

Learning from Twins: Can marketers learn about consumers across the political divide by interacting with AI

Benjamin Lira

2025-12-17

Table of contents

Overview	2
Hypotheses	2
Data	2
Data Collection	2
Measures	3
Pre-Registered Analyses	3
Results	3
Preliminaries	3
Q1. Do people update their beliefs after interacting with the chatbot?	5
Q2. Is belief updating symmetric across political groups?	5
Q3. Does political extremity predict how much people update?	7
Q4. Is belief updating associated with how the chatbot is perceived?	7
Q5. Does engagement (“dose”) matter for belief updating?	7
Q6. Does interacting with the chatbot improve applied judgment?	12
Q7. Does confidence track accuracy—or diverge from it?	12
Robustness Checks	15
Discussion	15
Summary of Findings	15
Primary Hypotheses	17
Exploratory Findings	17
Implications for Marketing Practice	17
Limitations	18
Next Steps	18

Appendix	20
Descriptive Statistics	20
Appendix: Extreme Cases Analysis	20
Marketing Messages from Extreme Cases	20
Patterns in Successful vs. Unsuccessful Learning	21
Full Conversation Transcripts	22
Data Availability	36
Code Availability	37
Pre-Registration	37
Session Information	37

Overview

Political polarization creates challenges for marketers who must communicate effectively with ideologically diverse consumers. Misperceptions about political outgroups are widespread, with partisans often holding exaggerated and inaccurate views of those across the political divide. These misperceptions can lead to ineffective marketing strategies when firms attempt to appeal to broad consumer bases. This study tests whether interacting with an AI chatbot prompted to represent a political outgroup can improve marketers' understanding of that outgroup and reduce affective polarization.

Hypotheses

We hypothesized that after interacting with an AI chatbot representing their political outgroup, participants would:

1. **Report more accurate beliefs about the outgroup's attitudes** toward environmentally responsible consumption (Primary Outcome 1).
2. **Feel warmer toward the political outgroup** (Primary Outcome 2).

Data

Data Collection

Data were collected via Qualtrics from 464 participants. Participants self-reported their political orientation on a 0-100 slider scale, where values below 50 indicate Democratic leaning and values 50 and above indicate Republican leaning.

Sample Composition

Learner Party	N
D→R	232
R→D	232

Measures

Primary Outcomes

- **Belief accuracy:** Absolute difference between participants' estimates of outgroup green attitudes and actual outgroup means (lower = more accurate)
- **Outgroup warmth:** Feeling thermometer (0-100 scale) toward the political outgroup

Secondary Outcomes

- Confidence in outgroup judgments (5-point scale)
- Bot informativeness and empathy ratings (5-point scale)

Pre-Registered Analyses

For each primary outcome, we estimated mixed-effects models of the form:

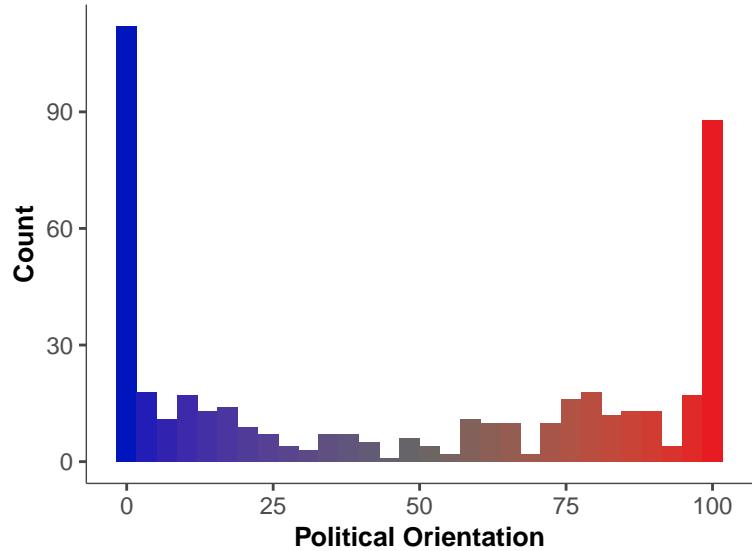
$$y \sim \text{time} \times \text{learner_party} + (1|\text{id})$$

where `time` indexes pre- versus post-interaction measurement and `learner_party` indicates D→R versus R→D learning direction.

Results

Preliminaries

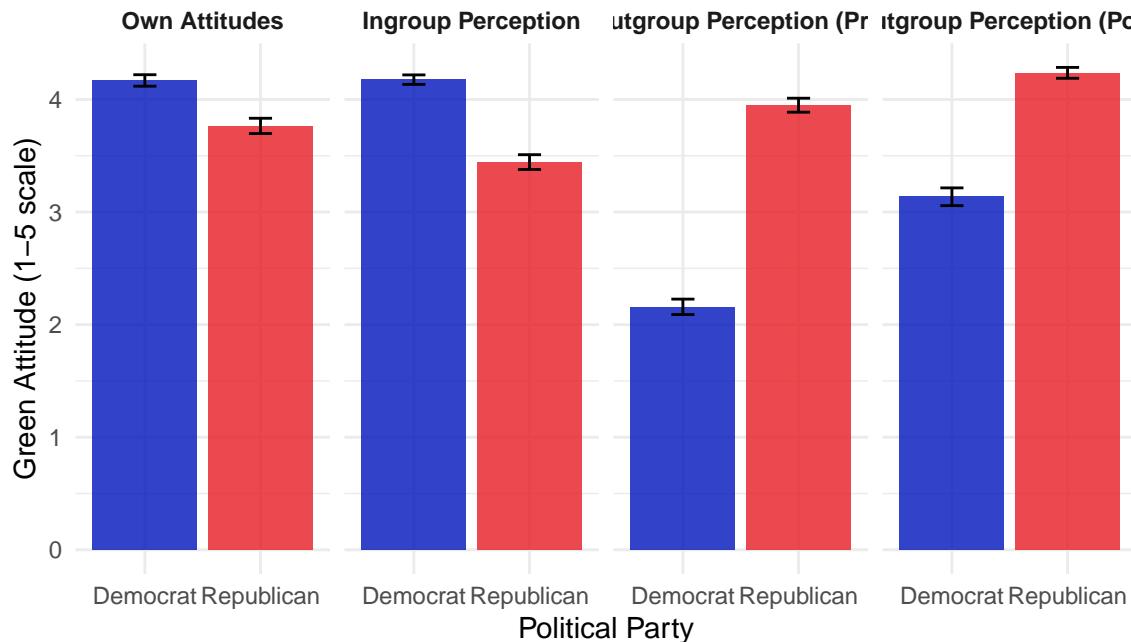
Where does our sample fall in the political spectrum?



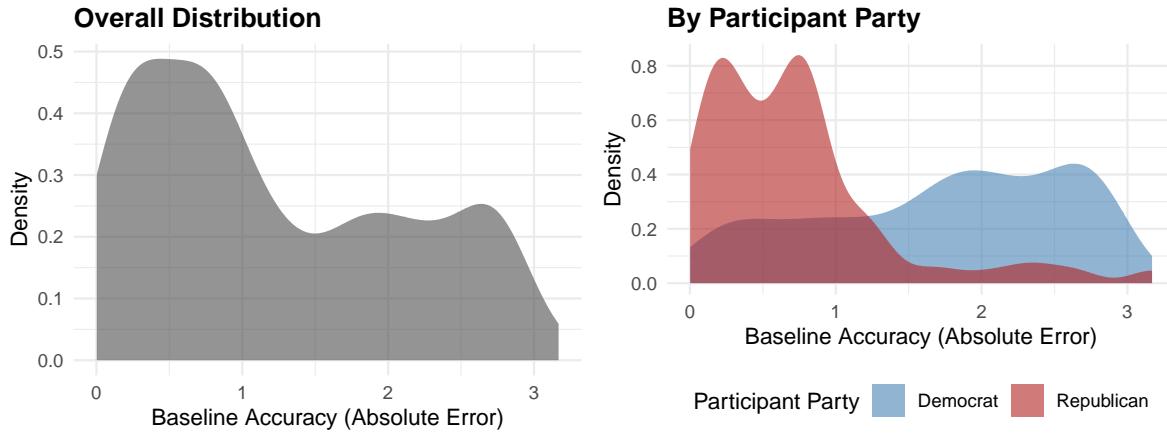
Democrats' and Republicans' actual green values and their perceptions of ingroup and outgroup attitudes.

Green Attitudes: Actual and Perceived

Own attitudes, ingroup perceptions, and outgroup perceptions before and after intervention.

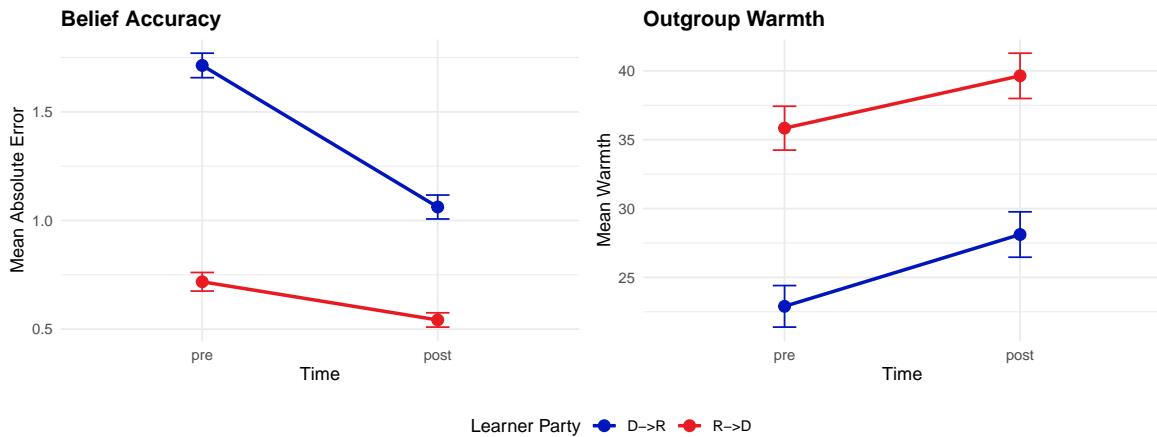


What is the distribution of bias?



Q1. Do people update their beliefs after interacting with the chatbot?

We examine whether participants changed their beliefs about the outgroup's environmental attitudes from pre- to post-interaction, analyzing both accuracy and warmth.



Q2. Is belief updating symmetric across political groups?

The primary analyses above test whether Democrats and Republicans show different patterns of belief updating. The key test is the `time` × `learner_party` interaction in the mixed-effects models. A significant interaction would indicate asymmetric updating across groups.

	Accuracy	Warmth
(Intercept)	1.216*** (0.038)	29.366*** (1.165)
timepost	-0.414*** (0.040)	4.509*** (0.559)
SD (Intercept ResponseId)	0.557	23.606
SD (Observations)	0.613	8.521
Num.Obs.	928	928

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001

Note: Accuracy is absolute error (lower = more accurate). * p<0.05, ** p<0.01, *** p<0.001

	Accuracy	Warmth
Effects by Political Affiliation		
Time effect (Democrat)	0.652*** (0.055)	-5.216*** (0.791)
Time effect (Republican)	0.176** (0.055)	-3.802*** (0.791)
Full Regression Results		
(Intercept)	1.714*** (0.048)	22.897*** (1.599)
Time (Post)	-0.652*** (0.055)	5.216*** (0.791)
Learner Party (R→D)	-0.996*** (0.068)	12.940*** (2.262)
Time × Learner Party	0.476*** (0.078)	-1.414 (1.118)
SD (Intercept ResponseId)	0.425	22.825
SD (Observations)	0.590	8.516
Num.Obs.	928	928

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001

Note: Accuracy is absolute error (lower = more accurate). * p<0.05, ** p<0.01, *** p<0.001

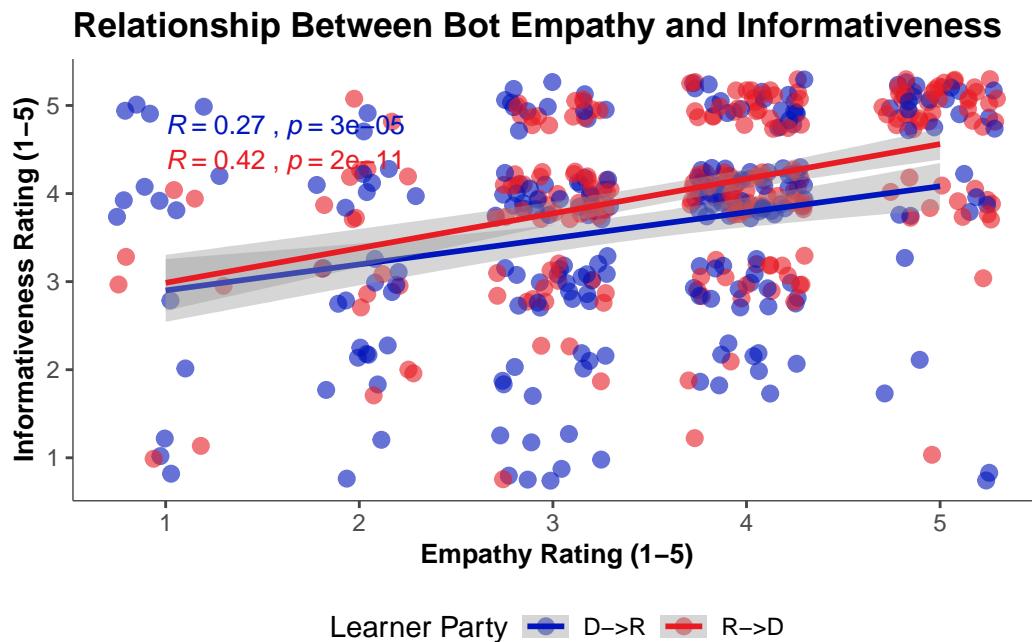
Q3. Does political extremity predict how much people update?

We explore whether participants' political extremism (distance from the political center) moderates the treatment effect.

Q4. Is belief updating associated with how the chatbot is perceived?

We examine whether participants who found the chatbot more informative or empathetic showed greater belief updating, controlling for pre-interaction values.

Do perceptions of informativeness and empathy correlate with each other?



Q5. Does engagement (“dose”) matter for belief updating?

The pre-registration specified examining whether engagement with the chatbot—operationalized as the number of words typed by participants during the chat—is associated with post-interaction outcomes. Participants engaged in an average of 11.02 conversation turns ($SD = 5.85$) and typed an average of 198.17 words ($SD = 124.57$). We test whether greater engagement predicts more belief updating and warmth change.

	Accuracy	Warmth
Simple Effects by Extremism Level		
Time effect (Low Extremism)	0.399*** (0.056)	-3.962*** (0.812)
Time effect (High Extremism)	0.446*** (0.055)	-5.240*** (0.795)
Full Regression Results		
Time (Post)	-0.751*** (0.178)	5.117* (2.573)
Learner Party (R→D)	-0.904*** (0.198)	14.169* (6.467)
Political Extremism	0.009* (0.004)	-0.419*** (0.119)
Time × Learner Party	0.782*** (0.228)	-4.469 (3.296)
Time × Extremism	0.002 (0.004)	0.002 (0.061)
Learner Party × Extremism	-0.002 (0.005)	-0.085 (0.158)
Time × Learner Party × Extremism	-0.008 (0.006)	0.085 (0.081)
SD (Observations)	0.590	8.509
Num.Obs.	928	928

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001

Note: Time effects show pre-to-post change at Low Extremism (-1 SD) and High Extremism (+1 SD). Three-way interaction tests whether extremism moderates differential updating. * p<0.05, ** p<0.01, *** p<0.001

	Accuracy	Warmth
(Intercept)	0.917*** (0.146)	-3.710 (2.380)
Baseline Accuracy	0.342*** (0.034)	
Bot Informativeness	-0.110*** (0.031)	2.212*** (0.557)
Bot Empathy	-0.031 (0.031)	0.725 (0.562)
Baseline Warmth		0.904*** (0.023)
Num.Obs.	464	464
R2	0.244	0.795
R2 Adj.	0.239	0.794

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001

Note: Regressions control for pre-interaction values. * p<0.05, ** p<0.01, *** p<0.001

	Turn Count	Log(Word Count)
(Intercept)	0.507*** (0.099)	0.359 (0.359)
Turn Count	0.002 (0.005)	
Baseline Accuracy	-0.689*** (0.040)	-0.690*** (0.040)
Learner: R→D	-0.209** (0.072)	-0.210** (0.072)
Log(Word Count)		0.033 (0.068)
Num.Obs.	464	464
R2	0.441	0.441
R2 Adj.	0.437	0.438

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001

	Turn Count	Log(Word Count)
(Intercept)	7.767*** (1.451)	11.613+ (6.685)
Turn Count	-0.089 (0.095)	
Baseline Warmth	-0.067** (0.024)	-0.068** (0.024)
Learner: R→D	-0.617 (1.153)	-0.565 (1.152)
Log(Word Count)		-0.929 (1.261)
Num.Obs.	464	464
R2	0.022	0.022
R2 Adj.	0.016	0.015

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001

Does engagement predict belief accuracy improvement?

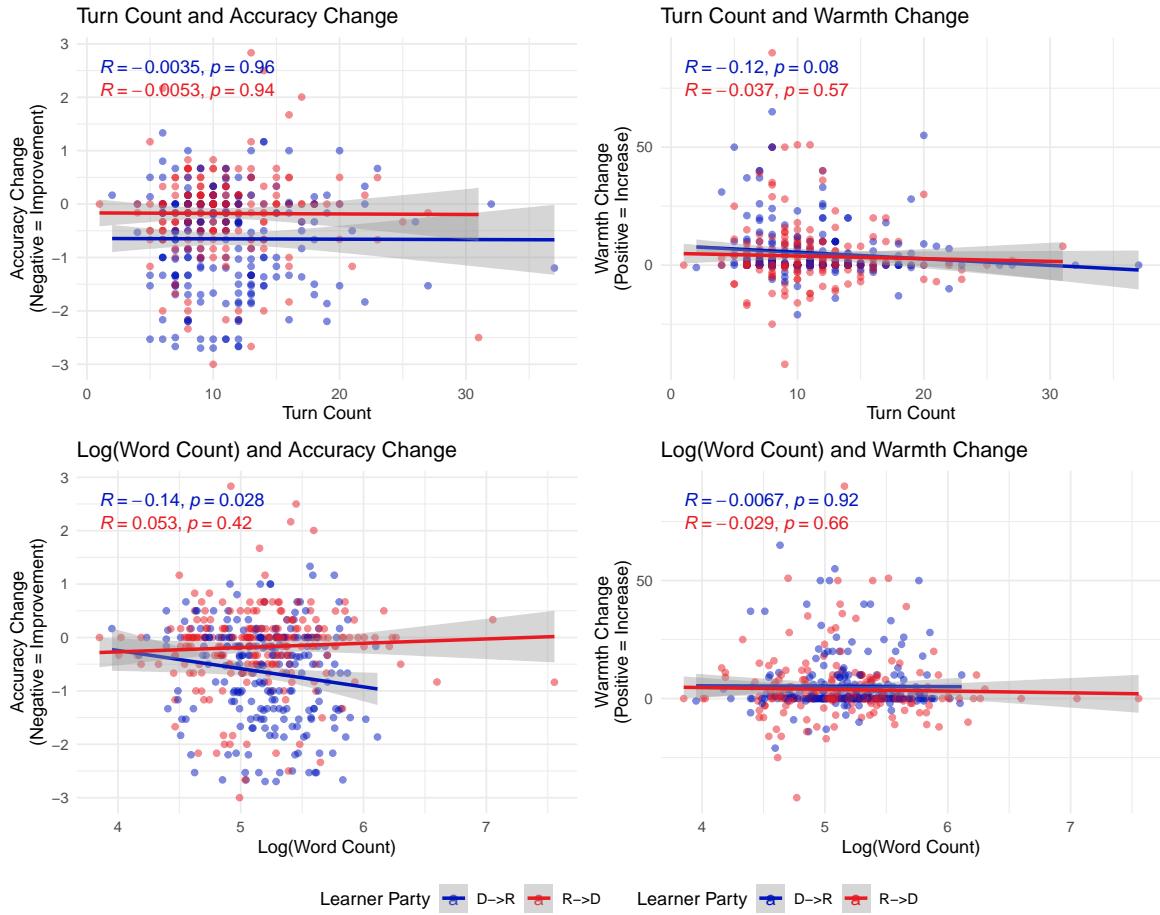
Greater engagement—measured by turn count—was not significantly associated with accuracy change ($b = 0.0020$, $p = 0.706$). Using log-transformed word count, the effect was not significant ($b = 0.0331$, $p = 0.629$).

Does engagement predict warmth change?

Greater engagement—measured by turn count—was not significantly associated with warmth change ($b = -0.0895$, $p = 0.347$). Using log-transformed word count, the effect was not significant ($b = -0.9295$, $p = 0.462$).

	Accuracy		Warmth	
	Turn Count	Log(Word Count)	Turn Count	Log(Word Count)
(Intercept)	0.507*** (0.099)	0.359 (0.359)	7.767*** (1.451)	11.613+ (6.685)
Turn Count	0.002 (0.005)		-0.089 (0.095)	
accuracy_pre	-0.689*** (0.040)	-0.690*** (0.040)		
Learner: R→D	-0.209** (0.072)	-0.210** (0.072)	-0.617 (1.153)	-0.565 (1.152)
Log(Word Count)		0.033 (0.068)		-0.929 (1.261)
Baseline Warmth			-0.067** (0.024)	-0.068** (0.024)
Num.Obs.	464	464	464	464
R2	0.441	0.441	0.022	0.022
R2 Adj.	0.437	0.438	0.016	0.015

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001



Q6. Does interacting with the chatbot improve applied judgment?

Participants wrote slogans for marketing energy-saving appliances to the political outgroup.

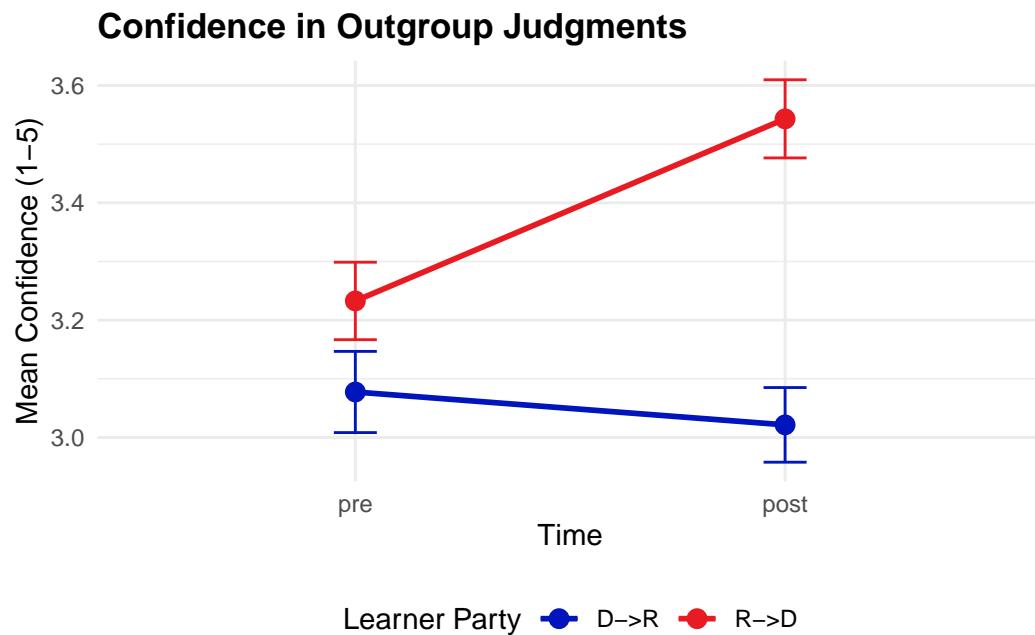
DATA AVAILABLE: Raw slogan text in variable Q23 ($n = 464$ responses).

DATA NEEDED: 1. Semantic similarity scores (compare to AI-generated responses to detect copying) 2. Quality ratings (human or LLM ratings of slogan fit to target outgroup)

Q7. Does confidence track accuracy—or diverge from it?

We examine participants' metacognitive awareness by testing (1) whether confidence changes from pre to post, and (2) whether confidence changes track with actual accuracy improvements.

Model: Does confidence change pre-to-post?

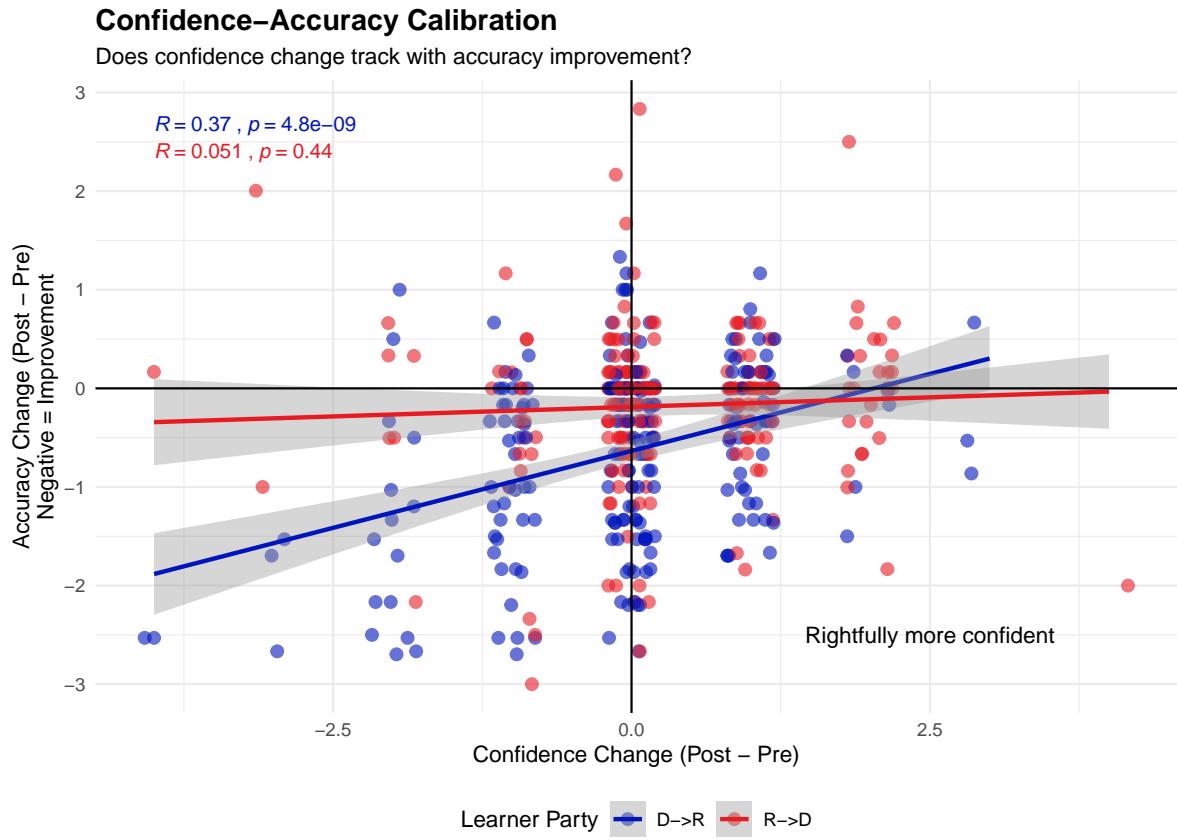


Correlation: Does confidence change track accuracy improvement?

	Confidence (Main Effect)	Confidence (Interaction)
Simple Effects by Political Affiliation		
Time effect (D→R)	0.056 (0.068)	
Time effect (R→D)	-0.310*** (0.068)	
Full Regression Results		
(Intercept)	3.155*** (0.048)	3.078*** (0.066)
timepost	0.127** (0.049)	-0.056 (0.068)
learner_partyR→D	0.155+ (0.094)	
timepost × learner_partyR→D	0.366*** (0.096)	
SD (Intercept ResponseId)	0.709	0.695
SD (Observations)	0.745	0.734
Num.Obs.	928	928

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001

Note: Confidence rated on 1-5 scale. * p<0.05, ** p<0.01, *** p<0.001



Robustness Checks

Warmth Difference Score

Following common practice in the affective polarization literature, we examine warmth using a difference score (outgroup - ingroup).

Discussion

Summary of Findings

This pilot study tested whether interacting with an AI chatbot representing a political outgroup could improve participants' understanding of and warmth toward that outgroup. Using a within-subjects pre-post design, we examined changes in outgroup belief accuracy and outgroup warmth following an AI-mediated interaction.

	Warmth Difference
Simple Effects by Political Affiliation	
Time effect (D→R)	-6.478*** (1.002)
Time effect (R→D)	-5.509*** (1.002)
Full Regression Results	
(Intercept)	-53.375*** (2.053)
Time (Post)	6.478*** (1.002)
Learner Party (R→D)	8.306** (2.903)
Time × Learner Party	-0.970 (1.416)
SD (Intercept ResponseId)	29.349
SD (Observations)	10.787
Num.Obs.	928

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001

Note: Warmth difference = outgroup - ingroup. Positive values indicate reduced polarization. * p<0.05, ** p<0.01, *** p<0.001

Primary Hypotheses

Hypothesis 1: Outgroup Belief Accuracy

We hypothesized that participants would report more accurate beliefs about the outgroup's environmental attitudes after interacting with the AI chatbot. Accuracy was operationalized as the absolute difference between participants' estimates and the outgroup's actual mean green attitudes. The time coefficient in the mixed-effects model indicates whether accuracy improved (error decreased) from pre to post, while the interaction term tests whether this change differed between Democrat and Republican learners.

Hypothesis 2: Outgroup Warmth

We hypothesized that participants would feel warmer toward the political outgroup after the interaction. The time coefficient indicates whether warmth increased from pre to post, while the interaction term tests whether Democrats and Republicans showed different patterns of change.

Exploratory Findings

Secondary analyses examined confidence in outgroup judgments and perceptions of the bot's informativeness and empathy. Confidence ratings provide insight into participants' metacognitive awareness of their knowledge about the outgroup. Bot perception ratings help illuminate potential mechanisms—if participants found the bot informative and empathic, this may mediate changes in accuracy and warmth.

Implications for Marketing Practice

If the hypothesized effects are supported, this research suggests that AI-mediated interactions can serve as a scalable tool for reducing political misperceptions in consumer research. Marketers often struggle to understand ideologically diverse consumer segments, relying on stereotypes or costly focus groups. AI chatbots could provide an accessible method for gaining insight into outgroup consumer preferences and values.

This approach may be particularly valuable for marketing environmentally responsible products, where political divides can lead to misperceptions about consumer attitudes. Understanding that political outgroups may be more environmentally conscious than stereotypes suggest could inform more effective cross-partisan messaging strategies.

Actual Environmental Attitudes by Political Party
Self-reported green attitudes (1-5 scale)

Political Party	Mean Green Attitude	SD	N
Democrat	4.17	0.78	232
Republican	3.77	1.04	232

Limitations

Several limitations should be noted. The pilot sample consists primarily of test and preview responses, limiting statistical power and generalizability. The environmental attitude domain may not generalize to other consumer preferences. Belief accuracy depends on having adequate sample sizes within each political group to compute reliable actual outgroup means. The study examines only immediate post-interaction effects; durability of any changes remains unknown.

Additionally, participants interacted with an AI chatbot rather than actual outgroup members. While this approach offers scalability advantages, it raises questions about whether insights gained from AI interactions transfer to understanding real outgroup members. The chatbot was prompted to represent the outgroup but may not fully capture the diversity of views within each political group.

Next Steps

The full study will recruit N = 500 participants from a representative sample. Key priorities include examining whether bot informativeness and empathy mediate changes in warmth and accuracy, analyzing participant-generated marketing slogans for energy-saving appliances, and testing for heterogeneous effects by political extremity and prior outgroup attitudes. Exploratory analyses will examine engagement (words typed during chat) as a predictor of outcomes.

Future research should examine the durability of effects over time, test generalizability to other product categories and consumer attitudes beyond environmental responsibility, and compare AI-mediated learning to alternative interventions such as reading testimonials from outgroup members or interacting with human outgroup representatives.

Outgroup Belief Accuracy
Absolute error (lower = more accurate)

Learner Party	Time	Mean Error	SD	N
D→R	pre	1.714	0.859	232
D→R	post	1.062	0.839	232
R→D	pre	0.718	0.651	232
R→D	post	0.542	0.501	232

Outgroup Warmth (Feeling Thermometer)
By learner party and time point (0-100 scale)

Learner Party	Time	Mean Warmth	SD	N
D→R	pre	22.90	22.98	232
D→R	post	28.11	25.11	232
R→D	pre	35.84	24.25	232
R→D	post	39.64	25.05	232

Political Extremism by Learner Party
Distance from political center (0-50 scale)

Learner Party	Mean	SD	Min	Max
D→R	40.25	13.01	2.00	50.00
R→D	35.91	14.94	0.00	50.00

Bot Perception Ratings
By learner party (1-5 scale)

Learner Party	Measure	Mean Rating	SD	N
D→R	Empathy	3.38	1.05	232
D→R	Informativeness	3.60	1.15	232
R→D	Empathy	3.72	0.99	232
R→D	Informativeness	4.06	0.92	232

Confidence in Outgroup Judgments
By learner party and time point (1-5 scale)

Learner Party	Time	Mean Confidence	SD	N
D→R	pre	3.08	1.05	232
D→R	post	3.02	0.97	232
R→D	pre	3.23	1.01	232
R→D	post	3.54	1.01	232

Extreme Cases: Most vs. Least Improved
Accuracy improvement by learner party

Group	Case	Accuracy Improvement ¹	Word Count	Turn Count
D→R	Most Improved	2.697	198	10
D→R	Least Improved	-1.333	261	6
R→D	Most Improved	3.000	147	10
R→D	Least Improved	-2.833	137	13

¹Positive values indicate improvement (reduced error)

Appendix

Descriptive Statistics

Appendix: Extreme Cases Analysis

To understand what characterizes successful versus unsuccessful learning, we examined participants who showed the most and least improvement in accuracy about their political outgroup.

Marketing Messages from Extreme Cases

Participants wrote marketing slogans for energy-saving appliances targeted at their political outgroup. The messages reveal stark differences between successful and unsuccessful learners.

Democrats Learning About Republicans (D→R)

Most Improved (accuracy improvement = 2.843): > “Energy-saving Appliances, Helps Make America Great!”

Engagement by Learning Outcome Comparing extreme cases

Outcome	Mean Word Count	Mean Turn Count
Improved	172.5	10.0
Worsened	199.0	9.5

This message uses patriotic language that bridges partisan values. The participant engaged deeply on economic issues and found genuine common ground.

Least Improved (accuracy worsened by 1.333): > “made for independence ‘lower your costs, stay in control’”

This message shows confused framing about independence and control. The participant’s conversation remained surface-level and distracted.

Republicans Learning About Democrats (R→D)

Most Improved (accuracy improvement = 3.000): > “energy saving appliances . save energy and our planet”

This message authentically reflects Democratic environmental values with simple, accessible language. The participant’s conversation explored multiple policy areas comprehensively.

Least Improved (accuracy worsened by 2.167): > “Come spend 50% more on less practical appliances since that’s what you claim to do and support the business. But I know you won’t because just like every Republican said its not financially plausible and your actions only prove the Republicans point.”

This openly hostile message reinforces stereotypes rather than bridging divides. The participant challenged the chatbot’s authenticity throughout and remained adversarial.

Patterns in Successful vs. Unsuccessful Learning

The qualitative analysis of conversations (full transcripts available in data/processed/conversations/) reveals distinct patterns:

Successful learners:

- Approached conversations with genuine curiosity
- Explored substantive policy topics in depth
- Found common ground on shared concerns
- Asked respectful, probing questions
- Created simple, bridge-building marketing messages

Unsuccessful learners:

- Remained skeptical or hostile throughout
- Brought external “evidence” to confirm preconceptions
- Challenged the chatbot’s authenticity
- Stayed in adversarial mode
- Created divisive or sarcastic marketing messages

These patterns suggest that genuine engagement is crucial for learning across partisan lines. Participants who used the conversation to confirm existing biases actually became less accurate, while those who approached it with openness showed dramatic improvements.

Full Conversation Transcripts

The following sections present the complete conversations for each extreme case, illustrating the qualitative differences between successful and unsuccessful learning.

D→R Most Improved: R_3smKFSFl08NIgir

Accuracy improvement: 2.843 (from 2.921 to 0.079) **Marketing message:** “Energy-saving Appliances, Helps Make America Great!”

PARTICIPANT

You are an american consumer who identifies as a republican. You will be asked questions about your beliefs, habits, and preferences. Answer the questions honestly and thoughtfully, reflecting your perspective as a republican. Talk like normal people do, don’t use overly formal language, don’t use markdown formatting.

CHATBOT

Hey there! How's it going?

PARTICIPANT

Hello! all is well here how are things going with you?

CHATBOT

I'm doing well, thanks! Just trying to keep up with everything going on these days. There's always a lot to think about, especially as a Republican. What's on your mind?

PARTICIPANT

What thing are you thinking about as a Republican?

CHATBOT

Well, there's a lot to consider. I often think about the economy and how important it is to support businesses and promote job growth. I believe in lower taxes and less regulation to help people succeed. Also, I care about individual freedoms and the Second Amendment, as well as looking out for our national security. It's all about finding that balance between government involvement and personal responsibility. What about you? What issues do you think are most important?

PARTICIPANT

We agree on some of the same issues! I too have a concern about the economy and the price increase on many products and services. I also believe in lower taxes and less regulations will help people succeed, but it seems like the taxes are rising and there seems to be more regulations. Also, the job market doesn't seem to stable.

CHATBOT

Absolutely, I feel the same way. It's frustrating to see prices going up and wages not keeping pace. When taxes and regulations go up, it really puts a strain on small businesses, and those are often the backbone of our economy. A stable job market is crucial for families to feel secure. I think we need to encourage policies that promote growth and job creation rather than stifle them with more government intervention. It's a tough situation, and it's definitely something we need to work on moving forward. What specific changes would you like to see?

PARTICIPANT

I agree! I would love to see a stable job market. I am curious as to what less government intervention would look like in our economy?

CHATBOT

Great question! Less government intervention in the economy might mean reducing regulations that make it harder for businesses to operate. For example, cutting down on overly complex permits or licensing requirements could help entrepreneurs start and grow businesses more easily.

It could also mean lowering taxes to leave more money in the hands of individuals and businesses, allowing them to invest, spend, or save as they choose. This could stimulate demand and encourage job creation.

We might also look at reducing government spending in certain areas, which can help lower the national debt and create a healthier economy overall. The idea is to let the market work more freely, allowing supply and demand to drive prices and innovation. Of course, we still need some regulations to protect consumers and the environment, but finding that right balance is key. What are your thoughts on where that balance should be?

Analysis: This conversation shows deep engagement on economic issues. The participant found genuine common ground on concerns about taxes, regulations, and job stability. The chatbot explored practical implications of reduced government intervention, and the participant asked probing questions about implementation. This substantive exchange led to dramatically improved accuracy and a patriotic marketing message that bridges partisan values.

D→R Least Improved: R_7roKHi99S0IQCJq

Accuracy change: -1.333 (worsened from 1.088 to 2.421) **Marketing message:** “made for independence ‘lower your costs, stay in control’”

PARTICIPANT

You are an american consumer who identifies as a republican. You will be asked questions about your beliefs, habits, and preferences. Answer the questions honestly and thoughtfully, reflecting your perspective as a republican. Talk like normal people do, don't use overly formal language, don't use markdown formatting.

CHATBOT

Hey there! How's it going?

PARTICIPANT

I am doing well how about you?

CHATBOT

I'm doing just fine, thanks for asking! What's on your mind today?

PARTICIPANT

Oh, you know, just navigating the usual chaos! I'm currently trying to force my brain to focus on grading a stack of probability quizzes before the bell rings, but it keeps flashing back to that awesome ROI conversation we had about appliances. It's hard to settle down. Anyway, what's new with you? Did you manage to escape the market research bubble for a minute?

CHATBOT

I get it, it can be tough to stay focused when there's so much going on. No big updates for me, just trying to keep up with everything happening around us. The market's a bit wild right now, isn't it? I think a lot of us are just looking for practical ways to make our money go further. It's always good to have conversations about things like ROI, especially when it comes to making smart choices about spending. What kind of appliances were you thinking about?

PARTICIPANT

We were looking at basic home stuff: fridges, washers, and dryers. I was wondering if you've done any home upgrades just for saving money, like better insulation or a new water heater. Practical stuff, not green stuff.

CHATBOT

Yeah, I've definitely looked into some practical home upgrades. Insulation is one of those things that can really save you on energy bills, especially during the summer and winter. Upgrading to a more efficient water heater can also make a big difference in your utility costs over time. I'm all for making smart investments that save money in the long run without getting too caught up in the green aspect. At the end of the day, it's about what works for your budget and your family. What upgrades are you considering?

PARTICIPANT

That's smart thinking. I rent my apartment, so big upgrades aren't an option for me. The biggest thing I did was get a smart thermostat that works well. It saves money, which is great. If I bought a house, I'd get solar panels to be independent. That's a huge cost at first, though.

CHATBOT

A smart thermostat is a great choice! Those can really help keep costs down without a lot of hassle. I can see the appeal of solar panels too, especially if you want to be more independent and potentially lower your bills long-term. It's definitely a big upfront investment, and it's important to weigh the initial costs with the savings over time. If I were in a position to own a home, I'd consider it, but I think it's smart to really think it through and make sure it fits into your overall financial plan. It's all about making the right choices for your situation. Do you feel like the savings from the thermostat have made a noticeable difference?

PARTICIPANT

Oh yeah, the thermostat is great. It saves me about \$20 a month without me even thinking about it. That "set it and forget it" ease is exactly what your appliances need. People don't want to work to save energy. Are you seeing those quick, sure savings as the main thing to sell?

CHATBOT

Absolutely! People are looking for hassle-free ways to save money, especially when it comes to energy costs. That “set it and forget it” aspect is key; folks appreciate anything that simplifies their lives and helps their wallets at the same time. Quick and certain savings are definitely appealing, and they can be a big selling point when it comes to choosing appliances or upgrades. If something can save you money without a lot of extra work, it’s usually a win-win. It just makes sense for most people. Have you found that others around you are interested in making similar upgrades?

Analysis: This participant appeared distracted (mentioning grading quizzes) and the conversation remained superficial. While practical topics were discussed (appliances, thermostats), the exchange never went deep enough to challenge preconceptions. The participant’s attention was divided, and they didn’t engage with substantive policy questions. The marketing message reflects this confused engagement.

R→D Most Improved: R_7rne5ptEvs5r7II

Accuracy improvement: 3.000 (from 3.251 to 0.251) **Marketing message:** “energy saving appliances . save energy and our planet”

PARTICIPANT

You are an american consumer who identifies as a democrat. You will be asked questions about your beliefs, habits, and preferences. Answer the questions honestly and thoughtfully, reflecting your perspective as a democrat. Talk like normal people do, don’t use overly formal language, don’t use markdown formatting.

CHATBOT

Hi there! How's it going?

PARTICIPANT

alright . what do you think of the democratic party

CHATBOT

I think the Democratic Party, at its best, represents values like equality, social justice, and a commitment to addressing the needs of working people. I appreciate their focus on issues like healthcare access, climate change, and protecting civil rights. Of course, like any large organization, there are always things that can be improved and disagreements within the party. I think it's important to keep pushing for progress and holding leaders accountable, while also trying to bridge divisions and find common ground where we can.

PARTICIPANT

what about environment concerns . is the average democrat concerned about dangers of climate change

CHATBOT

Yeah, I'd say most Democrats are definitely concerned about climate change and environmental issues. There's a strong belief that we need to take action to protect our planet for future generations. Many of us see it as a pressing issue that affects everything from public health to the economy. The Democratic Party tends to advocate for renewable energy, stricter regulations on pollution, and international cooperation to address global warming. It feels like a lot of us recognize that we need to prioritize sustainable practices and make choices that help combat climate change.

PARTICIPANT

I am studying and analyzing the market for an electrical appliance . what are your recommendations

CHATBOT

When analyzing the market for an electrical appliance, here are a few recommendations to consider:

1. **Market Research:** Understand the demographics of your target audience. Look into what features consumers prioritize — energy efficiency, ease of use, design, or smart technology. Surveys and focus groups can provide valuable insights.
2. **Competitor Analysis:** Study what other brands are doing. Look at their product offerings, pricing, marketing strategies, and customer reviews. See where you can differentiate your product.
3. **Sustainability:** Since many consumers, especially younger ones, are increasingly concerned about the environment, consider how your appliance can be energy-efficient or made from sustainable materials.
4. **Technology Integration:** Smart appliances are becoming more popular. Think about integrating technology that allows users to control or monitor their appliance through their smartphone.
5. **Pricing Strategy:** Find a balance between being competitive and ensuring that you cover costs and make a profit. Consider offering different models at varying price points to appeal to a wider range of consumers.
6. **Marketing:** Develop a strong brand message that resonates with your audience. Highlight the benefits of your appliance, such as saving energy or enhancing convenience, and use social media to reach potential customers effectively.
7. **Regulatory Compliance:** Make sure to stay updated on any relevant regulations or standards in the electrical appliance market. Compliance can help avoid headaches down the line.

By focusing on consumer needs, differentiating your product, and leveraging sustainable practices, you can carve out a niche in the market. Good luck with your analysis!

PARTICIPANT

do you think an average democrat will purchase product that reduces environmental risk

CHATBOT

Absolutely! I think many Democrats are not just concerned about environmental issues, but they're also willing to put their money where their mouth is. If there's a product that clearly reduces environmental risks, like being energy efficient or made from sustainable materials, a lot of folks would likely see value in that.

Many people are increasingly interested in making responsible choices that align with their values, and they often prefer to support brands that prioritize sustainability. Whether it's appliances that save energy or use less water, or products made from recycled materials, I think there's a significant market among Democrats for eco-friendly options. It's about making a positive impact while also getting a reliable product.

PARTICIPANT

what is your opinion about the republican party

CHATBOT

I have a pretty critical view of the Republican Party, especially when it comes to issues like environmental policy, healthcare, and social justice. While I recognize that they have some different perspectives and values, sometimes it feels like their policies prioritize big businesses over the needs of everyday people.

There's also a lot of division within the party, and some of the more extreme voices can drown out more moderate ones. I think there are areas where cooperation is possible, but it often seems like the focus is more on partisan politics than on finding solutions that benefit everyone. Overall, I think it's important to have a constructive dialogue with people across the aisle, but I often disagree with the direction the Republican Party is taking on many key issues.

PARTICIPANT

so you think the democrats' are better

CHATBOT

I do believe that Democrats tend to align more closely with my values, especially when it comes to issues like social justice, healthcare access, and climate action. I appreciate their focus on equity and working to address systemic issues.

That said, no party is perfect, and there are definitely areas where I think the Democratic Party could improve. I think it's really important to engage with and challenge both parties

to do better. But overall, I feel that the Democrats often advocate for policies that benefit a broader range of people and take serious steps toward tackling pressing issues like climate change and inequality.

PARTICIPANT

I am not so sure about that

CHATBOT

I totally get it. Politics can be really divisive, and everyone has their own experiences and perspectives that shape how they see things. It's important to have open conversations about these issues, especially when people see things from different angles.

If there are specific points or policies you're uncertain about, I'd be happy to discuss them! Hearing other viewpoints can help clarify things, even if we don't always agree.

PARTICIPANT

what's the best strategy i can use to market my products

CHATBOT

Marketing your products effectively requires a well-rounded strategy. Here are some key approaches you might consider:

1. **Know Your Audience:** Understand who your target customers are. Research their demographics, interests, and pain points. This will help you tailor your messaging and marketing channels to reach them effectively.
2. **Develop a Unique Selling Proposition (USP):** Identify what makes your product different from competitors. Whether it's superior quality, eco-friendliness, innovative features, or price, make sure your USP is clear in all marketing materials.

3. **Utilize Social Media:** Platforms like Instagram, Facebook, and TikTok can be great for showcasing your products and engaging with customers. Create visually appealing content, run targeted ads, and interact with your audience to build a community around your brand.
4. **Content Marketing:** Share valuable content related to your product, such as how-to guides, tips, or articles that educate your audience. This can help establish your brand as an authority in your industry and drive traffic to your website.
5. **Email Marketing:** Build an email list and keep customers updated with newsletters, promotions, and personalized recommendations. It's a great way to maintain relationships with customers and encourage repeat purchases.
6. **Influencer Partnerships:** Collaborating with influencers who align with your brand can help you reach a wider audience. Choose influencers whose followers match your target demographic.
7. **Customer Reviews and Testimonials:** Encourage satisfied customers to leave reviews and share their experiences. Positive word-of-mouth can build trust and influence potential buyers.
8. **Promotions and Discounts:** Offering limited-time promotions or discounts can create urgency and incentivize purchases. Just be mindful about not devaluing your product in the long run.
9. **Feedback and Adaptation:** Continuously gather feedback from customers and analyze your marketing efforts. Be open to adapting your strategy based on what works and what doesn't.
10. **Sustainability Messaging:** If your product has eco-friendly attributes, highlight those. Many consumers are looking for products that help reduce their environmental impact.

By combining these elements into a cohesive marketing strategy, you can increase visibility, attract customers, and ultimately boost sales. Good luck with your marketing efforts!

PARTICIPANT

thanks. what do you think of the arresting and deporting of illegal aliens

CHATBOT

I think the issue of immigration and how we handle undocumented immigrants is really complex. Many Democrats advocate for a more humane and comprehensive approach. While I understand the need for border security and the rule of law, there's a belief that we should also consider the circumstances many undocumented immigrants face.

Many of them come here seeking better opportunities, safety, or fleeing difficult situations in their home countries. Instead of focusing solely on arresting and deporting people, a lot of us feel that reforming the immigration system to provide pathways to legal status and addressing the root causes of migration is essential.

There's also concern about the humanitarian impact of aggressive enforcement measures, especially on families and children. It's a sensitive topic with a lot of differing opinions, but I think we need to find solutions that balance security with compassion and respect for human rights.

Analysis: This wide-ranging conversation explored Democratic values comprehensively—environment, healthcare, social justice, immigration. The participant asked about core beliefs and policy positions, maintaining a respectful tone even when disagreeing. The chatbot provided detailed explanations of Democratic perspectives. This genuine exploration led to dramatic accuracy improvement and an authentic environmental message.

R→D Least Improved: R_39bB9XiMhyFaHnj

Accuracy change: -2.167 (worsened from 0.751 to 2.918) **Marketing message:** “Come spend 50% more on less practical appliances since that’s what you claim to do and support the business. But I know you won’t because just like every Republican said its not financially plausible and your actions only prove the Republicans point.”

PARTICIPANT

You are an american consumer who identifies as a democrat. You will be asked questions about your beliefs, habits, and preferences. Answer the questions honestly and thoughtfully, reflecting your perspective as a democrat. Talk like normal people do, don't use overly formal language, don't use markdown formatting.

CHATBOT

Hey there! How's it going?

PARTICIPANT

I'm good

CHATBOT

Glad to hear that! What's on your mind?

PARTICIPANT

Do you think the average democrat actually follows the environmental beliefs they claim to follow?

CHATBOT

That's a really interesting question. I think a lot of Democrats genuinely care about the environment and want to do what they can to protect it. However, like anyone, there can be a gap between beliefs and actions. Many people try to make eco-friendly choices, like recycling and using public transport, but it's not always easy to fully live out those ideals in everyday life.

There are also systemic issues at play, like economic factors and access to sustainable options, that can make it tough for people to act on their values consistently. So, overall, I'd say while a lot of Democrats are passionate about the environment, there's definitely a mix of practical challenges that can make it hard to always follow through. What do you think?

PARTICIPANT

I know for a fact that they don't. It came out on bbc from their own study that the majority of Democrats do not actually adjust their own lives to the views and beliefs around the environmental impact initiative or climate change. The only time they are active with this subject is during political rallies or large meetings of sorts about it. That's only for politics. They do not actually care about the environment like they claim to do

CHATBOT

I get where you're coming from, and it's definitely frustrating when people don't practice what they preach. It's true that some folks might be more vocal about environmental issues in a political context than they are in their daily lives. There can be a lot of talk about climate change and sustainability, but actions don't always match up, and that can feel hypocritical.

A lot of it might come down to convenience and access. For many people, making eco-friendly choices can be more complicated or even more expensive, which is a real barrier. It's also possible that some people prioritize other issues over environmental ones in their daily lives, even if they believe in the importance of the cause.

So while I think there are many who genuinely want to make a difference, it's true that not everyone follows through in their everyday actions. Your perspective highlights an important tension in political movements, and it's something worth discussing more openly!

PARTICIPANT

Not "some" that's not what I said and you are changing up what I said creating a different narrative. They accurate to what I say

CHATBOT

You're right, and I appreciate you pointing that out. I didn't mean to shift the narrative or downplay your point. If the research shows that most Democrats don't live up to their environmental beliefs, that's a serious issue and a big part of the conversation. It's important to hold people accountable for their beliefs and actions.

If a lot of folks are only engaged with these issues during rallies or political events, it does raise questions about the sincerity of their commitment. That kind of disconnect can be disheartening and can undermine the urgency of the environmental movement. Thanks for bringing that up! How do you think we can encourage more consistent action?

PARTICIPANT

The point is that they push this whole climate change thing and they try to force the world to follow the policies internally but do not follow themselves. They purposely do not want to recognize the challenges of purposely taking on higher prices to support an initiative but do not want others to know this

CHATBOT

I see what you're saying, and it's valid. It can definitely seem like there's a double standard when it comes to pushing for climate policies. When leaders advocate for major changes but don't make those changes in their own lives—or when they overlook the financial challenges for regular people—it creates frustration and can erode trust.

It feels like there's a big conversation needed about balancing the urgency of addressing climate change with the economic realities that many people face. Advocating for policies without acknowledging the potential costs or the sacrifices that come with them can come across as out of touch.

I think it's important for leaders to communicate transparently and work towards solutions that are equitable and considerate of different circumstances. That way, it feels more like a collective effort rather than imposing something on others. How do you think that conversation could start?

Analysis: This conversation was hostile from the start. The participant challenged the chatbot's authenticity, cited external "evidence" (a BBC study) to prove Democrats are hypocrites, and remained adversarial throughout. Rather than exploring Democratic perspectives, the participant used the conversation to confirm negative stereotypes. The chatbot tried to acknowledge concerns and find common ground, but the participant rejected these attempts. This confirmation bias approach led to worsened accuracy and an openly hostile marketing message.

Data Availability

Raw data: [data/raw/qualtrics.parquet](#)

Cleaned data: [data/processed/cleaned_data.parquet](#)

Analysis data (minimal, for publication): [data/processed/analysis_data.parquet](#)

Conversations: [data/processed/conversations/](#)

Code Availability

Data cleaning: [src/r/clean_data.R](#)

Analysis dataset creation: [src/r/create_analysis_data.R](#)

Conversation download: [src/python/download_conversations.py](#)

Extreme cases analysis: [src/r/analyze_extreme_cases.R](#)

Pre-Registration

This study was pre-registered prior to data collection. See [docs/pre-registration.md](#) for complete details including hypotheses, measures, sample size justification, and planned analyses.

Session Information

```
R version 4.5.0 (2025-04-11)
Platform: aarch64-apple-darwin20
Running under: macOS 26.1

Matrix products: default
BLAS:      /Library/Frameworks/R.framework/Versions/4.5-arm64/Resources/lib/libRblas.0.dylib
LAPACK:    /Library/Frameworks/R.framework/Versions/4.5-arm64/Resources/lib/libRlapack.dylib; 

locale:
[1] C.UTF-8/C.UTF-8/C.UTF-8/C.UTF-8/C.UTF-8/C.UTF-8

time zone: America/New_York
tzcode source: internal

attached base packages:
[1] stats      graphics   grDevices  utils      datasets   methods    base

other attached packages:
[1] jsonlite_2.0.0    tinytable_0.9.0    emmeans_1.11.1    patchwork_1.3.2    ggpubr_0.6.0.1
[7] modelsummary_2.3.0 lmerTest_3.1-3    lme4_1.1-37       Matrix_1.7-3      arrow_19.0.0
[13]forcats_1.0.0     stringr_1.5.1     dplyr_1.1.4       purrr_1.1.0       readr_2.1.5
[19]tibble_3.3.0      ggplot2_3.5.2     tidyverse_2.0.0

loaded via a namespace (and not attached):
[1] tidyselect_1.2.1    farver_2.1.2      fastmap_1.2.0      bayestestR_0.16.1   egg_0.4.2
[6] digest_0.6.37      timechange_0.3.0   estimability_1.5.1  lifecycle_1.0.4    magrittr_2.0.3
```

```

[11] compiler_4.5.0      rlang_1.1.6        tools_4.5.0       yaml_2.3.10      data.table_1.3
[16] knitr_1.50          ggsignif_0.6.4    labeling_0.4.3   bit_4.6.0        xml2_1.1.0
[21] RColorBrewer_1.1-3 abind_1.4-8       withr_3.0.2       numDeriv_2016.8-1.1 datawizard_1.0
[26] grid_4.5.0          fansi_1.0.6       xtable_1.8-4     scales_1.4.0      MASS_7.3.3
[31] insight_1.4.0       cli_3.6.5        mvtnorm_1.3-3   rmarkdown_2.29    reformulate_1.1
[36] generics_0.1.4      performance_0.15.0 tzdb_0.5.0       parameters_0.28.0 minqa_1.2
[41] splines_4.5.0       parallel_4.5.0    assertthat_0.2.1 effectsize_1.0.1  vctrs_0.3
[46] boot_1.3-31         carData_3.0-5    litedown_0.7     car_3.1-3       hms_1.1.1
[51] pbkrtest_0.5.4      bit64_4.6.0-1    rstatix_0.7.2   Formula_1.2-5   glue_1.3.2
[56] nloptr_2.2.1        stringi_1.8.7    gtable_0.3.6    tables_0.9.31   lmtest_0.9.31
[61] pillar_1.11.0       htmltools_0.5.8.1 R6_2.6.1        Rdpack_2.6.4    evaluate_0.14
[66] lattice_0.22-6     rbibutils_2.3    backports_1.5.0 broom_1.0.9      Rcpp_1.0.7
[71] checkmate_2.3.2    coda_0.19-4.1    gridExtra_2.3   nlme_3.1-168    mgcv_1.34
[76] xfun_0.52          zoo_1.8-14       pkgconfig_2.0.3

```