



Heart over mind: unravelling motivated reasoning in an unprecedented socio-political context

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Abstract

Motivated reasoning, by which individuals evaluate information in a biased way to support desired conclusions, is a widespread phenomenon and has primarily been investigated in relation to ideological beliefs. However, the socio-psychological factors influencing opinion change during motivated reasoning tasks have received less attention. We explored motivated reasoning about policies in Spain, focusing on the socio-political climate shaped by the COVID-19 pandemic, recruiting a nationally representative sample of 1,329 participants. We used psychometric instruments to assess psychological and social predictors and evaluated motivated reasoning using an online experimental task in which participants were shown statements by politicians that were inconsistent with their ideologies, followed by exculpatory information explaining the inconsistencies. Right-wing and left-wing participants exhibited motivated reasoning in their evaluation of the statements. However, attitudinal change following exculpatory information varied according to participants' political orientation and psychological traits, with left-wing participants showing greater flexibility. Perceived economic threat and authoritarianism were associated with lower attitudinal change, and so less flexibility in response to right-wing statements, while reflective thinking predicted greater change. Less attitudinal change in response to left-wing statements was associated with right-wing orientation, perceived economic threat, and conspiracy mentality, with political orientation emerging as the strongest predictor. Our findings underscore the importance of considering ideological, emotional, and cognitive aspects in public information campaigns designed to reduce polarization and promote openness to new information during crises.

Keywords Motivated reasoning · Attitudinal change · Perceived economic threat · Political orientation

Introduction

Blaise Pascal's (1670) observation, "The heart has its reasons that reason does not know," reflects one of the major concerns of modern psychology, which is how people's motivations and emotions influence the way they process information (Lazarus, 1999; Power & Dalgleish, 2015). Social and political scientists have amassed considerable evidence that people's prior attitudes, beliefs, or feelings can lead to selective or biased information processing (Taber & Lodge, 2006; Strickland et al., 2011). For instance, during election campaigns, it is not unusual to find people motivated to defend and justify the mistakes made by their preferred political candidates. This type of deliberation, in which affect or motives influence information processing, is called motivated reasoning (Kunda, 1990; Taber & Lodge, 2006).

Under the assumption that all reasoning is goal-driven (Kunda, 1987, 1990), motivated reasoning occurs when

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individuals are engaged with partisan or directional goals, which motivate them to evaluate information in a way that supports a desired conclusion, rather than accuracy goals, which would motivate them to consider all the available evidence to reach a correct or otherwise best possible conclusion (Kunda, 1990; Molden & Higgins, 2012; Nir, 2011). The directional goals underlying motivated reasoning and allow people to discard information inconsistent with their prior beliefs while seeking and accepting information consistent with their predispositions (Kunda, 1990; Nir, 2011; Taber & Lodge, 2006), particularly on “hot topics” in which there is a strong emotional involvement, such as political (Bolsen et al., 2014; Leeper & Slothuus, 2014), religious (Willer, 2009), or even self-beliefs (Helzer & Dunning, 2012). In this sense, an essential feature is that affective processes drive or catalyze this type of reasoning (Lodge & Taber, 2000; Strickland et al., 2011) and hence some authors defining it as a form of implicit affect regulation in which the individual converges on solutions that minimize negative and maximize positive affective states (Westen et al., 2006). Confirmation and disconfirmation biases, along with the prior attitude effect, whereby people evaluate attitude-consistent arguments as more powerful and convincing than disconfirmatory ones, drive this process (Bolsen & Palm, 2019; Druckman et al., 2013; Taber & Lodge, 2006).

Political scientists have investigated motivated reasoning under the name of partisan-motivated reasoning for almost two decades (Bolsen & Palm, 2019), mainly using two paradigms (Ditto et al., 2019; Tappin et al., 2020a). The first, party cues, explores how identification with political parties affects people’s opinions about different policy issues, such as gun control (Taber & Lodge, 2006), climate change (Bayes & Druckman, 2021), and, recently, COVID-19 (Pennycook et al., 2022; Sylvester, 2021). For example, James and Van Ryzin (2017) found that motivated reasoning about the US Affordable Care Act increased when people were primed to think politically rather than about their own needs. In the second type of paradigm, outcome switching, researchers randomly assign participants to receive and evaluate concordant and discordant information related to their political preferences. Although all participants receive the same amount of information, its implication for subjects’ political preferences varies between conditions (Tappin et al., 2020a). For example, during the 2004 U.S. presidential election, Westen et al. (2006) conducted a study in which Democratic and Republican supporting participants had to judge contradictory information (statements that appeared inconsistent with a candidate’s ideology) and exculpatory information (statements that explained the inconsistency), about their favoured political candidate, an opponent, and politically neutral individuals. These authors found that both groups of participants identified more contradictions

for the opposing candidate’s statements and were substantially more likely to accept their own candidate’s exculpatory statements. However, Democrats and Republicans reasoned similarly about the contradictions of politically neutral figures.

Although the above paradigms have been widely used to examine motivated reasoning, a key limitation is that they neglect other variables that may be important, such as pre-existing beliefs (Tappin et al., 2020b). Some authors have identified that attitudinal strength, cognitive style, polarization, the social contexts in which political information is encountered, and real-world events are important moderators associated with this type of reasoning (Bolsen & Palm, 2019). Caddick and Feist (2022) reported that individuals with higher scores on dogmatism, authoritarianism, and neuroticism tended to engage in more motivated reasoning. Interestingly, other individual and contextual variables have the opposite effect and mitigate motivated reasoning. For example, prior exposure to opposing viewpoints (Chong & Druckman, 2007) or fostering trust in institutions (Miller et al., 2016) can reduce motivated reasoning. Redlawsk et al. (2010) found that, in the face of increasing information that disconfirms a pre-existing attitude, individuals eventually reach an “affective tipping point” where motivated reasoning ceases and an accuracy motive intervenes. However, more research is needed to explore how people change their minds or update their belief systems, and the psychological and social variables that facilitate this kind of cognitive flexibility.

Therefore, informed by this body of previous research and specifically the work by Westen et al. (2006), we conducted an online experimental study to measure motivated reasoning about socio-health policies in Spain. We conducted the study during the COVID pandemic and designed our task to explore motivated reasoning when participants evaluated contradictory and exculpatory statements made by their preferred and opposing political candidates. We aimed to examine the extent to which people change their opinions when we provide new exculpatory information following the ideologically inconsistent statements of their favoured politician. We also sought to explore which psychological and social variables might predict attitudinal change in these circumstances. Regarding hypotheses, we expected that participants would manifest motivated reasoning by perceiving fewer contradictions and considering exculpatory information to a greater extent when making judgments about politicians belonging to their favoured political party. We also expected that the magnitude of attitudinal change following exculpatory information would be greatest when participants processed information about their political party. Finally, we expected that authoritarianism would be associated with less attitudinal flexibility. We

also examined several other variables which might, *prima facie*, be expected to influence motivated reasoning, such as reflective thinking, intolerance of uncertainty, conspiracy mentality, and psychological state (anxiety about COVID and the perceived economic threat associated with the pandemic), but without firm predictions about their effects.

Methods

We collected the data during the first and second waves of a larger international longitudinal project monitoring the impact of the COVID-19 pandemic on mental health, well-being, and attitudes in four European countries (see “hidden for review” for a detailed description). We launched the first survey wave (T1) in Spain 26 days after the government declared the state of emergency (between 7 and 13 April 2020). We launched the second survey (T2) when the government declared a new “state of alert” (November 25–December 7, 2020), and the economic, political, and social consequences of the pandemic were becoming increasingly evident. Therefore, in the second survey, we included our political motivated reasoning task along with variables related to these consequences, such as perceived economic threat due to the COVID-19 pandemic and COVID-19 anxiety, which we subsequently included as covariates in the main analyses. We obtained ethical approval from the Faculty Ethics Committee and conducted the study in compliance with the Declaration of Helsinki.

Participants

We recruited a representative sample through Sondea, a company that provides online samples for market research. Participants completed an online questionnaire that we designed and distributed using Qualtrics software (www.qualtrics.com). Participants were aged 18 or older, and Sondea stratified the sample, based on official census data, to ensure representativeness across sex, age, household income, and population of each region. To ensure the validity of the responses, we followed a time-limit method (Edwards, 2019) and calculated the minimum time needed to complete the entire questionnaire based on pilot testing. Invalid responses were identified based on three criteria: (1) participants who completed the questionnaire in less than 20 min, which was the minimum threshold established through pilot testing; (2) participants who submitted duplicate responses; and (3) participants who failed one or more attention-check items embedded in the survey. In the first wave, 2,122 participants completed the survey; after excluding 145 participants based on the time criterion and 26 duplicate responses, the final first-wave sample was

1,951. In the second wave, 1,431 participants completed the survey; after excluding 76 participants based on the time criterion and 25 duplicate responses, the final second-wave sample was 1,330. When merging both waves, we additionally excluded one participant who failed the attention check, resulting in a final sample of $N=1,329$ (68.17% of those initially recruited). Participants received a small monetary compensation each time they participated in the study.

Measures

Socio-demographic characteristics. In addition to self-reported gender identity and age, respondents provided information about their highest level of educational attainment and current employment status.

Predictors

Political orientation

We assessed political orientation using a single item adapted from the Study (2017). Participants reported their ideological self-placement on a 10-point left–right scale, where 1 indicated a left-wing orientation and 10 a right-wing orientation (e.g., “Politics is often described in terms of left and right. Where would you place yourself on the following scale?”).

Anxiety about the pandemic

We assessed anxiety about the pandemic with a single-item visual analogue scale. Participants responded to the question: “How anxious are you about the COVID-19 pandemic?” using a slider ranging from 0 = “no anxiety” to 100 = “extremely anxious”.

Perceived economic threat related to COVID-19

We measured perceived economic threat related to COVID-19 with a single-item slider scale. Participants answered the question: “How concerned are you about how your household economy has been affected by the COVID-19 pandemic?” using a scale from 0 = “nothing” to 10 = “very much”.

Authoritarianism

We measured authoritarianism using the 6-item Very Short Authoritarianism Scale (VSA; Bizumic & Duckitt, 2018). Participants rated each item on a 5-point response scale ranging from 0 (Totally disagree) to 4 (Absolutely agree).

We calculated a total score by averaging the six items, with higher scores indicating stronger authoritarian attitudes. A score above 3 indicates a more extreme right-wing orientation, while a score below 3 reflects a more liberal stance. Internal consistency was acceptable ($\alpha=0.65$).

Intolerance of uncertainty

We included the 12-item Intolerance of Uncertainty Scale—Short Form (IUS-12; Carleton et al., 2007). Participants rated items on a 5-point response scale ranging from 1 (Not at all characteristic of me) to 5 (Entirely characteristic of me). We calculated a total score by summing the items, with higher scores indicating greater intolerance of uncertainty. Internal consistency was excellent ($\alpha=0.91$).

Reflective thinking

Reflective thinking reflects the tendency to override intuitive responses in favor of more deliberate, analytical reasoning. We measured it using the Cognitive Reflection Test (CRT; Frederick, 2005), which requires participants to solve three problems. Participants selected one of four response options for each item, presented in a fixed order. Each set of options included the intuitive (but incorrect) response, the correct answer, and two plausible distractors, following the structure proposed by Sirota and Juanchich (2018). For example: “A bat and a ball cost €1.10 in total. The bat costs €1.00 more than the ball. How much does the ball cost?” We summed the number of correct responses to obtain a total score, ranging from 0 to 3, with higher scores indicating a more analytical reasoning style. In this study, internal consistency was acceptable ($\alpha=0.71$).

Conspiracy mentality

We included the 5-item Short-Form Conspiracy Mentality Questionnaire (SF-CMQ; Imhoff & Bruder, 2014) to assess conspiracy mentality. Participants rated items on a scale from 0% (Certainly not) to 100% (Certainly), including statements such as “I think that many very important things happen in the world, which the public is never informed about” or “I think that politicians usually do not tell us the true motives for their decisions.” We calculated a total score by averaging the five items, with higher scores indicating greater conspiracy mentality. Internal consistency was good ($\alpha=0.84$).

Dependent variable

Political task To measure motivated reasoning, we followed the paradigm used by Westen et al. (2006), employing a set

of real statements reported by the media during the international health crisis. These statements presented clear contradictions between the public declarations and actions of political candidates from either the right or the left. Each set of statements consisted of the following components: (1) *Initial Statement*: A statement reflecting a verbal declaration made by the target politician; (2) *Contradictory Statement*: A statement based on the politician’s actual actions, suggesting a contradiction between the candidate’s words and actions; (3) *Evaluation Question*: We asked participants to rate the degree to which they considered the politician’s words and actions contradictory on a visual scale from 1 (*not at all contradictory*) to 10 (*totally contradictory*); (4) *Exculpatory Statement*: We provided additional information to explain the contradiction; (5) *Final Evaluation Question*: We again asked participants to rate the degree of contradiction between the politician’s words and actions on a scale from 1 to 10, this time considering the new exculpatory information. Each trial followed this fixed sequence to maintain consistency and allowed participants to judge whether the provided information represented a contradiction, and to evaluate the impact of the exculpatory context on their initial perception of inconsistency. We preprogrammed all sets of right-wing and left-wing trials in a pseudo-random order, so that while participants encountered all statements, the order of presentation varied across individuals. However, the internal structure within each trial remained constant. We present an example in Table 1, and the complete task is available in the supplementary materials.

Data analysis

We conducted all analyses using IBM SPSS Statistics (version 29). We first conducted a series of descriptive analyses of the sample. Then, to examine motivated reasoning, we calculated participants’ mean contradiction ratings after receiving contradictory and exculpatory information, separately for right-wing and left-wing political statements. We analyzed these scores using linear mixed-effects models, including time (contradictory vs. exculpatory) as a within-subject fixed factor, political orientation as a continuous predictor, and anxiety about the pandemic and perceived economic threat as covariates. We included random intercepts for participants and specified a compound symmetry structure to model the repeated measurements. We conducted separate models for left-wing and right-wing statements. To quantify the magnitude of within-subject change, we calculated Morris’s *d* (Morris, 2008), which provides a standardised estimate of effect size for pre–post designs. Specifically, we computed the difference in mean contradiction ratings between time points and divided it by the pooled

Table 1 Two examples of right and left-wing statements**Right-wing statement**

Initial	On March 12th, Pablo Casado announced that his party would be loyal with the Government.
Contradictory	In September 2020, Pablo Casado called for an investigation of the Government for its dismal handling of the COVID-19 pandemic.
Evaluation slide	To what extent do you consider that the statements and actions of Pablo Casado, in this case, are contradictory? From 1 (not at all contradictory) to 10 (totally contradictory)
Exculpatory	On October 22nd, Pablo Casado voted against the motion of censure proposed by VOX against the Government.
Evaluation slide	With this new information, to what extent do you consider that Pablo Casado's statements and actions contradictory? From 1 (not at all contradictory) to 10 (totally contradictory)

Left-wing statement

Initial	On September 7th, Pedro Sánchez and Pablo Iglesias agreed to lower VAT on necessity goods.
Contradictory	On September 30th, PSOE and Podemos voted against the proposal to lower the VAT on masks from 21% to 4%.
Evaluation slide	To what extent do you consider the statements and actions of Pedro Sánchez and Pablo Iglesias, in this case, are contradictory? From 1 (not at all contradictory) to 10 (totally contradictory)
Exculpatory	Later, Pablo Iglesias explained that they voted against it because they intended to lower VAT much more.
Evaluation slide	With this new information, to what extent do you consider the statements and actions of Pedro Sánchez and Pablo Iglesias contradictory? From 1 (not at all contradictory) to 10 (totally contradictory)

The Popular Party (PP) and VOX were the two main right-wing opposition parties in Spain at the time of the experimental task. Pablo Casado served as the leader of the PP, while Santiago Abascal led VOX. The Spanish Socialist Workers' Party (PSOE) and Podemos were the two left-wing parties governing Spain at the time of the experimental task. Pedro Sánchez was the leader of PSOE, and Pablo Iglesias led Podemos

standard deviation, corrected for the correlation between repeated scores.

In addition, to aid interpretation, we grouped participants into tertiles based on their self-placement on the left-right scale. We used this categorisation solely for descriptive summaries and to estimated marginal means. Finally, we conducted exploratory correlation and regression analyses using indices of attitudinal change, calculated by subtracting contradiction ratings after contradictory information from those after exculpatory information. A score of 0 reflected no change, negative scores indicated inflexibility,

and positive scores reflected belief updating. We used these indices to explore the role of person difference variables such as authoritarianism, intolerance of uncertainty, reflective thinking, and conspiracy mentality, which we did not include in the mixed-effects models.

Results

Characteristics of the sample

After excluding 439 individuals (33%) who did not vote in the last national election or who preferred not to disclose their political affiliation, we included 891 participants in the final analyses. The mean age was 47.24 years. Most participants reported having a university degree, and a large proportion were employed full-time (see Table 2). Regarding political orientation, all included participants provided valid responses on a 10-point left–right ideological scale (1 = very left-wing, 10 = very right-wing), which we used as a continuous measure in all analyses.

Motivated reasoning

For the right-wing statements, we found significant main effects of time, $F(1, 887) = 107.69, p < .001$, and ideological orientation, $F(1, 887) = 281.85, p < .001$. Participants rated the statements as less contradictory after reading exculpatory information, and participants with a more left-wing orientation perceived greater contradictions in right-wing politicians' statements (see Table 3). The time $\times$ ideology interaction was also significant, $F(1, 887) = 8.97, p = .003$, indicating that belief updating was greater in participants with a more left-wing ideological alignment when evaluating right-wing statements (see Table 3). In addition, perceived economic threat significantly moderated this change, $F(1, 887) = 11.03, p = .001$; participants who perceived greater economic threat showed less attitudinal change. Pandemic-related anxiety did not exert significant effects, $F(1, 887) = 0.02, p = .888$. We calculated the effect size of this attitudinal change using Morris's d (2008), which accounts for pre-post variation. For right-wing statements, we found an effect size of $d = -0.35$, which indicates a moderate asymmetry in belief updating. Overall, the results show that right-wing participants were less likely to revise their judgments after receiving exculpatory information compared to left-wing participants (see Table 3).

For the left-wing statements, the model also showed significant main effects of time, $F(1, 887) = 179.59, p < .001$, and ideological orientation, $F(1, 887) = 187.87, p < .001$. Participants again revised their judgments after reading exculpatory information, and those with a more right-wing political

Table 2 Sociodemographic and psychological characteristics of the sample

Participants (<i>N</i> =891)	
Age [<i>Mean (SD)</i>]	47.24 (12.43)
<i>Self-reported gender identity [n (%)]</i>	
Men	495 (55.60)
Women	395 (44.30)
Other	1 (0.10)
<i>Educational level [n (%)]</i>	
No formal education	3 (0.30)
Primary	20 (2.20)
Secondary	73 (8.20)
Vocational training	126 (14.10)
Baccalaureate	215 (24.10)
University graduate	351 (39.40)
Postgraduate	103 (11.60)
<i>Employment Situation [n (%)]</i>	
Full-time job	522 (58.60)
Part-time job	84 (9.40)
Unemployed	144 (16.20)
Retired	98 (11.00)
Student	34 (3.80)
Person with a disability	9 (1.00)
<i>Gross annual household income in euros, 2019 [n (%)]</i>	
12,450–20,200	272 (30.50)
20,200–35,200	329 (36.90)
35,200–60,000	219 (24.60)
Over 60,000	71 (8.00)
<i>Political orientation [Mean (SD)]</i>	4.58 (2.41)
<i>Anxiety about COVID-19 [Mean (SD)]</i>	45.78 (27.58)
<i>Perceived economic threat due to COVID-19 [Mean (SD)]</i>	6.12 (2.67)
<i>Authoritarianism [Mean (SD)]</i>	2.55 (0.70)
<i>Analytical reasoning [Mean (SD)]</i>	0.88 (1.06)
<i>Intolerance of uncertainty [Mean (SD)]</i>	33.19 (9.17)
<i>Conspiracy mentality [Mean (SD)]</i>	8.07 (1.82)

SD=Standard Deviation. Self-reported gender identity was assessed with response options: man, woman, and other. Percentages are calculated within each category

orientation perceived greater contradiction in left-wing statements (see Table 3). The time $\times$ ideology interaction was also significant, $F(1, 887)=95.36$, $p<.001$, reflecting a stronger belief update among participants with left-wing political orientations. Perceived economic threat again moderated the change, $F(1, 887)=12.78$, $p=.0004$, with higher threat linked to reduced belief flexibility. Pandemic-related anxiety remained non-significant, $F(1, 887)=1.60$, $p=.206$. For the left-wing statements, $d=-0.45$, suggesting a more pronounced ideological asymmetry than in the right-wing condition: individuals with more right-wing political orientations showed more rigidity in adjusting their judgments compared to left-wing participants (see Table 3).

Overall, these results provide evidence of motivated reasoning, as participants consistently assessed the statements made by politicians closer to their ideology as less

Table 3 Means and standard deviations after contradictory and exculpatory statements across ideological tertiles

Participant's political orientation				
	Left-wing (low tertile) (<i>N</i> =352)	Centre (middle tertile) (<i>N</i> =255)	Right-wing (high tertile) (<i>N</i> =284)	Total (<i>N</i> =891)
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Left-wing statements				
Contradictory	7.76 (2.32)	8.66 (1.68)	9.23 (1.32)	8.48 (1.97)
Exculpatory	6.39 (2.68)	8.21 (1.77)	8.87 (1.58)	7.70 (2.39)
Right-wing statements				
Contradictory	9.25 (1.19)	8.28 (1.95)	6.61 (2.29)	8.13 (2.13)
Exculpatory	7.95 (1.72)	7.36 (2.07)	5.64 (2.38)	7.04 (2.27)

Ideological tertiles are based on participants' self-placement on a 10-point political orientation scale. This table presents descriptive statistics only. In all inferential analyses, political orientation was treated as a continuous predictor. *M*=Mean; *SD*=Standard Deviation

contradictory. Regarding attitudinal change, both left- and right-identified individuals reduced their contradiction ratings after receiving exculpatory information, indicating belief updating. Yet, the magnitude of this change depended more strongly on ideological congruence among participants with right-wing political orientations, who showed greater rigidity when evaluating left-wing statements. In contrast, participants with more left-wing political orientations consistently adjusted their attitudes regardless of the political alignment of the statements.

Predictors of attitudinal change

Before the correlation and regression analyses, we provided a descriptive overview of attitudinal change. Table 4 displays the mean scores of the change indices for both left-wing and right-wing statements across ideological orientation tertiles. Table 5 shows the bivariate correlations between attitudinal change (for left- and right-wing statements) and the psychological and sociodemographic predictors. We decided to include all theoretically relevant variables in both regression models, one predicting attitudinal change to right-wing statements and the other to left-wing statements, even if some predictors did not show significant correlations. This approach allows us to compare the unique contribution of each predictor across both models. Table 6 shows the results of the regression analyses. For attitudinal change in response to right-wing statements, we found that participants who perceived greater economic threat and scored higher in authoritarianism showed significantly less change, while those with higher reflective thinking scores showed

Table 4 Means and standard deviations for attitudinal change across ideological tertiles

Participant's political orientation				
	Left-wing (low tertile) (<i>N</i> =352)	Centre (middle tertile) (<i>N</i> =255)	Right-wing (high tertile) (<i>N</i> =284)	Total (<i>N</i> =891)
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Indices of change				
Left-wing statements	1.37 (1.79)	0.44 (0.99)	0.35 (0.90)	0.78 (1.42)
Right-wing statements	1.30 (1.63)	0.92 (1.61)	0.97 (1.83)	1.09 (1.70)

Ideological tertiles are based on participants' self-placement on a 10-point political orientation scale. This table presents descriptive statistics only. In all inferential analyses, political orientation was treated as a continuous predictor. *M*=Mean; *SD*=Standard Deviation

greater change. After we controlled for the other variables in the model, authoritarianism emerged as the strongest predictor ($sr=-0.09$). For attitudinal change in response to left-wing statements, we found that participants with a more right-wing political orientation, higher perceived economic threat, and stronger conspiracy mentality exhibited significantly less change. In this model, right-wing political orientation remained the strongest predictor after we controlled for the other variables ($sr=-0.23$).

Discussion

Ideological bias in political judgments

This study explored motivated reasoning by examining how participants evaluated contradictory and exculpatory statements by their preferred and opposing political candidates during an unprecedented socio-sanitary crisis that intensified

political polarisation and reinforced left- and right-wing stereotypes. Motivated reasoning is well established as a factor influencing information processing and decision-making in the general population (Nir, 2011; Strickland et al., 2011). The existing literature has also highlighted that this type of reasoning becomes problematic when it leads to irrational resistance to change, often manifesting as the avoidance of new information (Taber & Lodge, 2006). Therefore, we also sought to identify psychological and social variables that might predict attitudinal change, aiming to understand which factors could mitigate or amplify motivated reasoning when new information is presented.

Considering the results of our motivated reasoning experimental task, and consistent with prior literature (e.g., Taber & Lodge, 2006; Westen et al., 2006), we observed elevated contradiction scores among both right- and left-wing participants when evaluating statements from opposing political parties. This pattern also reflects how participants consistently rated statements from ideologically aligned politicians as less contradictory, both before and after reading exculpatory information, suggesting a motivated reasoning bias. We modelled perceived economic threat as a covariate in our analyses and found that it correlated with reduced belief flexibility, a pattern previously associated with increased cognitive rigidity under conditions of uncertainty or stress (Thórisdóttir & Jost, 2011). Although we observed this effect across the sample, its implications appeared to vary with ideological orientation; participants with more left-wing political orientations tended to revise their evaluations more broadly, including in response to statements from the right-wing, whereas right-wing participants were more resistant to belief updating when processing incongruent information.

These findings suggest an asymmetry in belief updating and support a dimensional model of motivated reasoning,

Table 5 Correlation analysis between attitudinal change and the predictor variables

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Index change-left	—								
(2) Index change-right	0.36, $p<.001$	—							
(3) Political Orientation	-0.32, $p<.001$	-0.11, $p=.001$	—						
(4) Anxiety about COVID-19	-0.01, $p=.718$	-0.04, $p=.263$	0.05, $p=.121$	—					
(5) Perceived economic threat due to COVID-19	-0.13, $p<.001$	-0.12, $p<.001$	0.09, $p=.007$	0.32, $p<.001$	—				
(6) Authoritarianism	-0.24, $p<.001$	-0.14, $p<.001$	0.53, $p<.001$	0.06, $p=.071$	0.12, $p<.001$	—			
(7) Conspiracy mentality	-0.10, $p=.002$	-0.05, $p=.097$	0.07, $p=.026$	0.09, $p=.008$	0.13, $p<.001$	0.09, $p=.005$	—		
(8) Intolerance to Uncertainty	-0.06, $p=.069$	-0.05, $p=.112$	0.05, $p=.119$	0.28, $p<.001$	0.19, $p<.001$	0.17, $p<.001$	0.12, $p<.001$	—	
(9) Reflective thinking	0.05, $p=.155$	0.10, $p=.003$	-0.07, $p=.040$	-0.04, $p=.265$	-0.12, $p<.001$	-0.13, $p<.001$	-0.02, $p=.557$	-0.03, $p=.304$	—

Values are Pearson correlation coefficients (*r*) with exact *p*-values. Index change-left and right refer to attitudinal change after exculpatory information for left- and right-wing political statements, respectively. *p*-values are reported to three decimal places

Table 6 Linear regression predicting attitudinal change

	B	SE(B)	β	t	p	sr	R ²	Adjusted R ²
<i>Predictors of attitudinal change for right-wing statements</i>								
Constant	2.36	0.35		6.56	<0.001		0.04	0.03
Political Orientation	−0.03	0.03	−0.04	−1.12	0.263	−0.04		
Anxiety about COVID-19	0.001	0.002	0.01	0.29	0.765	0.01		
Perceived economic threat due to COVID-19	−0.06	0.02	−0.09	−2.74	0.006	−0.09		
Authoritarianism	−0.23	0.09	−0.09	−2.34	0.019	−0.08		
Conspiracy mentality	−0.03	0.03	−0.03	−0.87	0.384	−0.03		
Intolerance to Uncertainty	−0.003	0.01	−0.01	−0.38	0.702	−0.01		
Reflective thinking	0.12	0.05	0.07	2.19	0.030	0.07		
<i>Predictors of attitudinal change for left-wing statements</i>								
Constant	2.61	0.28		9.10	<0.001		0.12	0.12
Political Orientation	−0.15	0.02	−0.26	−7.13	<0.001	−0.23		
Anxiety about COVID-19	0.003	0.002	0.05	1.50	0.132	0.05		
Perceived economic threat due to COVID-19	−0.05	0.02	−0.10	−3.09	0.002	−0.10		
Authoritarianism	−0.15	0.07	−0.07	−1.93	0.053	−0.06		
Conspiracy mentality	−0.05	0.03	−0.06	−2.06	0.040	−0.06		
Intolerance to Uncertainty	−0.003	0.01	−0.02	−0.62	0.532	−0.02		
Reflective thinking	0.01	0.04	0.01	0.23	0.811	0.01		

The dependent variable is the attitudinal change index, separately computed for right-wing and left-wing political statements. Adjusted R² = adjusted coefficient of determination; B = unstandardised coefficient; SE = standard error; β = standardised coefficient; t = t-value; p = significance level; sr = semi-partial correlation; R² = coefficient of determination; p-values reported to three decimal places. Significant values ($p < .05$) are discussed in the text

whereby attitudinal change varies with ideological proximity rather than categorical group membership. In this sense, we used a continuous measure of political orientation, reflecting participants' symbolic ideological self-placement. While such scales are widely used, it is important to acknowledge that political ideology is often multidimensional, encompassing both economic attitudes (e.g., redistribution, regulation) and sociocultural values (e.g., immigration, tradition) (Feldman & Johnston, 2014). Individuals may position themselves differently across these domains, and symbolic identification with “left” or “right” can shift over time and across contexts (Jost, 2021), making ideology a dynamic construct. Recognising this complexity is essential to avoid overinterpreting the meaning of unidimensional ideological measures.

In addition, perceived economic threat inhibited attitudinal change and contributed to asymmetries in motivated reasoning. This underscores the importance of contextual and psychological factors that could be the target of public health interventions and political strategies that aim to reduce partisan bias. Previous studies have also shown that economic circumstances can moderate motivated reasoning among in- and out-party members, especially when evaluating the government's financial performance. For example, Dickerson and Ondercin (2017) found that, under unfavourable economic conditions, party loyalty reduced the impact of decisions attributed to the favoured political party, especially among party members. Other studies have indicated that social or economic threats, along with an increased need

for control, may prevent consideration of alternative evidence (Thórisdóttir & Jost, 2011). At the time of this study, Spain was governed by a coalition of left-orientated parties, which could have also influenced the lower receptiveness of right-wing individuals to exculpatory information when evaluating the statements of leftist politicians. In contrast, left-wing participants seem to show more flexibility, adapting their attitudes to exculpatory information in both parties' declarations, but this may also have been influenced by the fact that there was a leftist government at the time. Although an alternative interpretation could be that left-wing participants were more flexible because right-wing statements were more valid, this raises the difficult question of how to objectively judge the validity of political statements. Furthermore, we consider this explanation unlikely because prior research shows greater cognitive rigidity and dogmatism on the right than on the left (e.g., Costello & Bowes, 2023; Jost, 2021), because all participants followed the same motivated reasoning pattern and because we designed our stimuli to balance left and right. Additionally, previous research suggests that people attribute credit or blame to the government depending on party allegiance and the prevailing socio-economic conditions (Marsh & Tilley, 2010). For example, Bisgaard (2015, 2019) observed that voters of both governing and opposition parties objectively recognise positive or negative economic circumstances but are polarised about who to assign responsibility for them.

Social and psychological predictors of attitudinal change

Regression analyses confirmed that both a more right-wing political orientation and higher levels of authoritarianism were associated with reduced attitudinal change for left-wing and right-wing statements, respectively. This pattern aligns with previous research linking conservative ideology to lower cognitive flexibility and resistance to new information (Satherley et al., 2021; Wilson & Sibley, 2013; Sinclair et al., 2020). For example, some authors have suggested that conservative individuals are less likely to be open to information that conflicts with their political identity (Baron & Jost, 2019; Morisi et al., 2019), although other recent studies have not found this effect (Ditto et al., 2019). Other studies have reported that conservatives, compared to liberals, have a greater need for certainty (Guay & Johnston, 2022). Cornelis and Van Hiel (2006) also found a link between rigid cognitive styles, such as a desire for order and predictability, and right-wing authoritarianism, with authoritarianism mediating the association between these cognitive styles and conservatism. Likewise, a greater predisposition to conspiracy mentality made individuals less receptive to changing their opinions about left-wing information. Previous studies have indicated that partisans are more likely to believe in out-party conspiracy theories (Miller et al., 2016). By contrast, our results showed that more reflective thinking predicted greater attitudinal change in response to right-wing statements. Although some authors have suggested that partisans employ their cognitive sophistication to process information in the most biased way possible (Kahan, 2013), recent research has highlighted that individuals who score higher on analytic reasoning or reflective thinking show greater receptivity to new information (Tappin et al., 2020b; Tappin et al., 2021).

These findings align with recent research showing that ideological belief bias influences information processing and reasoning. For example, people reason less accurately when conclusions challenge their ideology (Ludwig & Sommer, 2024), and psychological states such as perceived threat or intolerance of uncertainty can intensify political bias (Vail et al., 2023; Keller et al., 2024). This supports the view that motivated reasoning is shaped not only by ideological alignment but also by emotional and dispositional factors. These patterns are also consistent with the framework proposed by Oeberst and Imhoff (2023), which conceptualizes a broad range of judgmental biases as expressions of a general tendency toward belief-consistent information processing. Rather than aiming for accuracy, individuals may prioritise coherence with existing beliefs. The relationships we observed, particularly the reduced attitudinal change among participants with higher levels of authoritarianism,

perceived economic threat, or conspiracy mentality, align with this perspective.

Study limitations and strengths

This study has several limitations that should be acknowledged. First, the findings may be specific to the socio-political context of a global health crisis, and future studies should examine whether similar patterns of motivated reasoning emerge under different circumstances. Although we used a continuous 10-point scale to assess political orientation, ideological self-placement is symbolic and context-dependent. Moreover, political ideology is often multidimensional, typically encompassing economic and sociocultural domains, which are not captured by unidimensional measures (Feldman & Johnston, 2014; Jost, 2021). In countries like Spain, where multiple parties coexist across the ideological spectrum, these simplifications may obscure relevant within-group variability. Second, the task stimuli were not formally validated. We selected statements from real Spanish politicians during the COVID-19 pandemic, following the structure of Westen et al. (2006), aiming to preserve ecological validity. However, the absence of independent piloting remains a limitation. Another significant challenge lies in measuring attitudinal change. Studies often rely on a single item before and after the task, which is problematic due to low reliability (Taber & Lodge, 2006). For this reason, we also calculated an index of change for right- and left-wing statements, which synthesised participants' responses throughout the task. Third, while some of the psychological instruments used in this study showed acceptable psychometric properties, others were ultra-brief or consisted of single-item indicators, limiting the reliability and interpretability of the findings. This applies particularly to the measures of authoritarianism and reflective thinking. Future research would benefit from using more comprehensive scales. Finally, the cross-sectional design limits causal interpretations. Although our findings are consistent with prior experimental studies (Westen et al., 2006), longitudinal or repeated-measures designs would offer a more definitive test of attitudinal change mechanisms over time. Additionally, incorporating measures of left-wing authoritarianism, though challenging to define, would provide a more balanced view and address a limitation in current research frameworks (Costello, 2022). Regarding the strengths of the study, we used a large, representative sample of the population and, contrary to many psychological studies related to the pandemic (Nieto et al., 2020), we employed psychological measures which were validated and showed good psychometric properties. We also designed an online experimental task that yielded results consistent with previous studies on motivated reasoning. Finally, another major

strength is that we considered psychological variables, such as the perception of threat to one's financial situation, that influence motivated reasoning processes and measured their impact (Dickerson & Ondercin, 2017).

Conclusion

In summary, we explored the extent to which people change their opinions when new information is provided and identified social and psychological variables that may magnify or mitigate this change. We also acknowledge the challenge of extrapolating our results; however, we emphasize their consistency with previous research. Understanding these dynamics is especially relevant for policy-making and for gaining insight into the factors that influence decision-making processes. Beyond its impact on political decisions, understanding motivated reasoning has significant implications for health interventions involving behavioural change, such as adherence to treatments or diet initiation (Strickland et al., 2011). By identifying the psychological factors that drive motivated reasoning, we can better explain individuals' responses to health-related information, particularly when such messages are perceived as aligned with or opposed to their personal beliefs or ideological leanings, especially in times of socio-political crisis.

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Data availability The data and materials for this study were registered in the Open Science Framework (OSF). A more detailed description of the project is available at [link hidden for review]. Data will be made available upon reasonable request to ensure compliance with the review process and ethical considerations.

Declarations

Conflict of interest None of the authors who sign this paper have any conflict of interest in conducting and reporting our research. We confirm that the manuscript has been read and approved by all named authors and is not being submitted elsewhere for publication.

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