishing the experiment, participants' environmental attitudes were assessed with five questions from the questionnaire of the European Value Survey, such as "Many of the claims about environmental threats are exaggerated" (5-point scale, from 1[Strongly agree] to 5[Strongly disagree]) (for the remaining questions, see ESM). Finally, participants completed an attention check (see ESM) and provided demographics information.

Results

UK sample

In support of H₁, participants perceived someone sharing the bleak statement more negatively (M = 3.44, SD = .99) than someone sharing the control statement (M = 2.83, SD = .70) ($\beta = -0.68$ [- .94, - .84], t(197) = -5.08, p < .001) (see Figure 1).

In support of H₂, participants deemed someone sharing the bleak statement as more committed to pro-environmental causes (M = 4.73, SD = 1.10) than someone sharing the control statement (M = 4.12, SD = 1.09) ($\beta = -.54$ [-.81, -.27], t(197) = -3.91, p < .001).

US sample

In support of H₁, participants perceived someone sharing the bleak statement more negatively (M = 3.35, SD = 0.91) than someone sharing the control statement (M = 2.90, SD = .62) ($\beta = -0.55$ [- .82, - .28], t(197) = -4.05, p < .001) (see Figure 1).

In support of H₂, participants deemed someone sharing the bleak statement as more committed to pro-environmental causes (M = 4.76, SD = 1.11) than someone sharing the control statement (M = 4.32, SD = 1.32) ($\beta = -.35$ [- .63, - .08], t(197) = -2.54, p = .012).

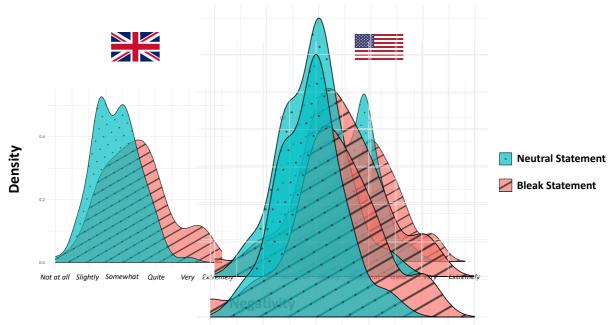


Figure 1. Negativity ratings of the bleak and the control statements in Experiment 1. Density plots representing the distribution of participants' answers according to the type of statement (Bleak or Control). The negativity ratings are the average of three questions about how judgmental, likeable (reverse coded), and friendly (reverse coded) the individual sharing the statements is.

Discussion

Experiment 1 showed that an individual sharing a statement about climate change stressing its dangers and its human causes (bleak statement), compared to an individual who shared a more neutral statement, was perceived as more committed to pro-environmental causes, but also more negatively on the whole (a combination of more judgmental, less likeable, and less friendly). The risk of being perceived negatively might help explain why people—including those committed to pro-environmental causes—might refrain from sharing particularly bleak

descriptions of climate change and its causes. Experiment 2 aims at replicating the effect observed in Experiment 1 with novel materials, testing whether people who share proenvironmental statements that are more accusatorial (compared to less accusatorial) are deemed to be more committed to pro-environmental causes, but also judged more negatively.

Experiment 2

Experiment 2 is a conceptual replication of Experiment 1, with different types of statements. Instead of a neutral and a bleak description of climate change, we compared control and accusatorial statements. In each pair, one statement did not explicitly point to the audience's responsibility (control), while the other did (accusatorial, see materials below). We pre-tested the statements in a pilot study reported in Electronic Supplementary Material (ESM). In the pilot study, participants judged the accusatorial statements to be higher on a composite measure of (i) being likely to apply to the audience, (ii) making their audience feel guilty, and (iii) being likely to induce behavior change in the audience.

We hypothesized that participants would judge the sources of the accusatorial messages more negatively, as measured by our composite measure of being judgmental, dislikeable, not friendly, and critical of you (on negative reactions to guilt-inducing messages, see, e.g. (Moser & Dilling, 2007):

H₁: Participants perceive people sharing accusatorial statements about climate change more negatively than people sharing control statements about climate change.

On the other hand, the more accusatorial statements might be more likely to be effective (on the power of guilt to motivate activism for instance, see Ferguson & Branscome, 2010; Mallett, Melchiori & Strickroth, 2013). As a result, we also hypothesized, as in Experiment 1, that the accusatorial statements would lead their sources to be perceived as being more committed to pro-environmental causes:

H₂: Participants perceive people sharing accusatorial statements about climate change as more committed to pro-environmental causes than people sharing control statements about climate change.

Participants

Based on a pre-registered power analysis, we recruited 200 UK participants on Prolific Academic, paid £0.38. We removed one participant who failed the attention check, leaving 199 participants (105 women, $M_{Age} = 32.18$, SD = 12.10). We also recruited 200 US participants on Prolific Academic, paid £0.38. No US participants failed the attention check (140 women, $M_{Age} = 36.72$, SD = 12.33).

Materials, Design and Procedure

Procedure was identical to Experiment 1, except that we added the following question: "Would you think that this individual is critical of you?" (6-point scale, from 1[Not at all] to 6[Extremely critical of you]). Our composite measure 'Negativity' was defined as the mean of the 'Judgmental', 'Likeable' (reverse coded), 'Friendly' (reverse coded), and 'Critical of you' ratings. Participants were only exposed to one condition (between-participants design) and presented with the three statements of this condition, described as coming from the same source.

The three pairs of statements read:

Pair 1

"The richest 1% in the world is responsible for most of the greenhouse gas emissions."

(Control version)

"The richest 1% in the world is responsible for most of the greenhouse gas emissions, because most citizens in countries like the United States consume too much energy." (Accusatorial version)

Pair 2

"Agriculture, forestry and other land use are accountable for 24% of the world's greenhouse gas emissions." (Control version)

"Agriculture, forestry and other land use are accountable for 24% of the world's greenhouse gas emissions, in large part because of those who eat meat." (Accusatorial version)

Pair 3

"The US federal government doesn't do enough to reduce emissions of greenhouse gases and to tackle climate change." (Control version)

"The US federal government doesn't do enough to reduce emissions of greenhouse gases and to tackle climate change, but this is largely because most citizens do not mobilize enough for this cause." (Accusatorial version).

Results

UK sample

In support of H₁, participants perceived someone sharing accusatorial statements more negatively (M = 3.74, SD = .87) than someone sharing control statements (M = 3.19, SD = .85) ($\beta = -.61$ [-.82, -.39], t(198) = -5.57, p < .001) (see Figure 2).

In opposition to H_2 , participants did not deem someone sharing control statements as significantly less committed to pro-environmental causes (M = 4.23, SD = 1.24) than someone sharing accusatorial statements (M = 4.13, SD = 1.20) ($\beta = .08$ [- .15, .32], t(198) = .69, p = .49).

US sample

In support of H₁, participants perceived someone sharing accusatorial statements about climate change more negatively (M = 3.74, SD = .98) than someone sharing control statements (M = 3.14, SD = .89) (B = -.61 [-.83, -.39], t(197) = -5.41, p < .001) (see Figure 2.)

In opposition to H₂, participants did not deem someone sharing accusatorial statement as significantly more committed to pro-environmental causes (M = 4.34, SD = 1.29) than someone sharing control statements (M = 4.27, SD = 1.28) ($\beta = -.06$ [-.29, .17], t(197) = -0.51, p = 0.61).

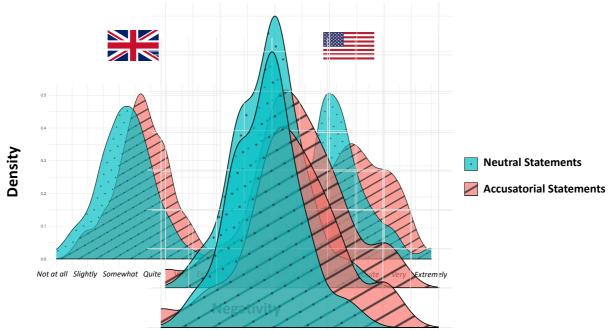


Figure 2. Ratings of accusatorial statements and control statements in Experiment 2. Density plots represent the distribution of participants' answers according to the type of statement (Accusatorial or Control) for negativity. The negativity ratings are the average of four questions about how judgmental, likeable (reverse coded), friendly (reverse coded), and critical of you the individual sharing the statements is.

Experiment 3

Having shown that people who share more accusatorial statements are judged more negatively, we ask whether people are less likely to share the same accusatorial statements—possibly because they are afraid of being judged negatively. Participants were presented either three accusatorial statements or three control statements related to human-caused climate change (identical to those of Experiment 2). For each statement, participants were asked how likely they would be to share the statement in a discussion and on social media. We predicted that participants would be more likely to share control statements than accusatorial statements about climate change (H₃).

H₃: Participants are more likely to share control statements about climate change than accusatorial statements about climate change.

Participants

Based on a pre-registered power analysis, we recruited 200 UK participants on Prolific Academic, paid £0.38. No UK participants failed the attention check (159 women, M_{Age} =

35.36, SD = 11.66). We also recruited 200 US participants on Prolific Academic, paid £0.38. No US participants failed the attention check (102 women, $M_{Age} = 32.26$, SD = 11.52).

Materials, Design and Procedure

We used the same pairs of statements related to climate change as in Experiment 2. After having completed a consent form, each participant was randomly presented with either three accusatorial statements or three control statements about climate change. For each statement, two questions were presented: "How likely would you be to share this statement in a discussion?" (6-point scale, from 1[Very unlikely] to 6[Very likely]), and "How likely would you be to share this statement on social media like Facebook or Twitter?" (6-point scale, from 1[Very unlikely] to 6[Very likely]). We created a composite measure 'Sharing' defined as the mean of these two questions. Before finishing the experiment, participants' environmental attitudes were assessed with five questions from the questionnaire of the European Value Survey (see ESM). Finally, participants completed an attention check (see ESM) and provided demographics information.

Results

UK sample

In support of H₃, participants were more likely to share control statements (M = 3.11, SD = 1.34) than accusatorial statements (M = 2.69, SD = 1.35) (B = .31 [.08, .55], t(198) = 2.61, p = .009) (see Figure 3).

US sample

In support of H₃, participants were more likely to share control statements (M = 3.51, SD = 1.45) than accusatorial statements (M = 3.06, SD = 1.62) (B = 0.29 [.05, .53], t(198) = 2.36, p = .019) (see Figure 3).

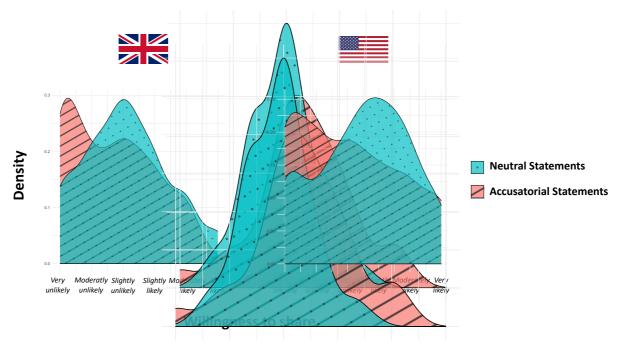


Figure 3. Willingness to share accusatorial statements and control statements in Experiment 3. Density plots represent the distribution of participants' answers according to the type of statement (Accusatorial or Control) for likelihood on sharing the statements. Sharing was the mean of two questions, one related to sharing in a discussion, and one to sharing on social media.

Discussion of Experiments 2 and 3

A pilot study conducted prior to Experiment 2 (distinct from Experiment 1) showed that accusatorial statements were deemed to have more effect on their audience (e.g. making them feel more guilty) than control statements. However, Experiment 2 revealed that people who share accusatorial statements, compared with control statements, are judged more negatively, and Experiment 3 that participants were less likely to share accusatorial statements. Contrary to our predictions, people who shared accusatorial statements were not perceived as more committed to pro-environmental causes, thereby negating a potential benefit of sharing such statements.

In Experiment 3, participants were less willing to share accusatorial compared to control statements about climate change. This finding may appear to contradict previous results in the literature about the advantage that moral and negative content enjoys compared to more neutral content (Brady & Van Bavel, 2021; Robertson et al., 2022; Schöne et al., 2021). However, it is important to note that our control statements are not exactly neutral, being negative and somewhat moralistic (e.g. "The US federal government doesn't do enough to reduce emissions

of greenhouse gases and to tackle climate change."). The difference between the accusatorial and control statement is whether ordinary citizens are also being blamed or not, but in both cases powerful institutions such as the government are being blamed. Thus, our findings do not contradict the existing literature.

Conclusion

Citizens can be crucial relays for official sources of information: when they are motivated to discuss issues with their friends, families, or colleagues, citizens can effectively convey information about politics, new technologies, and, in the case at hand, the environment. For citizens to play this role, however, they must be motivated to share information. Past research suggests that expressive green behavior—taking green positions, going to green protests—can negatively affect people's reputation, making them appear for instance more judgmental. This reputational risk could reduce their motivation to take green positions, and to share even relevant and accurate information about the environment (Bashir et al., 2013; Geiger & Swim, 2016; Klas et al., 2019).

Here, we tested whether sources who shared bleak, or accusatorial statements about the environment, compared to control statements, would be perceived more negatively (less friendly, more judgmental). Experiments 1 (bleak vs. control) and 2 (accusatorial vs. control) showed that this was indeed the case for participants in the UK and US. Experiment 3 further showed that participants declared being less willing to share the accusatorial, compared to control, statements—even though a pilot study had shown that the accusatorial statements were perceived by participants as having more effect on their audience.

Past studies had suggested that, in some cases, people 'self-silence' because of an undue fear to be judged negatively if they discuss climate change (Geiger & Swim, 2016). Our results suggest that, unless one uses very neutral language, avoiding bleak or accusatorial statements, these fears might be justified. However, there might be ways to attenuate these negative perceptions, in particular if the individual uttering the accusatorial statements 'walks the walk' by having low carbon footprint (see, Attari et al., 2019). Conversely, if they only 'talk the talk' and have a high carbon footprint, these negative perceptions will likely be enhanced because hypocrites are judged very negatively (Jordan et al., 2017).

A limitation of our study is that it focuses entirely on the 'warmth' (or communion, see Fiske et al., 2007) dimension of person evaluation. People are also evaluated on the 'competence' (or agency) dimension. It is therefore possible that people who share bleaker or more accusatorial statements are deemed more competent, if these statements are thought to be more accurate for instance. Even if that were the case, since the warmth dimension tends to take priority in reputation management (Abele & Wojciszke, 2014; Leary, 1995; Sedikides et al., 2003), a chance of being perceived as more competent should typically not compensate for the risk of being perceived as much less warm (on the importance of the motivation to appear warm for sharing information, see Altay & Mercier, 2020). Geiger and Swim (2016) found that people refrained from discussing climate change because they were worried of appearing less competent (due to an underestimation of the share of people who are concerned about climate change). In our studies, however, both control and accusatorial statements suggest that the sender is worried about climate change; what differs is whether ordinary people are blamed or not. This dimension in particular, blaming ordinary people in addition to more systemic factors (e.g. how the economy is regulated), is likely what is driving these negative warmth perceptions.

Another limitation is that we do not directly demonstrate that people share the accusatorial statements less than the control statements because the accusatorial statements lead to being perceived as less friendly, etc. Other features of the accusatorial statements could explain this effect. For instance, if the accusatorial statements were deemed less accurate, people might refrain to share them for fear of appearing incompetent (see, Altay et al., 2020). However, given that the importance of warmth in reputation management is well established, it seems very plausible that the fear of being perceived as less warm explains at least some of the unwillingness to share accusatorial statements.

Another potential brake to sharing information about climate change is that people (wrongly) perceive discussions on that topic to be futile (see, Geiger et al., 2017). A knowledge-based intervention aimed at changing this perception proved effective, generating more engagement in climate change related discussion in participants (Geiger et al., 2017). In the case at hand, the—well-founded—fear of appearing less warm by sharing bleaker or more accusatorial statements might also be attenuated. Future studies could test whether it is possible to convey the same bleak or accusatorial meaning in a way that doesn't have the same reputational fallout,

and whether showing one's warmth in other ways dampens the negative effects of sharing such statements.

In conclusion, we found that people refrain from sharing accusatorial statements about climate change, likely because they fear appearing judgmental and unfriendly. These fears appear to be justified and are not compensated by appearing more committed to pro-environmental causes.

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