

Disagreement Among Friends: A Collaboration-Based Framework for Reducing Polarization on Climate Change

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Abstract

The American public exhibits a deep partisan divide on climate change. Some evidence suggests that engaging with people who hold opposing views decreases polarization; but research into real-world political discussion shows that people avoid conversations involving political disagreement in order to protect their social bonds with those whose opinions differ from their own. McGrath presents findings from an intervention in which pairs of people who have a personal relationship and hold opposing views on climate change (personally-close, ideologically-distant) are provided with shared information and a collaborative framework guiding these polarized pairs through discussion of their views on climate change. Using a mixed methods approach, she finds quantitative evidence of significant and politically relevant opinion change from before to after the intervention, persisting at least three months out; and qualitative evidence that provides insights into the mechanism through which these changes may arise.

1. Introduction

Polarization has become a defining characteristic of politics for the American public. A survey conducted by the Pew Research Center in 2020 found that nearly 80 percent of registered voters, Democrat and Republican alike, said their differences with the other side were about core American values. Roughly 90 percent expressed concern that victory by the other side would lead to “lasting harm” to the United States (Dimock & Wike 2020). Majorities in both parties consider the other side to be closed-minded, dishonest, immoral, and unintelligent (Pew 2022).

When measured against an array of other policy domains (e.g. healthcare, immigration, defense), attitudes on climate change show one of the largest partisan gaps in support (Pew 2020). In 2023, for example, 82% of Democrats reported believing that climate change was mostly caused by human activity; 27% of Republicans reported the same (Ipsos 2023). Support for government action mirrors beliefs about cause: 59% of Democratic respondents report that dealing with climate change should be a top priority for the president and Congress, while 13% of Republican respondents hold that belief (Tyson et al. 2023). These views among partisans in the public are matched with a growing divide by party on climate-change related bills (Egan & Mullin 2024).

Reconciling the partisan divide on climate change is necessary for meaningful climate action. I present here findings from the study of an intervention designed to reduce polarization on climate change among the public. The intervention provides information on climate change from a popular-press book and guides polarized pairs through discussion of their opposing views. The two key features of this design are that, (i) the polarized pairs consist of personally-close, ideologically-distant individuals—i.e., pairs of people who know each other personally (friends or family) but hold opposite views regarding climate change; and (ii) the guided discussion applies a collaboration-based framework, designed around principles from organizational behavior and learning science. The intervention is delivered through four weekly, virtual one-on-one meetings between each polarized pair.

I used a mixed-method approach to investigate whether and how this collaboration-based framework can reduce polarization on climate change. Quantitative outcomes from this investigation show that views on climate change were significantly less polarized after the intervention, driven by the climate-skeptical moving toward their climate-advocate partners, and that these changes persisted three months after the intervention. In-depth post-program interviews and qualitative analysis of the weekly meetings provide insight from the participants into why and how this change came about.

2. Background

Climate attitudes and beliefs are resistant to change. Rode et al.’s (2021) systematic review and meta-analysis of climate change messaging studies, which analyzed 396 effect sizes from 76 independent experiments, found “limited effectiveness to date of interventions to promote positive climate change attitudes in comparison to a control condition” (p. 11). The authors found attitudes regarding climate policy to be significantly more resistant to influence than beliefs about climate change (Rode et al. 2021). Among the interventions included in their meta-analysis, which they restricted to one-time messaging studies, there were no differences in effectiveness of different themes (e.g., morality, scientific consensus, national security).

Some experimental evidence suggests that interventions prompting deeper engagement with and reflection on climate information can have positive effects on climate attitudes, and work to counteract partisan bias (see McGrath 2020 for a review). For example, using an experimental setup designed to

mirror communication through social media networks, Guilbeault et al. (2018) demonstrate that the opportunity to revise one's position after exposure to others' climate beliefs in bipartisan networks can counteract partisan bias in the interpretation of climate data.

Levendusky & Stecula (2021) examine the effects of cross-party political discussion generally, looking at how it changes feelings toward members of the other party. The authors randomly assigned participants to small discussion groups that were either politically homogenous (all one party) or heterogeneous (half Democrats, half Republicans), and asked them to read and briefly discuss an article on political polarization (in the homogenous group) or on common ground between the parties (in the heterogeneous group). Participants assigned to the heterogeneous discussion group reported significantly less partisan animosity (Levendusky & Stecula 2021).

Other researchers find the effects of cross-partisan conversation to be limited in important ways. Santoro & Broockman (2022) find that video chats between pairs of opposing-party strangers decreased partisan antipathy when discussing their perfect day, but that conversations that highlight difference (why each supports their party) had no ameliorative effects. Studying informal political discussion in a highly contentious real-world political setting, Wells et al. (2017) find a widespread breakdown of cross-difference political talk, and report little evidence of beneficial outcomes arising from it.

In their thorough examination of political discussion in the United States, Carlson & Settle (2022) find that Americans avoid the type of exposure to and engagement with opposing beliefs that Guilbeault et al. (2018) and Levendusky & Stecula (2021) find to hold promise—and that the main reason people avoid these conversations is to protect their relationships with those friends, family members, or acquaintances whose views differ from their own. The authors note that most examinations of political discussion overlook the centrality of social relationships to political conversation in the real world. In both academic investigations and civic exercises promoting cross-party discussion, "...strangers are brought together because their lives would never intersect otherwise. The whole goal is to encounter difference and engage directly with it. ...Engaging across lines of difference with close social connections raises concerns that do not exist when engaging with strangers in structured spaces." (2022, p. 253-54).

Carlson & Settle (2022) express pessimism about the potential for organic, unstructured political talk to serve as a means of overcoming partisan divisions, noting that people have compelling reason to avoid discussion across political differences in their lives, and that there is no clear evidence such conversations in the real world are beneficial. But the authors also hold out hope for future research that connects the study of political discussion to the real world.

While much research on discussion across political difference arrives at a bleak view of the prospects for its role in democratic progress, some evidence suggests that this avenue is not a dead end, but rather that people need guidance in navigating such conversations. In a study of online discussion between pairs of participants who differ on gun control, Argyle et al. (2023) randomly assign some pairs access to an in-chat AI tool that suggests rephrasing statements in a way that conveys open and respectful listening. The authors find that providing the tool to one participant in the pair increases their partner's self-reported willingness to respect the views of people who hold policy views opposing their own (but find no shift in policy views resulting from the discussion).

Arguing for a greater integration of decision-analytic structure into public deliberation, Gregory et al. (2005) remark that "descriptive findings of behavioral decision research have been invoked to

support sweeping claims about limits to the public’s decision-making competence ...these commentators take the public as it is, not as it could be after exposure to decision-aiding techniques and with properly designed participatory processes.” The same argument could be made regarding more informal, interpersonal political discussion across differences. People are not naturally adept at navigating disagreement; with instruction, they improve. For example, strong evidence in learning science indicates that providing support and structure for collaborative argumentation leads to positive learning outcomes (Kollar et al. 2006; Noroozi et al. 2012; Stegman et al. 2007; Zhou et al. 2025).

3. Study design

The study presented here builds on insights from the literature above. Climate attitudes are notoriously difficult to move (Rode et al. 2021)—but interventions that promote greater engagement with information and exposure to different views hold some promise (e.g., Guilbeault et al. 2018). In controlled settings, discussion across political difference creates positive outcomes (e.g., Levendusky & Stecula 2021), but in more naturalistic contexts—i.e., when directly addressing disagreement, or examining political talk in the real-world—there has been little evidence of benefit (e.g., Santoro & Broockman 2022, Wells et al. 2017). Such conversations are most likely to occur among people who know each other, but people avoid and close off these conversations so as to protect their social bonds with those whose opinions differ from their own (Wells et al. 2017; Carlson & Settle 2022).

Most scholars studying political discussion implicitly or explicitly recognize it as a crucial feature of democracy; that people avoid and seem not to benefit from discussing political disagreements may only signal the urgency of providing the public with guidance and support in doing so productively. Drawing on the call to recognize real-world political conversation as a social interaction (Carlson & Settle 2022; Wells et al. 2017) and on prior research on the political effects of collaboration (McGrath & Gerber 2020; McGrath 2023), I develop a collaboration-based framework that provides structure and guidance for discussing disagreement, aimed at pairs of personally-close, ideologically-distant conversation partners.

To recruit participants for this program, I partnered with a large international climate advocacy organization that has grassroots networks across the United States. Through these networks, we sent out a notice calling for people who had a friend or family member with views on climate change opposite to their own to take part in a virtual reading and discussion program together with that person. Participants were eligible for the program only as pairs. Notices for recruitment also went out through the network of a multi-university consortium centered around civic engagement. Both members of these personally-close, ideologically-distant pairs needed to be 18 years or older and residing in the United States in order to participate in the study. Two pairs of participants enrolled but withdrew before the program began; no participants dropped the program after starting it. This resulted in sixteen participants who completed the full six-week program in May and June of 2023.

The intervention was delivered through four weekly, one-on-one virtual meetings between these polarized pairs.¹ One week before the start of the discussion meetings, all participants filled out a pre-test survey. Starting the following week and continuing for four weeks, the partners received a chapter-length excerpt from a popular press book on climate change, which they were asked to read prior to their virtual discussion meeting together. Three days prior to their weekly scheduled meeting both

¹ Each personally-close, ideologically-distant pair consists of one climate “skeptic” and one climate “advocate”. For simplicity, I will use these terms throughout to refer to the two different members of each polarized pair.

partners were sent a reminder email, and the day before their meeting both partners were sent an email that included a link for their video-chat meeting and a link to their weekly online discussion guide. Weekly video-chat meetings were recorded, but attended only by the personally-close, ideologically-distant pair—no members of the study team or other participants were in attendance. During the video-chat meetings, partners worked together through the online discussion-guide, which consisted of a series of writing and discussion prompts, programmed in Qualtrics, with written responses recorded. The length of these meetings was left open to participants and ranged from about 30 to 90 minutes. In the week after the four weekly meetings concluded, all participants filled out a post-test survey and completed an exit interview over video chat with a member of the research team. A follow-up survey was collected three months after completion of the program.

The collaborative framework was implemented through the weekly discussion guides. The guides are designed around principles from the literature in organizational behavior (e.g., Coulson-Thomas 2005, Daley 2009, Gaillard et al. 2013) and learning science (e.g., Folkestad & Banning 2009, Adams & Forsyth 2007) on fostering collaboration. Collaborations work best when those taking part receive guidance in how to collaborate (Brizee 2008; Cameron & Lart 2003; Rummel & Spada 2005), and are given tools for collaboration along with opportunity (Weinberg et al. 2011, Kollar et al. 2006; Noroozi et al. 2012; Stegman et al. 2007; Zhou et al. 2025). Altering structures like the form and nature of meetings to be more collaborative has been found to have meaningful impacts on attitudes and sense of empowerment (Wu & Paluck 2020), and these structural changes can precipitate social change (see Paluck 2012).

In each pair's first weekly meeting, the discussion guide leads them through a process of establishing a shared goal for the program, which is revisited at the beginning of each week. Each weekly discussion guide provides structure to the conversation intended to aid participants in working together toward that goal. The guides refer to the shared text for that week and lead the partners in posing questions to each other about the reading and related questions about their attitudes on climate change, discussing each others' responses, and writing down reflections. The structure and framing of the guides reinforce the partners' status as co-equal colleagues bringing diverse expertise and perspective to joint pursuit of a shared goal.

Participants were compensated at each stage of participation, with the reward for completion increasing each week so as to encourage progressing through the entire program. Participants were compensated \$5 for completing the pre-test, \$10 for successful completion of the first week, and increasing by \$5 each week through the post-test and exit interview.

The pre/post/follow-up survey includes six questions regarding climate change attitudes and opinions, each measured on a 10-point scale. Full question wording is shown in Section 4. All participants completed all three waves of the survey. Video and transcripts of the weekly discussion meetings and exit interviews were recorded, as were written responses submitted through the weekly discussion guide. This resulted in a corpus of 16 semi-structured in-depth interviews, 32 recorded partner meeting sessions, and 160 open-ended writing responses for qualitative analysis. The study was approved by the Northwestern University Institutional Review Board.

4. Quantitative methods & results (survey data)

Analysis of the pre, post, and follow-up survey measures show a significant and lasting reduction in polarization on climate attitudes. For all questions, a higher value on the 10-point scale indicates a more climate-friendly response. The questions are as follows:

- In your view, is climate change a very serious problem, a somewhat serious problem, or not really a problem?
- How much are you willing to accept changes in your own lifestyle to help reduce the effects of climate change?
- How much do you agree/disagree with the following statement: “Nationally and globally, we need to take urgent action to address climate change, even if it is costly.”
- How much do you agree/disagree with the following statement: “We have an obligation to others on the planet and to future generations to do something to address climate change.”
- How much trust do you have in the general scientific conclusions about climate change?
- How high of a priority should action on climate change be for the president and Congress?

Fig. 1 presents the pre-post outcome distribution for each question. The x-axis shows a participant’s pre-test response to the question; the y-axis shows the participant’s post-test response. Responses showing no change from pre-test to post-test would fall on the diagonal line. Points appearing above the diagonal line reflect a pre-to-post shift on the question in a climate-friendly direction. Points appearing below the diagonal line reflect a pre-to-post shift in a climate-skeptical direction.

All six questions show indication of reduced polarization from before to after the program, with climate skeptics moving toward climate advocates. Due to the small sample size, a paired-sample Wilcoxon signed-rank test is used to test for significance of the pre-to-post shift, with exact p -values calculated via permutation testing and the Pratt correction applied to zeros. Figure 1 shows the results of this test for each question in the lower-right corner of each plot. Four of the six questions show statistically significant change at the conventional level of $p < .05$, and a fifth shows an exact p -value of .063. In all cases, movement is driven by climate-skeptical participants (pre-test values towards the left on the x-axis) moving up in the post-test, towards more climate-friendly attitudes. The largest shift in the climate-friendly direction comes in response to the question, “How high of a priority should action on climate change be for the president and Congress?” (pre:post $Z = 2.94$, $p = .00$). The question “How much are you willing to accept changes in your own lifestyle to help reduce the effects of climate change?” shows least indication of a shift in the climate-friendly direction after the program (pre:post $Z = 1.37$, $p = .21$).

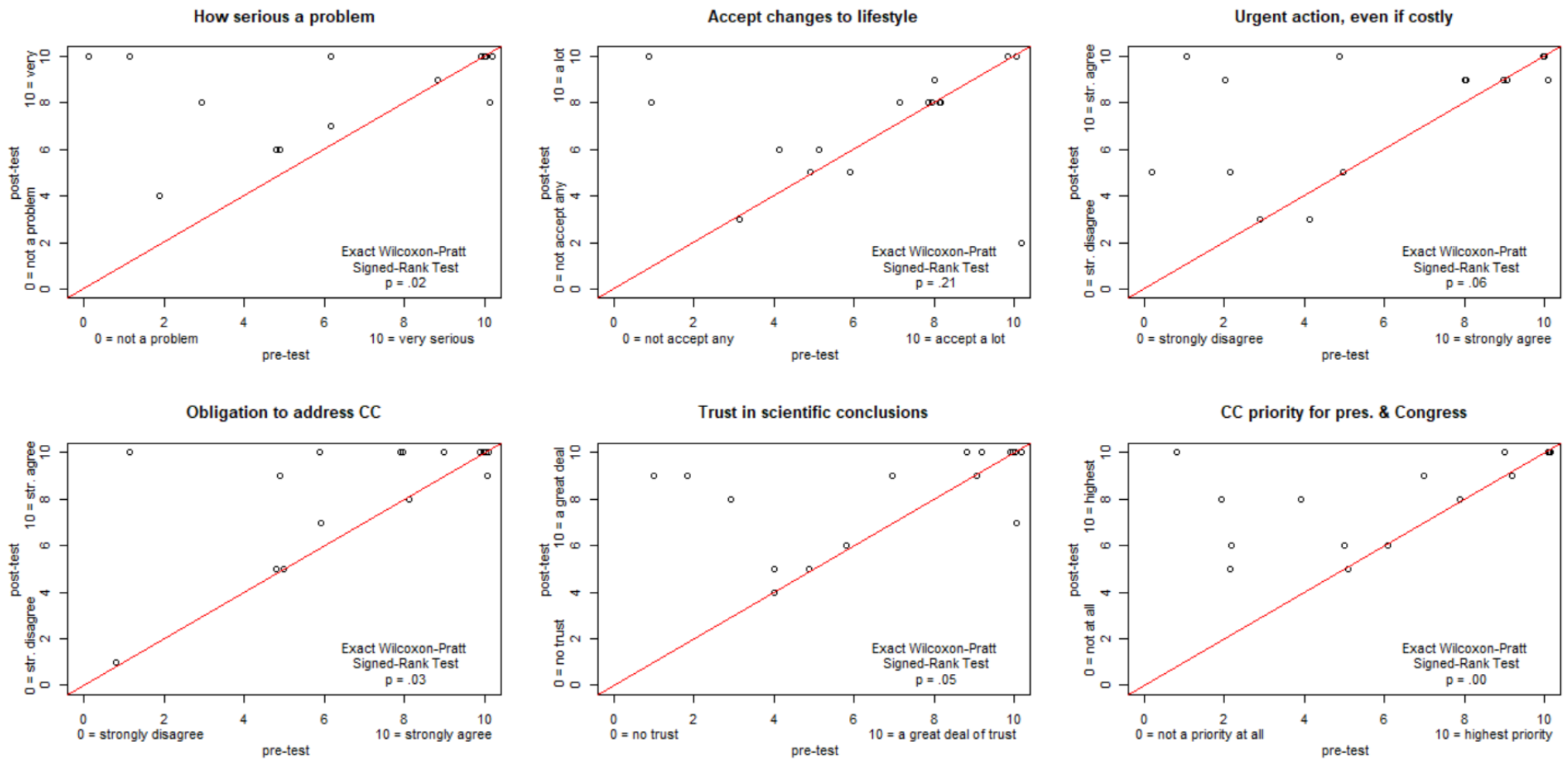


Fig 1. Pre- and post-intervention survey responses to climate change questions. Pre-intervention responses are plotted on the x-axis, post-intervention responses on the y-axis. Points are jittered slightly along the x-axis to make otherwise-stacked points visible. Points above the diagonal line indicate a shift in the climate-friendly direction from pre- to post-intervention.

Analysis of the follow-up survey responses shows that these attitude changes were maintained three months later. The only notable decay comes in response to the question about lifestyle changes, which was also the only question on which the initial post-test shift was non-significant even at the level of $p < .10$. By the time of follow-up, any indication of a shift in the climate-friendly direction on this question had disappeared (pre:3mo $Z = 0.60$, $p = .56$). Interestingly, the decay on this question is driven primarily by climate-advocates moving down in the three-month follow-up compared to their pre-test values, towards more skeptical attitudes about individual lifestyle changes. Response to the question about climate change as a priority for the president and Congress persists as the strongest shift in attitude three months out, with no evidence of decay (pre:3mo $Z = 2.90$, $p = .00$).

5. Qualitative methods & results (meeting & interview data)

Analysis of meeting recordings and in-depth interviews with the participants provided insight into how opinion changes documented in the quantitative measures unfolded through the course of the program. The primary aim of the qualitative analysis was to gain insight into the mechanism at work in the intervention—what was it that led to these changes?

The semi-structured interviews conducted with each participant after conclusion of the program served several functions. The interviews probed the role and nature of collaboration in these dialogues and elicited participants' perspectives on how taking part in the program altered their own views about climate change; any barriers they encountered in the process; and how, if at all, these conversations affected each participant's relationship with their partner.

Using NVivo, the research team identified and coded themes within the qualitative data. The full corpus of conversations was thematically coded (Rubin and Rubin 2012). We looked for patterns across dialogues, particularly where opinions converged or diverged between conversation partners, as well as meta-themes that linked conversations across separate pairs (Miles and Huberman 1994). I used an iterative process to classify central topics and sub-topics and then map these into a structure reflecting participants' progression through the program. The approach was an interpretive exercise to understand both substance and process: Substantively, I sought clarification on central points of contention and agreement between climate skeptics and advocates. In terms of process, I wanted to understand how participants came to find common ground and what led to shifts in attitudes.

Several elements emerged from the qualitative data as important in shaping the outcomes of the intervention. The mechanism by which the intervention operates appears to follow a sequentially dependent progression with two inputs: the pre-existing relationship between the partners; and the shared information and structure provided by the program.

Participants' relationship with their partner motivated their decision to take part, especially among the climate skeptics—though some climate skeptics also expressed recognition of a disconnect between two sides on climate change as a motivation. For example, one climate skeptic, explaining his reason for participating during his interview, said of his partner:

I like [him] so much and we've seemed to be on kind of opposite ends of the spectrum politically and everything, but have always had the ability to communicate. And so I was just like, sure, you know, I know it's something that he's passionate about and really interested in. So I was like, yeah, let's make the time.

In earlier discussion with his partner, this skeptic had also expressed recognition of the disconnect as a motivating factor, asking rhetorically how to expect progress “when you can only preach to your choir? Well, that's why I'm participating in this. I mean, that's exactly why I'm talking to you about this...”

The other input in this progression is the program itself, which provided infrastructure in the form of shared information and a collaborative framework. Shared information grounds the partners on equal footing. The framework orients them toward collaboration rather than competition, creating a context in which neither participant is aiming to convince and neither is aiming to refute. The sense that

neither person was trying to *win* permitted the participants an openness to making mistakes, being wrong, and learning. Through this openness, participants arrived at two discoveries: (1) unexpected areas of consonance in their thinking about climate change—areas in which, despite their close relationship (and in some cases, frequent discussion of climate change), they did not realize they were in agreement; (2) as a complement to this, polarized pairs were also able to isolate the true points of their disagreement regarding climate change.

Mutual respect between partners appeared to be crucial to the mechanism at work. Because the current study targeted personally-close but ideologically-distant pairs, this design cannot tell us whether a supply of mutual respect is necessary as an input, or if the intervention itself can generate this mutual respect between partners who do not previously know each other; this remains for future testing. But both advocates and skeptics made statements indicating that the relationship with their partner played a role in the mechanism of change. One climate advocate noted, “There were some moments where my opinions were changed, or at least I developed a different perspective on the topic... I think it was because it was with someone that I knew and cared about and had a relationship with. So I was willing to, you know, just learn. And I was ready to have, you know—have my ideas changed.” A skeptic remarked, “I just want to say, I really liked the structure... I really liked that. Because I feel like it would be, I don’t know—it would be really uncomfortable with another person, you know. So that’s really good with the discussion guide. It’s like a perfect combination.” Several participants noted that the logistical, not just relational, aspect of taking part with someone personally close mattered—as another skeptic said of the program, “...we definitely we talked about it off-camera, too, you know, and actually, we discussed it quite often.”

5.1 Equal footing

Participants noted that having a common text to start from served as an important part of the process. The single, shared point of reference “put us on the same playing field,” as one advocate put it, establishing a neutral context in which no partner was presumed to know more or less about the topic at hand, whether the levees of New Orleans or geoengineering. Another advocate remarked that, “it’s really useful to have a common grounding like that. We’re not talking past each other, there are facts on the table, and there’s not like ‘what about?’—there’s not the what-aboutism, and arguing over like, for example, if a number’s correct or not.” Commenting in a meeting on the benefit of having the shared text to discuss, one of the deepest skeptics in the study said that he felt polarization on climate change largely comes from people trying to bypass a lack of information by adopting views from groups they identify with as a shortcut: “most people don’t have a good background of the problem, we hear the news media, we’re in a group, and a group has an agenda, and that [agenda] jumps over all that” lack of information.

The shared text meant that conversations did not revolve around the discussants confronting each other with competing sets of facts. Rather, supplied with common information about problems and efforts to address them, along with guidance orienting the discussion toward arriving at a shared understanding, the participants found that the shared text, “has created a different kind of dialogue for us,” as one advocate noted to his partner in conversation, “like if we talk about politics, we’re more likely to disagree... but we’re less polarized by these stories...” This same advocate explained further in his interview: “We could see those conversations almost like a game in which we seek common ground... In Washington [D.C.] you can think of these conversations as zero-sum: I’m right, you’re wrong. But a better kind of conversation is a collaborative game where you both win or lose together.”

5.2 Mutual respect

The infrastructure of equal footing through shared information and a collaborative framework to structure the discussion allowed mutual respect to take root as a guiding principle. Although the concept of mutual respect was never raised explicitly in the discussion guides or interview questions, skeptics and advocates alike spontaneously offered that concept as key to the process. When asked about any benefits of the program, one skeptic responded,

I think it helped us understand each other a little better. We've always had a pretty good relationship, even though he's more on a liberal end, and I'm a Conservative guy... But I think—I, I respect his views more, or I'm not so—I think I listen to him more, and I try not to then follow up with something. ... You know so just overall respecting his views more—this helped with that.

Another skeptic remarked, “I felt a duty to be respectful of any point he made—and I think he felt the same.” Asked to elaborate, he continued, “...all because we disagreed it wouldn't mean we weren't becoming, you know—we couldn't be friends in real life. And—just a sense of respect, that's all, that we maintained throughout—and I felt that was really successful.”

Discussions and interviews gave insight into two main ways in which this mutual respect manifested: non-proselytization, and acceptance of the other's concerns as legitimate.

5.3 Non-proselytization

As one skeptic put it, “when we discuss things she's never trying to change my opinion, and I'm not really trying to change her opinion. We respect each other's opinions about it, and just try to understand each other's opinions about it.” Another skeptic contrasted this non-proselytization to an experience he had trying to engage with a different group promoting cross-difference dialogue:

What I found in that group is, their purpose was to be bipartisan and get bipartisan support. So they solicited some Conservatives like myself, and there was a couple of other people. What it really turned into was trying to convert us. And I woulda liked to just stay on the discussion level more, but—so that's kinda why I dropped out... So this [the current program] was a little—I could tell that what the direction was, even for the book that was chosen—but that's okay. You know it wasn't, it wasn't overly—aggressive in trying to make converts.

When later asked whether he felt taking part in the program changed his thoughts on climate change at all, he said he thought it had, and returned to this idea again:

Where I get my back up is when it's, it gets pushed down my throat—and I know how Liberals feel when Conservatives push things down, you know, shove things down their throats. Nobody likes that. So as long as we're not doing that, and we're willing to listen with each other, I think I can, I can accept some climate change—differences, you know.

The paradoxical nature of this—that change requires not feeling that others are trying to change you—was reflected on at length by another skeptic in discussions with his partner. To bring skeptics around on climate change, he said, requires “doing it without an agenda”. If climate change is the crisis that advocates suggest, then addressing it is an immense task that will require ordinary people to make sacrifices:

you have to think about what it would *really* look like to make an impact with this, it would take people *really* changing their lifestyles, and materialism and consumerism and a *lot* of things if we were going to do this. And you're not going to turn that tide without winning people's hearts first.

A groundswell is not achieved through coercion, this skeptic says, it has to come from within. "Just even to the concept that, that I *might just* be approaching this whole thing wrong... not because somebody threw that at me... a self-realization..." A devoutly religious person, he draws a direct comparison to religious proselytization. If climate advocates want to win hearts, expecting fastidious alignment with a certain set of beliefs and demonizing those who don't share those beliefs will only hurt their cause. Winning hearts, this skeptic says, requires starting small and finding some point of agreement—some shared view or shared principle to begin from—in his analogy, a non-believer coming to recognize an underlying truth in his religious faith, even if they don't share the specific beliefs: "Ok, we got a starting point, that's enough... If I can get in there and just get a crack at the door open, then maybe there's a possibility for a larger awakening."

5.3 Acceptance of concerns

Hand-in-hand with non-proselytization, mutual respect also manifested as acceptance of the other person's concerns as legitimate. This involved both "an assumption of good faith"—i.e., a mutual understanding that what was said could be taken at face-value; that neither person was trying to score points, but expressing truly held beliefs or concerns—and an acceptance of concerns as valid even if they were not shared.

Climate skeptics frequently voiced concerns rooted in the costs of addressing climate change—and more pointedly, about being pushed to make sacrifices that will not actually solve the problem. One skeptic articulated this in an exchange that began with his partner light-heartedly commenting that he didn't expect to "convert" the skeptic to a climate activist. The skeptic responded,

And I don't even seek to change you to my view, other than that I want you to just see, like you just said: every action has another *reaction*, and the things we do, or don't do, are going to cause other problems, and we have to really balance that, you know? Which is more harmful, I guess, in the long run? I don't see the solutions for climate change as having the positive effect that people think they will.

Remarking on the importance of assessing the efficacy of a technology like carbon capture, he raised the example of recycling as emblematic of the potential disconnect between a concept and its effects, its costs and benefits:

...we have to measure how effective it was—like recycling... has that been a good? ...I like recycling! I like getting something that says it was recycled and saying, "Alright, that's great, we have used our waste to create something else." Now, what did it cost to do that? That's what I gotta look at, you know? ...The *concept* is good, I think...

Another skeptic succinctly expressed this concern about climate policies imposing costs without being an effective solution: "...like throwing a brick into the Grand Canyon, you know, and thinking you're gonna fill it up. That's not really gonna work. So I understand the concept, but—you know."

Skeptics also expressed that apocalyptic predictions in the face of uncertainty made them dubious about the objectivity of climate science, and with these doubts about the science, resistant to proposed policies. One participant suggested the public has “been lied to” about timelines, and that this introduces a broader skepticism about climate change. Another participant made a similar point, noting that much of the conversation feels like “scaremongering” given there exists genuine uncertainty about rates of change. Another skeptic said that claiming there would be a difference between 1.5- and 2- degrees Celsius sounded like “a marketing ploy.”

These participants’ partners often did not agree with these sentiments, but they also did not attempt to downplay or dismiss their partners’ concerns. This openness to acknowledging the validity of concerns that differed from their own often led to productive, substantive discussions. As one advocate reflected in his exit interview, “the discussions helped me see my partner’s perspective better, why she was against it—and I understood it, too! She had very valid concerns—and the discussion guide helped us bring out opposing opinions and compare them and talk through them. ...and toward the end we started to see eye to eye on certain things, we were able to understand each others’ perspectives more.” As another advocate remarked, knowing that his conversation partner was not trying to score points in a debate, but expressing sincerely held thoughts created a valuable openness in the discussions:

I think the biggest thing I gained was experience and practice actually engaging with someone with a very different point of view in an environment that wasn’t combative. ...having a chance and time to really talk about some of these things in a calm but honest way—that was really valuable. And of course, being able to learn what someone else was thinking, and knowing that he was actually, as far as I could tell, being honest with me and not just performing a certain point of view.

Participants’ openness to each others’ concerns allowed for conversation about uncertainty in science—“the limits of scientific knowledge” as one climate advocate put it—and, by extension, about the challenge of crafting truly effective, long-term solutions. Starting from shared acknowledgement of uncertainty—in science and in proposed solutions—often resolved into discussion of opportunity costs. As one pair discussed, if we spend a dollar on climate mitigation, what other set of problems—for example, social problems like homelessness—are we choosing not to fund? Another pair of partners moved from a discussion of how much a disappearing species is worth into broader conceptual discussion about the monetary value of preventing one degree of warming. One advocate remarked upon the nuance of these conversations leading her to the recognition that, “it’s not so much a matter of right and wrong or good and bad intentions. We all come from different places.”

5.4 Unexpected consonance

Openness to recognizing each other’s concerns as valid rather than looking to rebut them brought many pairs to the recognition that some of these concerns were shared, in varying degrees, by both partners. As one skeptic remarked, “Some of the views which I thought we were really far apart on were really kind of...we shared a lot of the same views.” As an advocate from a different pair put it, “It’s actually less clear to me now that we have a fundamentally different way of looking at the world.”

Pervasive in conversations was agreement over the futility of individual actions, which were described by one participant as “difficult to rationalize.” They are “nothing compared to corporate changes,” as someone else put it, and “kind of annoying.” As one participant put it: “Me using a plastic straw won’t ruin the planet, or if I use a paper straw it won’t save the planet.”

The quotations above all came from the climate advocate within the polarized pair—people who recognize climate change as a serious problem and believe in acting to prevent its worst effects. But by voicing frustration over what they saw as misplaced emphasis on individual action, these advocates constructed a bridge between their views and the views of their partners, who were more skeptical of the science and of the need for urgent intervention. As one skeptic who was concerned about losing the amenities of modern life put it, “Climate is a global problem, and we should focus on global, not individual, compliance.”

Tied to this was a nearly universal recognition that governments are the only agents able to affect change on a sufficiently large scale. “I think governments need to act not necessarily because I’m a fan of big government, but because no other institution is capable of addressing climate change at the scale needed,” said one advocate. This was paired with deep doubts that government in its current forms was capable of addressing a problem as “insidious” as climate change.

Participants across the spectrum of climate belief also readily agreed on the need to protect the natural world. This need was justified on several dimensions. One participant noted that “we should protect the natural world...because our lives depend on it.” Others raised the same point in their conversations by describing how “we’re all connected here.” A more diffuse concern over aesthetics — “we should protect the natural world because it’s beautiful,” as one self-described libertarian climate skeptic put it — also motivated a desire to act. Discussion of aesthetics evoked narratives that anchored expressions of concern to uniquely personal experience. As one climate advocate recounted,

The first time I went [scuba] diving with my uncle, seeing underwater how amazing it was, I knew, sort of theoretically and academically, you know, that the reefs have been lost. And so I asked him about that. I asked: “It’s not like it used to be, is it?” And when he replied, it was so soft I might as well have just heard it in my own head. “No, not at all,” he said.

A final key area where people agreed was in the moral necessity to protect the people who are most vulnerable from the effects of both climate change and the solutions that are proposed to mitigate climate change. The Earth, most people noted, will sail along whether humans inhabit it or not. As one advocate put it, “Solving climate is about saving humans. Earth will be here; we may not.” Among both advocates and skeptics, the rationale for acting—or not—ultimately boiled down to protecting people.

5.5 Clarity on true disagreement

As a complement to these discoveries of unexpected consonance, these discussions also helped reveal to the pairs their true points of disagreement. In discussion meetings and interviews, participants expressed that arriving at a clear understanding of where their views differed was important to them. This clarity offered a sense of opportunity to move forward. “Our solutions [are] where we differ,” one advocate said to his partner at the conclusion of a discussion meeting, “which in and of itself is progress.” The greatest points of disagreement tended to be over the kinds of actions that should be taken, and, in particular, how urgently they should be pursued. As a member of a different pair remarked:

A number of times it felt like we could come to an agreement and that was refreshing...and maybe he didn't see me as quite the extremist that he probably does... You know, we do have the same goals. Maybe we have different reasons for wanting to get there, and—there are different approaches.

6. Discussion

Political discussion—especially discussion of political disagreement—is crucial to the health of a democracy. The greatest opportunity for these discussions to take place is among people who know each other. But as others have documented (Carson & Settle 2022; Wells et al. 2017), people avoid these conversations, and for good reason: they value and want to protect their relationships, not risk damaging them through political disagreement.

The small scale, intensive study presented here provides evidence that, equipped with a collaborative framework and shared information, people can navigate political disagreement without damaging their ties to those with whom they disagree—and that this process can produce lasting and potentially politically-consequential opinion change. With guidance, discussion of political disagreements with personally-close connections can be democratically and personally beneficial, reducing polarization while preserving (and for some, strengthening) relationships.

The quantitative evidence shows that, as long as three months after conclusion of the program, climate skeptics were less polarized from their climate-advocate partners than they were before the program. Importantly, the most significant reduction in polarization appeared regarding climate change as a priority for the president and Congress. This response is especially notable when taken in conjunction with responses about individual lifestyle changes—which was the only question to show little indication of movement in the post-test, and further decay toward the climate-skeptical position in the follow-up. Climate skeptics' sustained movement toward climate advocates regarding governmental prioritization of climate change is notable for two reasons. First, it reflects a striking recognition of the collective nature of the problem and the requisite response. This was a common theme that emerged in meetings, in which polarized partners found unexpected agreement regarding the futility of individual actions, the need for collective response, and the resulting necessity of working through government—even if many skeptics retained skepticism that the government could or would act effectually. This latter part touches on the second way in which climate skeptics' movement toward advocates on governmental prioritization is notable: aversion to governmental intervention is a core principle of American political conservatism, which most skeptics in this sample (and in the general population) identify with. Indeed, some evidence suggests this aversion may even drive conservative climate skepticism (see, e.g., Hornsey & Fielding 2020; see also Rode et al. 2021 on climate policy views being more intransigent than beliefs about climate change).

The qualitative data offered insight into how these lasting and potentially politically-consequential shifts may be coming about. Commentary from the participants in discussion meetings and in interviews pointed, paradoxically, to the importance of neither discussion partner aiming to convince, and neither aiming to refute—in short, neither one aiming to win. This opened a space for skeptics to voice real, substantive concerns without being dismissed or rebutted—their partners showed a willingness to accept their concerns as legitimate, and in some cases even shared those concerns. If this mutual openness to taking the other's concerns seriously played a role in the mechanism of change, it could also shed light on why climate change messaging has proven so ineffectual. Perhaps tweaks to

framing of policies or alternate routes of conveying the science miss the heart of the matter—and instead, starting to shift opinions requires frank discussion of the valid, underlying concerns people have about the costs of addressing climate change. Questions about opportunity costs—what is worth saving, what is worth making sacrifices for—arose repeatedly in participants’ conversations. How do we determine what tradeoffs we are comfortable with, economically, socially, morally? These questions are central to the problem of climate change, and to governance more generally, and there are no easy answers.

This study cannot speak to whether changes in opinion carry beyond survey responses and conversation into, for example, political voice. It does provide evidence that, equipped with a collaborative framework and shared information, people who hold genuinely opposing viewpoints can identify common goals and work through disagreement toward an overarching shared objective; that such discussions over political disagreement can lead to opinion change; and that this process need not jeopardize the personal relationship between polarized discussants. In short, this study provides evidence of a starting point.

This study involves a small and self-selecting sample of participants. As noted, people are resistant to discussing opposing views with someone they know, and so the people who were willing to take part in this program likely differ in important ways from climate skeptics and climate advocates at large. However, they arguably represent the most important people to understand how to engage. An intervention does not need to work for everyone to be effective, nor does effective policy require unanimous support among the public. Certainly, some climate skeptics have intransigent beliefs; if the goal is to shift public opinion on climate change—for example, the extent to which it is held as a priority for government action or in voters’ candidate choice—efforts should be directed toward people who are skeptical, and may have deep concerns, but are open to change.

References

- Adams, Curt M., and Patrick B. Forsyth. 2007. "Promoting a Culture of Parent Collaboration and Trust: An Empirical Study" *Journal of School Public Relations* 28: 32-46
- Argyle, L. P., Bail, C. A., Busby, E. C., Gubler, J. R., Howe, T., Rytting, C., Sorensen, T., & Wingate, D. (2023). Leveraging AI for democratic discourse: Chat interventions can improve online political conversations at scale. *Proceedings of the National Academy of Sciences of the United States of America*, 120(41), 1–8. <https://doi.org/10.1073/pnas.2311627120>
- Brizee, H. Allen. 2008. "Stasis Theory as a Strategy for Workplace Teaming and Decision Making." *Journal of Technical Writing and Communication* 38(4): 363–85.
- Cameron, Ailsa, and Rachel Lart. 2003. "Factors Promoting and Obstacles Hindering Joint Working: A Systematic Review of the Research Evidence." *Journal of Integrated Care* 11(2): 9–17.
- Carlson Taylor N. and Jaime E. Settle. (2022) *What Goes Without Saying: Navigating Political Discussion in America*. Cambridge University Press.
- Coulson-Thomas, C. (2005), "Encouraging partnering and collaboration", *Industrial and Commercial Training*, 37(4): 179-184.
- Daley, Dorothy M. 2009. "Interdisciplinary Problems and Agency Boundaries: Exploring Effective Cross-Agency Collaboration" *Journal of Public Administration Research and Theory*, 19(3): 477–493.
- Dimock, Michael and Richard Wike (2020) America is exceptional in the nature of its political divide. *Pew Research Center*. <https://www.pewresearch.org/short-reads/2020/11/13/america-is-exceptional-in-the-nature-of-its-political-divide/>
- Egan, P. J., & Mullin, M. (2024). US Partisan Polarization on Climate Change: Can Stalemate Give Way to Opportunity? *PS - Political Science and Politics*, 57(1), 30–35.
- Folkestad, J. and Banning, J. 2009. "Promoting collaboration: the physical arrangement of library computers" *Library Hi Tech News* 26(1/2): 18-19.
- Gaillard, Jean; Monteil, Charlotte; Perrillat-Collomb, Anaïs; Chaudhary, Sukhdev; Chaudhary, Mamta; Chaudhary, Omkant; Giazzi, Franck; Cadag, Jake. 2013. "Participatory 3-dimension mapping: A tool for encouraging multi-caste collaboration to climate change adaptation and disaster risk reduction." *Applied Geography*. 45:158–166.
- Gregory, R., Fischhoff, B., & McDaniels, T. (2005). Acceptable Input: Using Decision Analysis to Guide Public Policy Deliberations. *Decision Analysis*, 2(1), 4–16.
- Guilbeault, D., Becker, J., & Centola, D. (2018). Social learning and partisan bias in the interpretation of climate trends. *PNAS*, 115(39), 9714–9719. <https://doi.org/10.1073/pnas.1722664115>

- Hornsey, M. J., & Fielding, K. S. (2020). Understanding (and Reducing) Inaction on Climate Change. *Social Issues and Policy Review*, 14(1), 3–35. <https://doi.org/10.1111/sipr.12058>
- Ipsos. 2023. USA Today/Ipsos Extreme Weather Survey. July 21-23, 2023. https://www.ipsos.com/sites/default/files/ct/news/documents/2023-09/Topline%20USA%20Today%20extreme%20weather%20072523_1.pdf
- Kollar, I., Fischer, F., & Hesse, F. W. (2006). Collaboration scripts - A conceptual analysis. *Educational Psychology Review*, 18(2), 159–185. <https://doi.org/10.1007/s10648-006-9007-2>
- Levendusky, M. S., & Stecula, D. A. (2021). We need to talk: How Cross-Party Dialogue Reduces Affective Polarization. In *Elements in Experimental Political Science*.
- McGrath, M. C. (2020). Experiments on Problems of Climate Change. In *Advances in Experimental Political Science*. <https://doi.org/10.1017/CBO9781107415324.004>
- McGrath, Mary C. (2023) Collaboration induces debt-motivated altruism. *Institute for Policy Research Working Paper Series*. WP-23-01.
- Miles, Matthew B., and A. Michael Huberman. 1994. *Qualitative Analysis*. Thousand Oaks, CA: Sage Publications.
- Noroozi, O., Weinberger, A., Biemans, H. J. A., Mulder, M., & Chizari, M. (2012). Argumentation-Based Computer Supported Collaborative Learning (ABCSCCL): A synthesis of 15 years of research. *Educational Research Review*, 7(2), 79–106. <https://doi.org/10.1016/j.edurev.2011.11.006>
- Paluck. Elizabeth Levy. 2012. The dominance of the individual in intergroup relations research: understanding social change requires psychological theories of collective and structural phenomena. *Behavioral & Brain Sciences*. 35(6):443-4.
- Pew Research Center, August 2022, “As Partisan Hostility Grows, Signs of Frustration With the Two-Party System” <https://www.pewresearch.org/politics/2022/08/09/as-partisan-hostility-grows-signs-of-frustration-with-the-two-party-system/>
- Pew Research Center, February 2020, “As Economic Concerns Recede, Environmental Protection Rises on the Public’s Policy Agenda” <https://www.pewresearch.org/politics/2020/02/13/as-economic-concerns-recede-environmental-protection-rises-on-the-publics-policy-agenda/>
- Rode, J. B., Dent, A. L., Benedict, C. N., Brosnahan, D. B., Martinez, R. L., & Ditto, P. H. (2021). Influencing climate change attitudes in the United States: A systematic review and meta-analysis. *Journal of Environmental Psychology*, 76(May), 101623.
- Rubin, H.J. and Rubin, I.S., 2012. *Qualitative interviewing: the art of hearing data*. 3rd ed. Thousand Oaks, CA: SAGE Publications, Inc.;
- Rummel, Nikol, and Hans Spada. 2005. “Learning to Collaborate: An Instructional Approach to Promoting Collaborative Problem Solving in Computer-Mediated Settings.” *The Journal of the*

Learning Sciences 14(2): 201–41.
http://www.tandfonline.com/doi/abs/10.1207/s15327809jls1402_1.

- Santoro, E., & Broockman, D. E. (2022). The promise and pitfalls of cross-partisan conversations for reducing affective polarization: Evidence from randomized experiments. *Science Advances*, 8(25), 1–16. <https://doi.org/10.1126/sciadv.abn5515>
- Stegmann, K., Weinberger, A., & Fischer, F. (2007). Facilitating argumentative knowledge construction with computer-supported collaboration scripts. *International Journal of Computer-Supported Collaborative Learning*, 2(4), 421–447. <https://doi.org/10.1007/s11412-007-9028-y>
- Tyson, Alec, Cary Funk, and Brian Kennedy (2023) What the data says about Americans’ views of climate change. *Pew Research Center*. <https://www.pewresearch.org/short-reads/2023/08/09/what-the-data-says-about-americans-views-of-climate-change/>
- Weinberg, Dana Beth et al. 2011. “Building Collaborative Capacity: Promoting Interdisciplinary Teamwork in the Absence of Formal Teams.” *Medical Care* 49(8): 716–23.
- Wells, C., Cramer, K. J., Wagner, M. W., Alvarez, G., Friedland, L. A., Shah, D. V., Bode, L., Ederly, S., Gabay, I., & Franklin, C. (2017). When We Stop Talking Politics: The Maintenance and Closing of Conversation in Contentious Times. *Journal of Communication*, 67(1), 131–157.
- Wu, Sherry Jueyu and Elizabeth Levy Paluck. Participatory practices at work change attitudes and behavior toward societal authority and justice. *Nature Communications*. 11, 2633 (2020).
- Zhou, J., Hmelo-Silver, C. E., Ryan, Z., Stiso, C., Murphy, D., Danish, J., Chinn, C. A., & Duncan, R. G. (2025). Disagreeing softly: Supporting students in managing disagreement in peer critique. In *International Journal of Computer-Supported Collaborative Learning* (Issue 0123456789). <https://doi.org/10.1007/s11412-024-09438-z>