

# Reducing Negative Attitudes Towards Immigrants – The Role of Prior Attitudes and Argument Style

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## Abstract

Xenophobia and anti-immigrant sentiments have been increasing in Western democratic countries, and it is important to understand how messaging can improve attitudes towards immigrants. Past studies show prior attitudes are associated with how individuals evaluate related arguments. The present study ( $N = 349$ ) explores if people's prior attitudes influence how they evaluate the strength of arguments in the context of immigration. We also test whether the style of argument (i.e., narrative or statistical) influences argument evaluation. We measured participants' attitudes towards immigrants before and after an argument evaluation task, where participants rated the quality of a narrative and statistical argument. Participants with high pre-existing negative attitudes towards immigrants rated pro-immigrant arguments poorly and anti-immigrant arguments strongly, and we see the opposite relationship for participants with pre-existing positive attitudes towards immigrants. Our findings demonstrate that people can evaluate the same arguments about immigrants very differently depending on their pre-existing attitudes and that argument style can affect argument evaluation.

**Keywords:** attitude revision; argument quality; reasoning; immigrants

## Introduction

There has been an increase in xenophobia and anti-immigrant sentiment in Western democratic countries over the past few decades (Marris, 2023). Growing political polarisation, around immigrants (e.g., Silver, 2022), has coincided with a rise in disinformation on these issues (Enock et al., 2024). For example, erroneous information showing immigrants and immigration in a negative light can have dire consequences, with recent examples including far-right riots in the UK in the summer 2024 and the shift to the far-right in many European democracies. It is important to understand how anti-immigrant messages contribute to a shift in attitudes towards immigrants and if pro-immigrant messages can have a countering effect.

Past research on changing negative attitudes towards immigrants has mostly involved interventions aimed at changing peoples' policy attitudes, where arguments about immigration are presented to participants and their shift in policy attitudes (e.g. policies regarding the number of immigrants that a country should take in) is assessed (Abascal

et al., 2021; Dennison, 2022; Grigorieff et al., 2020; Voelkel et al., 2022). This research has found mixed effects. Some studies have focused on challenging specific misconceptions about immigrants, such as the percentage of immigrants who are unemployed. These studies found that people update their attitudes in line with the specific corrected information but did not change their attitudes towards policy or behaviours towards immigrants, such as donations or petition signatures (Barrera et al., 2020; Grigorieff et al., 2020). Wojcieszak & Kim (2016) tested narrative and statistical information interventions that are either pro-immigrant (focusing on the legalization of illegal immigration), or anti-immigrant and find that statistical messages were more effective at producing attitude change, albeit at small effect sizes. Facchini et al.'s (2022) study similarly tested the effects of narrative and statistical information on changing policy attitudes towards immigrants in Japan, and find that their interventions led to more positive attitudes on policy issues (namely, supporting the increase of the number of immigrants to Japan). However, they find no systematic differences between the effectiveness of the narrative and statistical messages.

There are few studies that have considered the effects of corrective information on more general attitudes towards immigrants and immigration, as opposed to attitudes towards specific policy. Hopkins et al. (2019) tested a fact-checking intervention that corrected misperceptions about the sizes of immigrant populations in the U.S. and found that while it was successful at challenging specific misperceptions about immigrant group sizes, it did not change their broader attitudes towards immigrants. That is, it changed their attitudes towards a specific sub-issue, but did not change their general attitude. Wright and colleagues (2020, 2021) included general measures of attitudes towards immigrants as their outcome measures in their study, where they presented participants with videos showing either pro- or anti-immigrant messaging. While they did find that participants' post-test attitudes differed based on which treatment they were assigned to, these effect sizes were quite small, and

there was no measure of pre-test attitudes to measure whether the intervention changed participants' individual attitudes.

Much of the existing research on changing attitudes towards immigrants does not include direct measures of attitude or argument strength. To better understand what makes an intervention successful, it seems relevant to further unpack when and what kinds of arguments about immigrants are effective at changing attitudes towards immigrants. This paper directly contributes to this literature by examining perceived strength of arguments and their effect (and the effect of argument style) on general immigration attitudes.

### **Argument style – narrative and statistical arguments**

Some research suggests that narrative arguments can change attitudes towards immigrants by evoking empathy (Igartua & Cachón-Ramón, 2023; Igartua & Guerrero-Martín, 2022). Narrative messages and evidence refer to information that involves character-based storytelling, usually in the first or third person, and frequently evokes an emotional or empathetic response within the reader (Wojcieszak & Kim, 2016). For example, a pro-immigrant narrative can be a story that describes how a person moves to another country, establishes themselves within the local community and builds a successful life. Narrative evidence is argued to be an effective style of messaging when communicating about outgroups through the process of 'narrative transportation' (Green & Brock, 2000) wherein the reader identifies more with the characters in the narrative, thereby increasing their empathy, leading to more positive attitudes. Some studies have found that narrative communication, in videos and written texts, has similarly had positive effects in increasing empathy towards immigrants and in turn attitudes towards immigrants (Audette et al., 2020; Igartua et al., 2019; Igartua & Cachón-Ramón, 2023; Igartua & Guerrero-Martín, 2022). Notably, Igartua and Cachon-Ramon (2023), found that narratives about immigrants increased people's empathy through the process of narrative transportation, which in turn has indirect effects on their attitudes towards immigrants.

Besides narrative evidence, statistical, or numerical, evidence can lead to a change in attitudes towards immigrants. Statistical evidence refers to information being presented in an objective and factual way. Its persuasive influence differs from narrative evidence in that it relies more on claims to objectivity and logic to influence peoples' attitudes (Greene & Brinn, 2003; Porter, 1995). People appear to find statistical arguments to be credible and objective (Allen & Preiss, 1997; Greene & Brinn, 2003). However, meta-analyses comparing the relative persuasiveness of narrative and statistical evidence has found similar effects between them (Xu, 2023). Some studies found statistical evidence to be a more effective way of changing attitudes about immigration (Wojcieszak & Kim, 2016), while others report no difference between statistical and narrative evidence regarding changing immigration attitudes

(Facchini et al., 2022). Additionally, some studies show potentially counter-productive impacts of statistical evidence that challenges their beliefs. For example, Lewandowsky et al. (2012) show a backfire effect, which occurs when presenting people with an evidence-based correction that leads them to bolster their misconceptions rather than challenge them (see also Connor et al., 2020).

While the literature on narrative arguments suggests that they provide an effective means of increasing empathy towards outgroups, overall findings are unclear as to whether they are more or less effective than statistical arguments, and the mechanisms through which they are effective. Additionally, there is a lack of research looking at the impact of argument style on argument evaluations, which may be the mechanism through which they influence attitude change.

### **The role of prior attitudes in argument evaluation**

Besides the type of argument, people's prior attitudes may be another key aspect of argument evaluation. Prior attitudes affect how individuals perceive and evaluate information and can lead to distortions in their reasoning (Gampa et al., 2019). When people encounter new information, they may find themselves in a complex interplay between processing the information accurately and processing it in accordance with their existing attitudes (Taber & Lodge, 2006). One way to understand this interplay is in terms of motivated reasoning, according to which various goals can be activated during information processing (Kunda 1990). These goals include aiming to come to a desired conclusion (directional goals) and aiming to process the information as factually as possible (accuracy goals).

Additionally, prior beliefs very persistently affect how we evaluate incoming information. Directional goals lead to biases like selectively seeking information that supports their beliefs (known as confirmation bias), rejecting information that contradicts their attitudes (known as disconfirmation bias), and perceiving information that is consistent with their attitudes as more persuasive (known as prior attitude effect). However, even if we are driven by accuracy, we might still expect to be more convinced by belief-consistent information assuming we evaluate the information in a rationally Bayesian way (e.g., Hahn, 2020; Hahn & Oaksford, 2007).

There is substantial evidence demonstrating the effect of prior beliefs on evidence evaluation. For example, in a study by McCrudden et al. (2017) participants were asked to rate the strength of arguments on climate change that were either congruent or incongruent with their own beliefs. The study found that for both strong and weak arguments (as defined by the time span over which the evidence used in the argument was collected), arguments that were congruent with participants' beliefs were rated as significantly stronger than arguments which were incongruent with participants' beliefs. Taber and Lodge (2006) also found a similar pattern in their study looking at the evaluation of real-world arguments regarding controversial topics (affirmative action and gun control). Participants rated the quality of arguments

supporting their attitudes as higher compared to those opposing their attitudes, further demonstrating the influence of prior attitudes on argument evaluation. Stanovich & West (1997) also found a similar pattern of results, later replicated by Thompson & Evans (2012), looking at the evaluation of a variety of polarising arguments (gun control, taxes, university governance, crime, automobile speed limits) presented as part of a dialogue as opposed to as a single piece of evidence. Both studies found that rebuttals to arguments were rated as stronger when those rebuttals were in line with participants' beliefs. The persistent effects of prior attitudes on subsequent argument evaluation in a variety of domains gives us reason to believe that participants' prior attitudes about immigrants will affect how subsequent arguments about immigrants are evaluated.

### The Current Study

This study builds on existing literature showing the effects of prior attitudes on argument evaluation. To our knowledge, no research to date has measured whether prior attitudes influence the perceived strength of arguments about immigrants/immigration. In addition, few studies on attitude change in this context include pre-test and post-test measures of attitudes that allow us to investigate attitude change at an individual level.

The aim of this study is to test whether people evaluate the strength of immigration-related arguments in part based on their own attitudes towards immigrants, and if so, whether people's attitudes have more of an effect on how they evaluate the strength of arguments based on narrative information (narrative arguments) compared to arguments based on statistical information (statistical arguments). We posit the following hypotheses based on the reviewed literature:

**H1:** We expect participants who have a **high NATIS score** (Negative Attitudes Towards Immigrants Scale; see 'methods' section for details) in the pre-test, who are in other words anti-immigrant<sup>1</sup>, to not be persuaded by subsequent pro-immigrant arguments. We would therefore expect these participants to rate pro-immigration arguments poorly, and their **post-test NATIS scores to remain high**.

**H2:** We expect participants who have a **high NATIS score** in the pre-test, who are in other words high anti-immigrant, to be persuaded by anti-immigration arguments. We would therefore expect these participants to rate the anti-immigrant arguments strongly, and their **post-test NATIS scores to remain high**.

**H3:** We expect participants who have a **low prior NATIS score** in the pre-test, who are in other words pro-immigrant, to be less persuaded by anti-immigration arguments. We would therefore expect these participants to rate anti-immigration arguments poorly, and their **post-test NATIS scores to remain low**.

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<sup>1</sup> Please note that in our pre-registration our hypotheses say "anti-immigration" and "pro-immigration". This is corrected to "anti-immigrant" and "pro-immigrant" here for clarity.

**H4:** We expect participants who have a **low prior NATIS score**, who are in other words anti-immigrant, to be persuaded by pro-immigration arguments. We would therefore expect these participants to rate the pro-immigration arguments strongly, and their **post-test NATIS scores to remain low**.

**H5:** We expect a slight decrease in NATIS scores for participants saw pro-immigrant arguments. We expect the opposite as well - slight increases in NATIS scores for participants who saw anti-immigrant arguments.

**H6:** This is an exploratory hypothesis where we expect narrative arguments to have a stronger effect on peoples' argument evaluations compared to statistical arguments, drawing from existing research with not entirely conclusive results (Audette et al., 2020; Dale & Moyer-Gusé, 2020; Igartua & Cachón-Ramón, 2023)<sup>2</sup>.

### Methods

The hypotheses, research design, and analyses for this study were pre-registered prior to data collection. The pre-registration can be found via the following link: <https://osf.io/xf4b7/>

#### Participants

We performed a power analysis using G\*Power, with a small effect size ( $f = 0.15$ ), which found a sample of 351 was needed for the study to be sufficiently powered at 80%. 361 participants were recruited from Prolific. 7 participants did not respond to all questions and 5 participants were  $\pm 2$  standard deviations of the mean completion time. These participants were excluded from the analysis, leaving us with 349 participants from whom we analysed data.

The participants were from the UK, over 18 years of age and native English speakers. We required participants to be born in the UK as we did not want our sample to contain immigrants (as our research question is focused on changing the attitudes of non-immigrants). Our sample consisted of 178 (51%) people who identified as female, 170 (49%) who identified as male, and 1 who chose 'Rather not say'. The mean age of our sample was 41.87 (Range: 19 – 78) years,  $SD = 12.94$ .

Our sample was skewed towards those with a liberal political leaning. 23 (6.6%) of participants self-identified as being Very Liberal, 89 (25.5%) as Liberal, 68 (19.5%) as Slightly Liberal, 98 (28.1%) as Moderate, 37 (10.6%) as Slightly Conservative, 29 (8.3%) as Conservative, and 5 (1.4%) as Very Conservative.

#### Design

The first independent variable is whether participants saw pro- or anti-immigrant arguments (group assignment; pro-immigrants vs anti-immigrants). The second independent

<sup>2</sup> In our pre-registration H6 stated that "we expect narrative arguments to have a stronger effect on peoples' *attitudes* compared to statistical arguments...". Due to methodological reasons, we collected and analyzed data on argument evaluations instead.

variable is whether the argument was narrative or statistical in nature (argument style; narrative vs statistical). We used a 2x2 mixed design. Group Assignment was a between-subjects variable and participants were randomly assigned to see either pro- or anti-immigrant arguments. All participants saw a narrative argument and a statistical argument as argument style was a within-subjects variable. As such, each participant saw either both pro-immigrant argument styles, or both anti-immigrant argument styles, depending on their assigned group. This design allows within-subject comparisons of argument style. The experiment was programmed using Qualtrics.

## Materials

We piloted both the source descriptions and the arguments to ensure that participants rated the sources as highly reliable and the arguments as strong before including them in the study. The participants always read strong arguments from reliable sources to avoid strength and reliability to influence their argument evaluation. For the source descriptions, the narrative arguments were described as relayed by someone trustworthy, truthful, and with a general track record of being reliable. The reliable statistical source was described as reputable, thoroughly fact-checked, and having been rigorously peer-reviewed. Piloting details can be found in our pre-registration: <https://osf.io/xf4b7/>.

The arguments were approximately 200 words long. Of the piloted arguments, the highest scoring arguments were chosen. Narrative arguments were about assimilation and cultural attitudes pertaining to immigrants while statistical arguments were about crime. We only selected stimuli that were strongly rated as pro- and anti-immigrant. For more information on how the stimuli were developed and for a sample stimulus, see the following link: <https://osf.io/xf4b7/>.

## Procedure

As a measurement of pre-intervention attitude towards immigrants, participants answered six randomly selected questions, selected from the 12-item Negative Attitudes Towards Immigrants Scale (NATIS) (Varela et al., 2013). The scale items are listed on OSF. This measured participants' prior attitudes towards immigrants. Participants then saw the narrative and statistical arguments about immigrants and were asked to rate the strength of each argument on a scale of 1 (Very Weak) to 5 (Very Strong). Having read and rated the arguments, they then had to answer the remaining six items of the NATIS scale, which functioned as their post-intervention measurement of attitudes toward immigrants. The order of our within-subjects factor (argument style; narrative vs statistical) was counter-balanced. Finally, participants were asked social attitudes

questions, including a shortened Right-Wing Authoritarianism (RWA) scale, the Very Short Authoritarianism (VSA) scale from Bizumic & Duckitt (2018); a political leanings question; and Ho et al.'s (2015) shortened social dominance orientation (SDO), SDO7 scale.

## Results

To test if participants changed their attitudes towards immigrants after seeing the arguments, we ran a mixed ANOVA with Group Assignment (pro vs anti-immigrant argument) as a between-subjects factor, the Measurement Phase (NATIS Score before vs after seeing the arguments) as a within-subjects factor, and NATIS Score as our dependent variable.

We found a significant interaction of Group Assignment and Measurement Phase of the NATIS Score,  $F(1, 347) = 33.46, p < .001$ . As can be seen in *Figure 1*, compared to the pre-NATIS scores, post-NATIS scores were higher for participants in the anti-immigrant group and lower for participants in the pro-immigrant group. Follow-up contrasts comparing pre and post-NATIS scores within each group confirmed this pattern. For the anti-immigrant group, the difference between pre and post-NATIS scores was 0.19, 95% CI [0.12, 0.27],  $t(347) = -4.89$ , and  $p < .001$ . For the pro-immigrant group, the difference between pre and post-NATIS scores was 0.13, 95% CI [0.05, 0.21] with  $t(347) =$

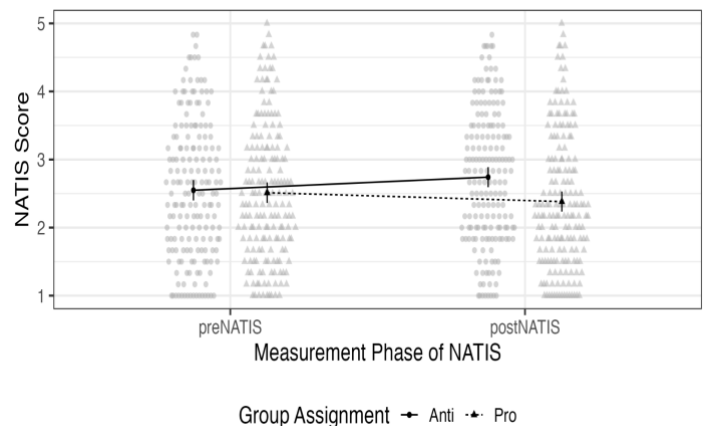


Figure 1: Changes in NATIS Score by Phase

3.30, and  $p = .001$ . This provided strong evidence for the idea that participants' anti-immigrant attitudes were stronger after seeing anti-immigrant arguments and weaker after seeing pro-immigrant arguments. This supports H5. H1 and H2 posited that participants with high pre-NATIS scores (i.e., with stronger anti-immigrant attitudes<sup>3</sup>) would

<sup>3</sup> For clarity we refer to participants who had high pre-NATIS scores as being anti-immigrant and those with low scores as being pro-immigrant. We categorise participants as anti or pro immigrant by those who scored above and below the midpoint of the scale

respectively. We make this distinction at the midpoint of the scale for simplicity, however despite the left-leaning skew of participants in our sample, the midpoint of the scale and the overall mean NATIS score was similar (3 and 2.55 respectively).

find anti-immigrant arguments stronger than pro-immigrant arguments. Further, we expected participants with lower pre-NATIS scores (i.e., with weaker anti-immigrant attitudes) assigned to anti-immigrant arguments to rate these as weaker. H3 and H4 held the same hypothesis concerning participants who had low pre-NATIS scores; they would find pro-immigrant arguments stronger than anti-immigrant arguments. To test these hypotheses, we ran an ANCOVA with Argument Type (pro-immigrant vs anti-immigrant) as a between-subjects factor, Argument Style (narrative vs statistical) as a within-subjects factor and Argument Strength Rating as the dependent variable. We included the pre-NATIS score as an additional covariate. We centred the pre-NATIS scores at the midpoint of the scale (i.e., where the pre-NATIS score was 3). This roughly corresponded to the mean pre-NATIS score (2.53). Values below 0 indicate pro-immigrant attitudes values above 0 indicate anti-immigrant attitudes. Figure 2 shows the main results.

Figure 2 shows participants with low pre-NATIS scores rated the quality of anti-immigrant arguments lower than participants with high pre-NATIS scores. Similarly, participants with high pre-NATIS scores rated the quality of pro-immigrant arguments lower than participants with low pre-NATIS scores. This was corroborated by the significant Group Assignment by pre-NATIS score interaction,  $F(1, 345) = 158.87, p < .001$ .

We used *emmeans* to run a post-hoc test to investigate this interaction. For participants in the anti-immigrant condition, for every additional point increase in their pre-NATIS scores, their argument strength ratings were on average 0.48, 95% CI [0.37, 0.59], points higher ( $t(345) = 8.78, p < .001$ ). In the pro-immigrant condition, for every additional point increase in pre-NATIS scores, their argument strength ratings were on average 0.50, 95% CI [0.39, 0.61], points lower ( $t(345) = 9.05, p < .001$ ).

We also find a significant interaction between pre-NATIS score and Argument Style ( $F(1,345) = 16.29, p < .001$ ) and more significantly a three-way interaction between pre-NATIS score, Argument Style, and Group Assignment  $F(1, 345) = 11.90, p < .001$ . To investigate the three-way interaction, we compared the difference in slopes of pre-NATIS scores between argument styles for each group of participants. We found no statistically significant difference in slopes between narrative and statistical arguments in the anti-immigrant condition (difference = 0.03,  $t(345) = 0.42, p = .677$ ), suggesting that the effect of pre-NATIS on argument strength ratings for anti-immigrant arguments did not significantly differ across argument style.

However, the difference between slopes for narrative and statistical arguments in the pro-immigrant condition was statistically significant (difference = 0.42,  $t(345) = 5.27, p < .001$ ). This, as can be seen in Figure 2, suggests that for pro-immigrant arguments, the effect of prior attitudes on argument strength ratings is stronger for statistical arguments than it is for narrative arguments. Compared to narrative arguments, statistical arguments were rated as stronger among people with low NATIS scores and weaker among

people with high NATIS scores. The exploratory hypothesis

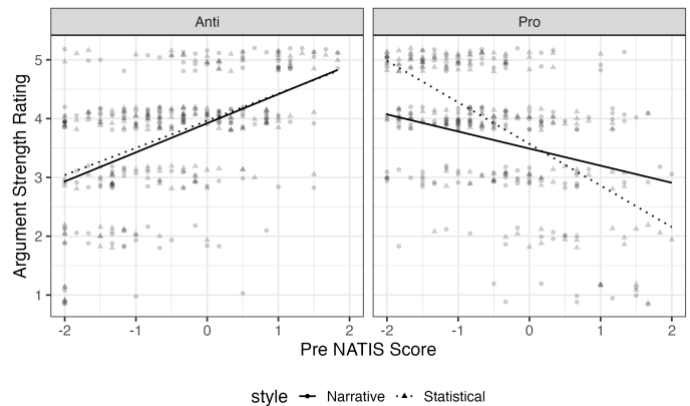


Figure 2: Argument strength ratings by condition and argument style

H6 is therefore not supported, as narrative arguments are only more effective than statistical arguments some of the time.

H1-4 also expected that participants would find attitude-congruent messages more persuasive than attitude-incongruent messages. That is, we expected that for participants with higher pre-NATIS scores, their post-NATIS scores to remain high, and for participants with low pre-NATIS scores their post-NATIS scores would remain low.

We ran an ANCOVA with ‘attitude change’ (post-NATIS score – pre-NATIS score) as the dependent variable and Group Assignment and pre-NATIS scores as our independent variables, to test whether prior attitudes predicted attitude shifts for participants who saw either anti- or pro-immigrant arguments.

The results show that Group Assignment has a significant effect on Attitude Change,  $F(1, 345) = 24.93, p < .001$ . Participants who saw anti-immigrant arguments shifted 0.33, 95% CI [0.22, 0.43] NATIS points higher than participants who saw pro-immigrant arguments. We also see a main effect of pre-NATIS score on attitude change,  $F(1,345) = 31.41, p < .001$ . In both pro and anti-immigrant conditions, higher pre-NATIS scores were significantly associated with more anti-immigrant attitude change (slope = -0.15, 95% CI [-0.20, -0.10]).

To test whether the attitude shift was significant, we investigated whether attitude change scores were significantly different from 0 at the edges of the scale. For anti-immigrant arguments, participants who held the least negative attitudes towards immigrants developed more negative attitudes towards immigrants (belief change shift = 0.48, 95% CI [0.34, 0.61,  $t(345) = 6.93, p < .001$ ), and participants who had the most negative attitudes towards immigrants developed less negative attitudes towards immigrants (belief change shift = -0.26, 95% CI [0.46, -0.66,  $t(345) = -2.63, p = .009$ ). For pro-immigrant arguments, participants who held the least negative attitudes towards immigrants did not change their attitudes (belief change shift = 0.04, 95% CI [-0.09, 0.18,  $t(345) = 0.59, p < .553$ ), whereas participants who held the most negative attitudes towards immigrants developed less negative attitudes towards

immigrants (belief change shift = -0.41, 95% CI [0-0.61, -0.21],  $t(345) = -4.06, p < .001$ ).

The findings show that people who initially had higher pre-NATIS scores (stronger anti-immigrant attitudes) became less anti-immigrant (lowered post-NATIS scores) whether they saw pro or anti-immigrant arguments. This can be seen in *Figure 3*. Additionally, participants who had low pre-NATIS scores and were assigned to the pro-immigrant conditions, did not experience much attitude change; while low pre-NATIS participants assigned to the anti-immigrant conditions did become more anti-immigrant. We therefore only find partial support for H1-4; whilst we do find that participants rate arguments that align with their attitudes as stronger, we find that attitude change varied based on condition.

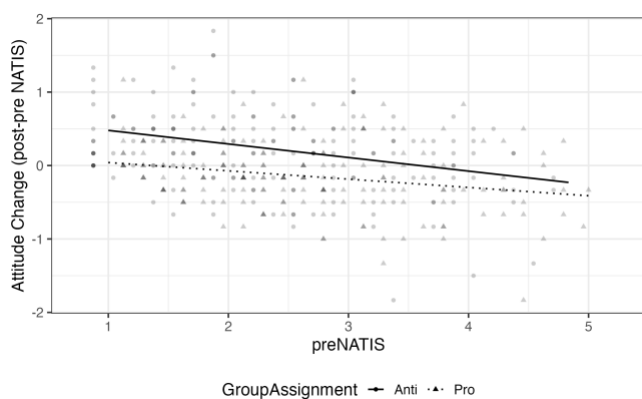


Figure 3: Attitude Change across Conditions

## Discussion

This paper explored if people’s prior attitudes impact their evaluation of arguments that align with their prior attitudes about immigrants compared to arguments that contradict their prior attitudes and if argument style (narrative or statistical) affects argument evaluation. Specifically, it tested if the influence of prior attitudes are a possible cause for why people may reject evidence or arguments that run counter to their prior attitudes – if people are very certain of a particular position, they may rate new evidence contrary to that position as weak. We found evidence that people do rate arguments as stronger when they align with their prior attitudes.

The effect of prior attitudes on argument evaluation is related to the literature on reasonable belief revision via Bayesian updating. If a speaker gives evidence for a subjectively perceived extremely improbable idea, it may be more likely that the evidence is somehow erroneous, that the speaker is unreliable, or that the evidence may even be fabricated. That is, statements subjectively perceived as improbable may result in revising the belief about the reliability of the speaker (or alternative causes for the evidence) rather than updating on the hypothesis itself (Bovens & Hartmann, 2004). There may thus be a reasonable account for seemingly unreasonable dismissal of strong

evidence (see Madsen et al., 2024). Bayesian accounts have previously been used to demonstrate how seemingly irrational beliefs can emerge via rational processes (Cook & Lewandowsky, 2016).

With regards to actual attitude change, we found mixed results as to whether people update their attitudes in the same direction as their prior attitudes based on whether they see arguments that are congruent or incongruent with their prior attitudes. As expected, we found that people who previously held positive attitudes towards immigrants did get more pro-immigrant when they saw pro-immigrant arguments. However, when participants had prior negative attitudes towards immigrants, they positively updated their attitudes to be less anti-immigrant regardless of whether they saw pro or anti-immigrant arguments. A possible explanation for this finding is that we did not have many participants with strong prior anti-immigrant attitudes in our sample, which limits the inferences we can draw from our data.

Finally, the exploratory analysis of the difference in persuasiveness between statistical and narrative arguments showed interesting results. We found that, for anti-immigrant arguments, there was no significant difference in the perceived strength of narrative or statistical arguments. For pro-immigrant arguments we found that participants with pro-immigrant attitudes rated the quality of statistical arguments higher than narrative arguments, whereas participants with anti-immigrant attitudes showed the opposite pattern. This may suggest that the style of argumentation is more effective based on a person’s prior attitudes. Thus, the relationship between prior attitudes, argument style and argument quality ratings seem to be more complex and needs further exploration.

One important limitation in this study is that our sample was skewed towards individuals with positive attitudes towards immigrants, which may have limited our findings in terms of people with preexisting negative attitudes towards immigrants. Additionally, while we were interested in arguments that mimic everyday arguments, their informal structure limits our ability to decipher in more detail what elements makes them more persuasive. More consistent and structured arguments may make it easier to decipher what elements of the argument are more effective.

Our findings have important implications for studies on attitude change in the context of attitudes towards immigrants. Future research can explore if providing people with information that seems to be attitude-congruent but actually challenges misconceptions about immigrants can challenge negative attitudes towards immigrants. Future studies can also manipulate different elements of the argument, such as the source reliability and argument strength, to better understand how and when arguments about immigrants can change attitudes.

## References

Abascal, M., Huang, T. J., & Tran, V. C. (2021). Intervening in Anti-Immigrant Sentiments: The Causal Effects of

- Factual Information on Attitudes toward Immigration. *The ANNALS of the American Academy of Political and Social Science*, 697(1), 174–191. <https://doi.org/10.1177/00027162211053987>
- Allen, M., & Preiss, R. W. (1997). Comparing the persuasiveness of narrative and statistical evidence using meta-analysis. *Communication Research Reports*, 14(2), 125–131. <https://doi.org/10.1080/08824099709388654>
- Audette, N., Horowitz, J., & Michelitch, K. (2020). *Personal narratives reduce negative attitudes toward refugees and immigrant outgroups: Evidence from Kenya*.
- Barrera, O., Guriev, S., Henry, E., & Zhuravskaya, E. (2020). Facts, alternative facts, and fact checking in times of post-truth politics. *Journal of Public Economics*, 182(C). <https://ideas.repec.org/a/eee/pubeco/v182y2020ics0047272719301859.html>
- Bizumic, B., & Duckitt, J. (2018). *Investigating right wing authoritarianism with a very short authoritarianism scale*. <https://openresearch-repository.anu.edu.au/handle/1885/251661>
- Bovens, L., & Hartmann, S. (2004). *Bayesian epistemology*. OUP Oxford. [https://books.google.com/books?hl=en&lr=&id=oQ9REA AAQBAJ&oi=fnd&pg=PR8&dq=bovens+hartmann&ots=emrIAXD5AZ&sig=ponpcWV\\_oCKbWL8bKAI05MBw198](https://books.google.com/books?hl=en&lr=&id=oQ9REA AAQBAJ&oi=fnd&pg=PR8&dq=bovens+hartmann&ots=emrIAXD5AZ&sig=ponpcWV_oCKbWL8bKAI05MBw198)
- Cook, J., & Lewandowsky, S. (2016). Rational Irrationality: Modeling Climate Change Belief Polarization Using Bayesian Networks. *Topics in Cognitive Science*, 8(1), 160–179. <https://doi.org/10.1111/tops.12186>
- Dale, K. R., & Moyer-Gusé, E. (2020). Interdependence in mediated intergroup contact: Exploring the common ingroup identity model in a fictional narrative. *Journal of Media Psychology*. <https://doi.org/10.1177/10591022209388654>
- Dennison, J. (2022). A review of experimental evidence of how communication affects attitudes to immigration. *Comparative Migration Studies*, 10(1), 35. <https://doi.org/10.1186/s40878-022-00310-3>
- Enock, F. E., Bright, J., Stevens, F., Johansson, P., & Margetts, H. Z. (2024). *How do people protect themselves against online misinformation?* <https://www.turing.ac.uk/news/publications/how-do-people-protect-themselves-against-online-misinformation>
- Facchini, G., Margalit, Y., & Nakata, H. (2022). Countering public opposition to immigration: The impact of information campaigns. *European Economic Review*, 141, 103959. <https://doi.org/10.1016/j.eurocorev.2021.103959>
- Gampa, A., Wojcik, S. P., Motyl, M., Nosek, B. A., & Ditto, P. H. (2019). (Ideo)Logical Reasoning: Ideology Impairs Sound Reasoning. *Social Psychological and Personality Science*, 10(8), 1075–1083. <https://doi.org/10.1177/1948550619829059>
- Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology*, 79(5), 701.
- Greene, K., & Brinn, L. S. (2003). Messages Influencing College Women's Tanning Bed Use: Statistical versus Narrative Evidence Format and a Self-Assessment to Increase Perceived Susceptibility. *Journal of Health Communication*, 8(5), 443–461. <https://doi.org/10.1080/713852118>
- Grigorieff, A., Roth, C., & Ubfal, D. (2020). Does Information Change Attitudes Toward Immigrants? *Demography*, 57(3), 1117–1143. <https://doi.org/10.1007/s13524-020-00882-8>
- Hahn, U. (2020). Argument quality in real world argumentation. *Trends in Cognitive Sciences*, 24(5), 363–374.
- Hahn, U., & Oaksford, M. (2007). The rationality of informal argumentation: A Bayesian approach to reasoning fallacies. *Psychological Review*, 114(3), 704.
- Ho, A. K., Sidanius, J., Kteily, N., Sheehy-Skeffington, J., Pratto, F., Henkel, K. E., Foels, R., & Stewart, A. L. (2015). The nature of social dominance orientation: Theorizing and measuring preferences for intergroup inequality using the new SDO<sub>7</sub> scale. *Journal of Personality and Social Psychology*, 109(6), 1003.
- Hopkins, D. J., Sides, J., & Citrin, J. (2019). The muted consequences of correct information about immigration. *The Journal of Politics*, 81(1), 315–320.
- Igartua, J.-J., & Cachón-Ramón, D. (2023). Personal narratives to improve attitudes towards stigmatized immigrants: A parallel-serial mediation model. *Group Processes & Intergroup Relations*, 26(1), 96–119. <https://doi.org/10.1177/13684302211052511>
- Igartua, J.-J., & Guerrero-Martín, I. (2022). Personal migrant stories as persuasive devices: Effects of audience-character similarity and narrative voice. *Journal of Social and Political Psychology*, 10(1), 21–34.
- Igartua, J.-J., Wojcieszak, M., & Kim, N. (2019). How the interplay of imagined contact and first-person narratives improves attitudes toward stigmatized immigrants: A conditional process model. *European Journal of Social Psychology*, 49(2), 385–397. <https://doi.org/10.1002/ejsp.2509>
- Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin*, 108(3), 480.
- Lewandowsky, S., Ecker, U. K. H., Seifert, C. M., Schwarz, N., & Cook, J. (2012). Misinformation and Its Correction: Continued Influence and Successful Debiasing. *Psychological Science in the Public Interest*, 13(3), 106–131. <https://doi.org/10.1177/1529100612451018>
- Madsen, J. K., de-Wit, L., Ayton, P., Brick, C., de-Moliere, L., & Groom, C. J. (2024). Behavioral science should start by assuming people are reasonable. *Trends in Cognitive Sciences*, 28(7), 583–585.
- Marris, E. (2023). Why hidden xenophobia is surging into the open. *Nature*. <https://doi.org/10.1038/d41586-023-03973-9>
- McCrudden, M. T., Barnes, A., McTigue, E. M., Welch, C., & MacDonald, E. (2017). The effect of perspective-taking on reasoning about strong and weak belief-relevant arguments. *Thinking & Reasoning*, 23(2), 115–133. <https://doi.org/10.1080/13546783.2016.1234411>

- Porter, T. M. (1995). Trust in numbers. In *In pursuit of objectivity in science and public life*. Princeton University.
- Silver, L. (2022, November 16). Most across 19 countries see strong partisan conflicts in their society, especially in South Korea and the U.S. *Pew Research Center*. <https://www.pewresearch.org/short-reads/2022/11/16/most-across-19-countries-see-strong-partisan-conflicts-in-their-society-especially-in-south-korea-and-the-u-s/>
- Stanovich, K. E., & West, R. F. (1997). Reasoning independently of prior belief and individual differences in actively open-minded thinking. *Journal of Educational Psychology, 89*(2), 342.
- Taber, C. S., & Lodge, M. (2006). Motivated Skepticism in the Evaluation of Political Beliefs. *American Journal of Political Science, 50*(3), 755–769. <https://doi.org/10.1111/j.1540-5907.2006.00214.x>
- Thompson, V., & Evans, J. St. B. T. (2012). Belief bias in informal reasoning. *Thinking & Reasoning, 18*(3), 278–310. <https://doi.org/10.1080/13546783.2012.670752>
- Varela, J. G., Gonzalez Jr, E., Clark, J. W., Cramer, R. J., & Crosby, J. W. (2013). Development and preliminary validation of the Negative Attitude Toward Immigrants Scale. *Journal of Latina/o Psychology, 1*(3), 155.
- Voelkel, J. G., Malik, M., Redekopp, C., & Willer, R. (2022). Changing Americans' Attitudes about Immigration: Using Moral Framing to Bolster Factual Arguments. *The ANNALS of the American Academy of Political and Social Science, 700*(1), 73–85. <https://doi.org/10.1177/00027162221083877>
- Wojcieszak, M., & Kim, N. (2016). How to Improve Attitudes Toward Disliked Groups: The Effects of Narrative Versus Numerical Evidence on Political Persuasion. *Communication Research, 43*(6), 785–809. <https://doi.org/10.1177/0093650215618480>
- Wright, C., Brinklow-Vaughn, R., Johannes, K., & Rodriguez, F. (2021). Media Portrayals of Immigration and Refugees in Hard and Fake News and Their Impact on Consumer Attitudes. *Howard Journal of Communications, 32*(4), 331–351. <https://doi.org/10.1080/10646175.2020.1810180>
- Wright, C. L., DeFrancesco, T., Hamilton, C., & Machado, L. (2020). The Influence of Media Portrayals of Immigration and Refugees on Consumer Attitudes: A Experimental Design. *Howard Journal of Communications, 31*(4), 388–410. <https://doi.org/10.1080/10646175.2019.1649762>
- Xu, J. (2023). A Meta-Analysis Comparing the Effectiveness of Narrative vs. Statistical Evidence: Health vs. Non-Health Contexts. *Health Communication, 38*(14), 3113–3123. <https://doi.org/10.1080/10410236.2022.2137750>