frontiers in Political Science

TYPE Original Research
PUBLISHED 29 April 2026
DOI 10.3389/fpos.2026.1805138

OPEN ACCESS

EDITED BY
Patrizia Pérez Asurmendi,
Complutense University of Madrid, Spain

REVIEWED BY
Antonio Mercer,
Pontifical Catholic University of Parana, Brazil
Mohamed Rashwan,
British University in Egypt, Egypt

*CORRESPONDENCE
Benoît Béchard
benoit.bechard.1@ulaval.ca

RECEIVED 05 February 2026
REVISED 17 March 2026
ACCEPTED 30 March 2026
PUBLISHED 29 April 2026

CITATION
Béchard B, Bodet MA, Couture J and Morneau-Guérin F (2026) Deciding on secession: how familiar and unknown futures shape loss aversion. *Front. Polit. Sci.* 8:1805138. doi: 10.3389/fpos.2026.1805138

Deciding on secession: how familiar and unknown futures shape loss aversion

Benoît Béchard[1]*, Marc André Bodet[2], Jérôme Couture[2] and Frédéric Morneau-Guérin[3]

[1]School of Psychology, Pavillon Félix-Antoine-Savard, Université Laval, Québec, QC, Canada, [2]Department of Political Science, Pavillon Charles-De Koninck, Université Laval, Québec, QC, Canada, [3]Departement Education, Université TÉLUQ, Québec, QC, Canada

Loss aversion is well supported by experimental evidence from structured and well-defined private decision-making tasks, yet its role in political dilemmas remains uncertain. Logically comparing alternatives and evaluating the consequences of political decisions is often challenging and typically depends on substantive cognitive assessment. In secession referendums, voters must weigh the personal and collective future consequences of their choice. Using gain- and loss-framed scenarios that contrast certain and uncertain options, this online experimental study (N = 401) examines how loss aversion shapes secession decisions with high-stakes implications for both the individual and collective levels. Results show that the combination of framing and scenario influences risk propensity. In a union scenario, voters take greater risks when outcomes are framed as losses. However, in a scenario where the regional government becomes an independent country, responses shift; gains frame riskier choices, while losses favor certainty. Regression analyses indicated that undecided voters are more likely to take risks when the status quo is framed as a loss, whereas framing secession as a gain is associated with risk-taking. The findings are consistent with the interpretation that unfamiliarity may lessen endowment effects and increases risk tolerance, particularly among undecided voters in contexts where options are not presented as logically equivalent, as is the case in real-life political dilemmas.

KEYWORDS
framing, loss aversion, political decision-making, secession, temporal uncertainty

Introduction

Political decision-making involves complex and divisive issues such as immigration, abortion rights, healthcare reform, and climate change policies, which evoke strong emotional responses among voters. Emotions can shape how information is prioritized, leading individuals to make decisions based on their feelings (Romanova and Hutchens, 2024). A referendum on secession generates sharp emotional divides that strongly resonate with voters (Balcells and Kuo, 2023). Parties adopt firm positions that polarise public opinion, eliminating grey areas that could serve as safe havens for undecided voters.

Explaining support for secession

Various theories have been proposed to explain support for or opposition to secession. Sociological approaches indicate that the dominant language of the target population, the middle-aged demographic, and favorable socio-economic conditions all contribute to increased support for

secession (Gagné and Langlois, 2002), although this support typically lessens in recent generations (Ferland and Desrochers, 2023). Sociopsychological models focus instead on individual and collective perceptions, emphasizing historical grievances as a key driver of support for secession, rooted in social and cultural history (Pinard, 1992). Confidence in the success of the secession movement and in the future country's capacity to govern itself strengthens such models (e.g., Pinard and Hamilton, 1986).

Other researchers have instead focused their attention on the role of individual perceptions in shaping preferences. For instance, Blais et al. (1995) emphasized the significance of economic expectations: voters who anticipate positive economic outcomes from secession are more likely to support it than those concerned about potential financial risks (see also Fournier and Blais, 2025). Consequently, economic concerns about a newly independent country would reduce support for secession (Martin, 1994).

While collective identity influenced decisions about political secession, it was increasingly understood alongside evaluative considerations based on rational choice theory. Nadeau et al. (1999) noted the importance of risk tolerance: assessing secession through a cost–benefit lens, individuals who are more willing to take risks are more likely to support secession. Conversely, more cautious individuals would focus on negative scenarios and potential "worst outcomes." This view suggests that people with low risk tolerance are more sensitive to potential losses. From a rational standpoint, this offers a key insight into support for secession: individual perceptions of its economic impact would be among the strongest predictors (Mendelsohn, 2003).

Uncertainty and choice

Many studies in political science have highlighted the discrepancies between what rational models predict and actual behavior when individuals face uncertainty and make risky choices (e.g., Chong, 2013; Geddes, 2018; see also Dörner and Güss, 2022). Deciding on divisive political issues entails a complex interplay of cognitive, motivational, and emotional processes (Dörner and Güss, 2013; Funke, 2010). Supporting or opposing secession requires considering multiple parameters that change nonlinearly and dynamically affect the issue (e.g., Gonzalez et al., 2005), predicting potential side effects associated with each option (e.g., Sterman, 2006), and accounting for delays and accumulations, such as the gradual depletion or growth of resources and capacities in a state that remains in or separates from a larger union (e.g., Rahmandad et al., 2009). Political decisions rarely present themselves as dilemmas in which the options are logically equivalent. They more often involve conflicting choices that trigger complex cognitive-emotional-motivational responses due to their significant impact on both individual and collective outcomes (see Funke, 2010). As voters try to process complex information, such challenges can exceed human cognition (Béchard et al., 2025).

Amid complex issues, researchers have shown that policymakers and voters alike intuitively simplify information to facilitate decision-making (e.g., Béchard et al., 2023; Hartwell, 2022). Spontaneous emotional reactions, sometimes referred to as emotional intuition (Gigerenzer and Gaissmaier, 2015), are automatic responses that help reduce the need for detailed analysis and effortful thinking (Gigerenzer, 2023). A key emotional tendency related to intuitive decision-making is loss aversion (see Kahneman and Tversky, 2013).

Loss aversion is a cognitive-affective phenomenon in which people prefer avoiding losses to gaining similar rewards. This occurs because gains and losses are not processed symmetrically: losses are indeed usually felt as more painful than equivalent gains (Kahneman and Tversky, 2013). The prospect of a loss tends to elicit a stronger emotional response, even among individuals who do not typically exhibit loss aversion (Hochman and Yechiam, 2011). This tendency may be amplified when individuals feel attached to something they own or that is socially recognized, thereby strengthening the bias toward maintaining the status quo as people seek emotional comfort in existing conditions (Alesina and Passarelli, 2019; Liñeira and Henderson, 2021). Indecisiveness makes it harder to evaluate options (Thaler and Sunstein, 2009), which can discourage public support for change and reform (Gao, 2023) and lead to governmental inaction (Vis, 2011).

Loss aversion has been extensively documented in psychology (Gisbert-Perez et al., 2022) and has been shown experimentally to challenge rational assumptions. When information emphasizes potential losses, people tend to take more risks because they view those losses as unavoidable consequences of inaction. The potential for loss may trigger an emotional preservation response, leading to an attempt to avoid losses as much as possible. In contexts framed as gains, individuals appear less willing to take risks because the perceived cost of a loss exceeds the value of an equivalent gain (Kahneman, 2011). This shift is referred to as the reflection effect (see Baucells and Villasís, 2010). Through this process, framing can alter the perceived reference point, thereby affecting risk tolerance. This helps explain why equivalent choices can lead to different decisions (Lévy-Garboua et al., 2012).

Although the effect may sometimes be modest (Walasek et al., 2024), recent meta-analyses support the expectations on loss aversion (Brown et al., 2024; Neumann and Böckenholt, 2014). Similar patterns have been documented across disciplines, including in political science (see Mercer, 2005). Loss aversion also appears to have a significant impact on private decision-making, such as consumer choices (e.g., Karle et al., 2015), investments and savings (e.g., Fisher and Montalto, 2011), and medical decisions (e.g., Sacks et al., 2021). However, some research questions its empirical support in the social sciences (e.g., Gal and Rucker, 2018; Higgins and Liberman, 2018). Studied through experiments involving risky choices that elicit dilemmas of individual well-being (Osmundsen and Petersen, 2020), loss aversion has been challenged in contexts where decisions relate to collective interests. When individuals make decisions for others, the potential for loss aversion could decrease (Andersson et al., 2016; Füllbrunn and Luhan, 2017). People sometimes perceive their future self as another person. In such cases, they may exhibit lower loss aversion than when deciding for their present selves (Cheng and He, 2017), revealing an underappreciated temporal aspect (Sokol-Hessner and Rutledge, 2019) that may constrain the observed scope of the phenomenon to contexts involving well-defined outcomes in private decision-making.

Political decision-making reflects not only private concerns (Maria Schaffer and Spilker, 2019) but also sociotropic factors that extend beyond individual experiences while still carrying personal implications (e.g., Hainmueller and Hopkins, 2014). Research on referendums indicates that voters frequently base their choices on broader issues that are not explicitly mentioned in the question (e.g., Berg Bilbao and Navia, 2025). Secession from an existing political regime typically presents two options that combine private and collective well-being considerations, each requiring some degree of substantive judgment. The options presented to voters can involve both immediate personal trade-offs (e.g., loss of citizenship rights, limited access to social services) and heterogeneous collective consequences related to trade, national security, and economic (in)stability, whose temporal distance can affect how risks are perceived (see Petersen and Aarøe, 2013; Polman, 2012).

This study examines the extent of loss aversion in contexts with personal and collective consequences. It focuses on loss aversion in political secession dilemmas, where outcomes are framed as gains or losses that

contrast certain and uncertain options (see Soman, 2004). The aim was to examine how gain and loss frames influence decision-making in scenarios that closely resemble real-world political dilemmas, where the substantive content of the alternatives also matters. By carefully wording to enhance political realism, we explicitly acknowledge the trade-off between increased realism and reduced formal equivalence across experimental options. Therefore, the study is not a direct test of prospect theory, but rather an investigation of how these frames function in contextually rich, real-world decisions. We posit that the emotional responses triggered by exposure to the potential consequences of secession may serve as a shortcut for managing the complexity of the issue: voters should be risk-averse when facing gains, and risk-seeking when facing losses. The specific scenario they face should influence how loss aversion impacts their decision; participants exposed to maintaining the status quo may tend to behave in accordance with the reflection effect, whereas participants shown the scenario involving an unknown future (i.e., becoming an independent country) may exhibit lower loss aversion. We hypothesize that this pattern should be more pronounced among participants who are indecisive about secession (and therefore lack a reference point).

Materials and methods

The research protocol consisted of a web-based experimental survey, following the logic of a randomized controlled trial (RCT), and structured according to a 2-by-2 factorial design. We experimentally manipulated two factors: the political status (remaining within the federal state or becoming independent) and the presentation of information (framing outcomes as gains or losses). Each set of treatment included one alternative framed to elicit certainty and another to elicit uncertainty. The alternatives were designed to prompt substantive information processing rather than purely logical comparison. Participants were blind to condition assignments and were randomly allocated to one of four treatments:

- Treatment 1: Remaining within the federal state (FED) + outcomes framed as gains (Gain)
- Treatment 2: Remaining within the federal state (FED) + outcomes framed as losses (Loss)
- Treatment 3: Becoming independent (IND) + outcomes framed as gains (Gain)
- Treatment 4: Becoming independent (IND) + outcomes framed as losses (Loss)

Participants were recruited, and data were collected online through a web-based panel[1] between April 14th and April 21st, 2025. This panel comprises volunteers who registered to participate in online surveys in exchange for points redeemable for rewards (such as gift cards) and entries into weekly and monthly prize draws. Participation in the study was understood as informed consent.

Eligibility criteria required participants to be at least 18 years old (the legal voting age), to reside in the subnational entity where the study took place, and to speak one of the federally recognized official languages at home. Participants were drawn from the French- and English-speaking populations of the province of Quebec in Canada. Accordingly, the questionnaire was available both in French and English to the participants' convenience, ensuring linguistic representativeness. The outcome variable was coded as a choice between the two options presented (certainty vs. uncertainty). Participants who opted for the certain option were coded 1 and those who opted for the uncertain option were coded 0. Responses of "Do not know" and "Prefer not to answer" where coded as missing. For estimation, we used listwise deletion.

An *a priori* power analysis for a 2-by-2 between-subjects factorial design was carried out to determine the target sample size. Assuming a small-to-medium effect size ($f = 0.15$), a one-tailed $\alpha = 0.05$, and 80% statistical power, the analysis indicated that approximately 350 participants would be required. To maintain adequate power in the event of exclusions or missing data, a recruitment target of approximately 400 participants was set. This sample size provides adequate sensitivity to detect effects of theoretical interest while avoiding unnecessary oversampling.

By voluntarily signing up for the panel, participants agreed to be invited to participate in online surveys. To access the questionnaire, participants logged into their accounts and followed the provided link. Then, they were automatically redirected to a webpage explaining the study's purpose and providing details on the participation procedure, data anonymization and confidentiality measures. The information provided did not reveal explicitly the topic of the study. It was kept sufficiently general (i.e., assessing the psycho-emotional aspects of secession decision-making) to avoid influencing participants. The webpage ended with a thank-you message inviting them to click "Next" to begin the survey.

The first section comprised a series of sociodemographic questions covering gender (man or woman), age, and primary language spoken at home (French, English, or both). Participants were asked to rate their political knowledge on a scale from 1 (no knowledge) to 10 (excellent knowledge). They also had to provide their ideological self-placement on a scale from 0 (far left) to 10 (far right). That variable was recoded into three categories: Left (0 to 3), Centre (4 to 6), and Right (7 to 10). Participants were then asked to express their views on the political future of the subnational entity by answering the following question: "How much do you support a major change in the status of your regional government within the federal state?" Responses were recorded on a five-point scale ranging from "Strongly in favor of change" to "Strongly opposed to change."

Following completion of the first section and prior to the presentation of the scenarios, all participants were presented with the following vignette[2], regardless of their treatment assignment:

> *Like other regions around the world, your regional government goes through periods of economic growth and recession, influenced by internal and external factors. As part of the global economy, it is vulnerable to international fluctuations. The structure within which it operates, as well as local and international political events, shape the environment it must navigate, creating opportunities or imposing constraints. Decisions and public policies implemented by other states can also affect their ability to prosper.*
>
> *In this regard, the issue of your regional government's political status periodically resurfaces in public debate, influenced by socio-economic dynamics and contemporary socio-political discussions.*
>
> *Considering the above, which scenario would you prefer if you had to choose one of the following options?*

1 The online survey was administered via the Leger Opinion (LEO) panel. Before administering the survey, the panel conducted a pretest with a pilot sample to ensure that prospective respondents understood the questionnaire.

2 This version of the vignette was shown to participants who indicated English

10.3389/fpos.2026.1805138

TABLE 1 Sample distribution among treatments (N = 401).

Choice	Remaining within the federal state (n = 201)		Becoming independent (n = 200)		Total (n = 401)
	Outcomes as gains (n = 100)	Outcomes as losses (n = 101)	Outcomes as gains (n = 100)	Outcomes as losses (n = 100)	
Risk aversion (certainty)	69 (69.0)	21 (20.8)	24 (24.0)	60 (60.0)	174 (43.4)
Risk propensity (uncertainty)	31 (31.0)	80 (79.2)	76 (76.0)	40 (40.0)	227 (56.6)
Total	100 (100)	101 (100)	100 (100)	100 (100)	401 (100)

Percentages in parentheses are calculated by column for each scenario and framing.

Participants were then presented with a choice between two potential outcome scenarios drawn from one of four binary sets. Table 1 presents these options. They were asked to select the option that best reflected their perspective. Within each binary sets, one scenario emphasized certainty and the other uncertainty. The scenarios were designed to ensure that outcome probabilities were consistent across groups.

Participants subsequently rated their support for secession on a scale from 1 (complete opposition) to 10 (full support). The survey concluded with questions assessing participants' perceptions of the regional government's economic situation, both at the personal and state level, and their voting intentions. The time taken to complete the survey differed considerably among participants (M = 11 min 53 s, Mdn = 5 min 14 s).

The primary outcome variable measured risk-related behavior (i.e., choice in favor of uncertainty vs. choice in favor of certainty). The main explanatory variables were the scenarios (remaining within the federal state or becoming independent) and the frames (gains or losses). Self-reported support for secession served as a context-specific proxy for assessing whether individuals' stance on secession could explain variation in risk-related behavior.

Results

To ensure that randomization produced comparable groups with respect to relevant sociodemographic and attitudinal characteristics, we performed a covariate balance test using inverse probability weighting (IPW). This approach assigns weights to each participant based on the inverse of their likelihood of being assigned to a given treatment group, thereby correcting for potential covariate imbalance. Covariates included age, sex, primary language spoken at home, and ideological self-placement on the left–right scale in three categories (Left, Centre, and Right). We aimed for weighted standardized mean differences between each treatment group and the reference group (remaining within the federal state with outcomes framed as gains) below the commonly accepted threshold of 0.1 (Austin, 2009) and weighted variance ratios close to 1, the latter indicating homogeneity of variances across groups.

Table 2 summarizes the treatment-effect estimation. Prior to weighting, substantial covariance imbalance was observed across the four groups on three of the four covariates. However, after IPW, balance improved markedly: all weighted standardized mean differences fell below 0.1. Variance ratios also converged substantially toward 1 after weighting, providing a credible basis for comparative analysis.

The sample consisted of 401 participants. All participants lived in the Canadian province of Quebec at the time they completed the online survey. The primary spoken language at home among participants was French (n = 364), followed by English (n = 35), with 2 participants reporting equal use of both languages equally. The sample displayed a nearly equal sex ratio, comprising 201 men and 200 women. Participants' ages ranged from 18 to 75+, with a relatively even distribution across groups: 18–34 years (n = 103), 35–54 years (n = 150), 55–74 years (n = 110), and 75 + years (n = 38). Most participants had either a college diploma (34%) or a bachelor's degree (27%), with 14% (n = 56) having completed graduate-level studies. Most participants were employed (63%), while 27% were retired (n = 107) and 5% were full- or part-time students (n = 21) at the time of the study. Household gross annual income was broadly distributed, with 42% reporting an income below $70,000 CAD and 37% reporting an income of $100,000 CAD or more. Overall, participants reported a moderate-to-high level of political knowledge (Mdn = 7, SD = 2.2), indicating they were sufficiently informed to understand the issues discussed in the survey. Ideological self-placement showed a normal distribution (Mdn = 5, SD = 1.9), with responses distributed around the centre, without excessive clustering at the extremes.

Participants' responses appear to reflect the combined influence of outcome framing (gains vs. losses) and the political status presented (see Table 3). Among participants assigned to the federal state scenario[3], behavior was broadly consistent with the theoretical predictions; most preferred certainty (71%) when presented with outcomes framed as gains, reflecting behavior aimed at avoiding losses. When outcomes were framed as losses, a majority of participants favored the uncertain option (79%), indicating a tendency toward risk-taking (or risk tolerance). Participants confronted with the scenario of the provincial government becoming an independent country exhibited a pattern that differed from theoretical expectations: outcomes framed as gains appeared to lead to a higher tendency to choose uncertainty (75%), suggesting

was their commonly spoken language at home, while a French-language version was presented to those who reported French as their main language.

3 The data presented here are weighted. Statistical analysis makes use of estimated IPW weights.

TABLE 2 Treatment-effect estimation.

Diagnostic statistics	Std raw	Std weight	Var raw	Var weight
FED_Loss				
Age	0.27	−0.07	1.07	1.00
Woman	−0.23	0.06	1.03	1.01
French	−0.15	0.09	1.71	0.78
Left–Right	−0.14	−0.02	1.24	1.17
IND_Gain				
Age	0.18	−0.06	0.96	0.90
Woman	−0.24	0.05	1.03	1.01
French	−0.31	0.09	2.53	0.78
Left–Right	−0.15	0.02	1.08	1.03
IND_Loss				
Age	0.06	−0.09	0.89	0.83
Woman	−0.26	0.09	1.02	1.01
French	−0.16	0.08	1.72	0.81
Left–Right	0.08	0.06	0.97	0.88

TABLE 3 Weighted sample distribution among treatments (N = 401).

Choice	Remaining within the federal state (n = 201)		Becoming independent (n = 200)		Total (n = 401)
	Outcomes as gains (n = 100)	Outcomes as losses (n = 101)	Outcomes as gains (n = 100)	Outcomes as losses (n = 100)	
Risk aversion (Certainty)	71.4%	21.3%	25.4%	61.5%	46.0%
Risk propensity (Uncertainty)	28.6%	78.6%	74.5%	38.4%	54.0%
Total	100%	100%	100%	100%	100%

risk-seeking preferences, whereas outcomes framed as losses favored certainty (62%), consistent with a tendency to avoid risk and minimize losses.

To determine whether response distributions differed significantly across political status scenarios and framing conditions, an uncorrected chi-square test (χ^2) was performed. The result was significant, $\chi^2(3) = 78.15$, $p < 0.001$, with a (unweighted) Cramér's V of 0.43, indicating a moderate-to-strong effect size and suggesting that the observed differences between groups are unlikely due to chance.

We then estimate a multivariate linear probability model (LPM) where scenarios and frames were interacted to estimate their association with the probability of choosing an uncertain over a certain outcome. LPM is a good choice when the outcome variable is not too skewed in favor of one choice or the other. It is important to treat the inherent heteroskedasticity created by such a proposition but the gain are important (see Wooldridge, 2016; Karlson et al., 2012). First, interpretation is much simpler compared to Logit and Probit models. Second, since LPM is an algebraic estimation, it can deal with empty cells in complex models easily. It is still important to note that estimates without interactions did not change substantially when a logistic regression model was used instead.[4] However, since one combination (Low support for independence x Independence scenario x Loss frame that leads to the choice of certainty) produces an empty cell, the interaction model cannot be estimated in a maximum-likelihood framework. For these reasons, LPM is a better option here.

In addition to the scenario contrasts (stay in Canada and suffer a loss, separate from Canada and benefit from a gain, separate from Canada and suffer a loss), we control for age and age squared, gender, primary language spoken at home (French vs. English and both), and support for secession (three categories).[5] The model also includes interactions between scenarios and frames. We make use of standard errors robust to control for heteroskedasticity.

We found the same patterns as in Figure 1, with those facing a loss with the federal framework (FED_Loss) being more likely to opt for an uncertain outcome (+60.0%) than those facing a gain in a federal state (the reference category). Similarly,

4 Full results are presented in the Appendix.

5 The reference category is Low Support (1, 2, and 3 on the 0 to 10 scale). Moderate Support includes respondents who answer 4 to 7. High Support includes respondents who answer 8 to 10.

10.3389/fpos.2026.1805138

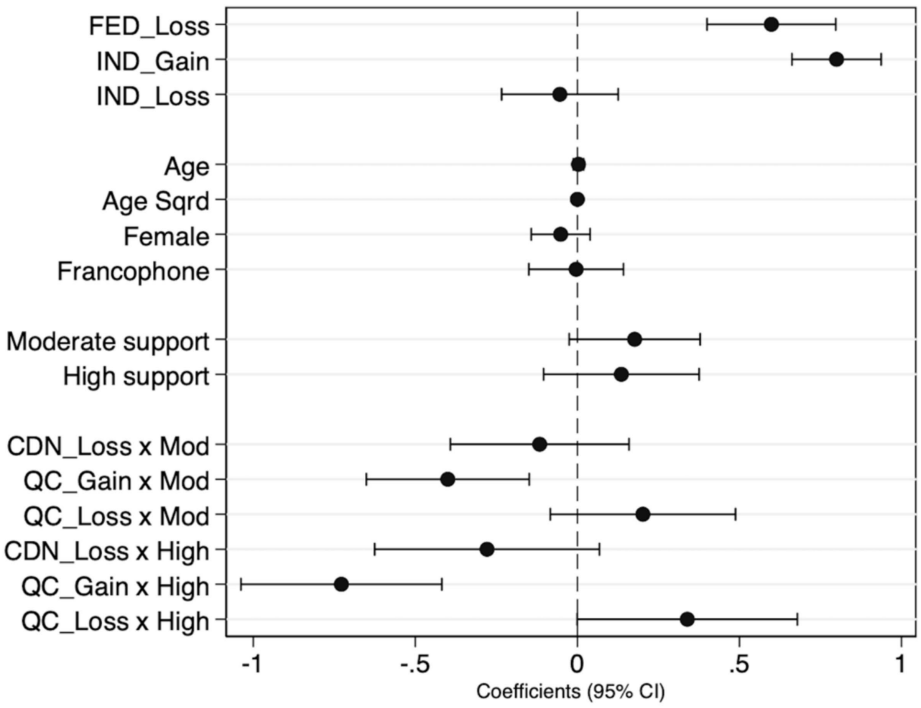

FIGURE 1
Multivariate LPM to predict support for an uncertain scenario. Confidence intervals are estimated using robust standard errors and a 95% level of confidence.

participants facing a gain in case of independence (IND_Gain) were also more likely to opt for the uncertain outcome (+80.0%) than those facing a gain in a federal state. These two estimates are statistically significant at the 95% confidence level. There was no statistically distinguishable difference between the loss in case of independence (IND_Loss) and the reference category.

We further examined heterogeneity across subgroups defined by level of support for independence. The reference category (n = 150) comprised participants scoring 1, 2, or 3 on the 0 to 10 scale. Moderate Support (n = 158) included participants who answered 4 to 7. High Support included participants who answered 8 to 10. Given the difficulty of interpreting the full LPM in this subgroup context, we estimated average marginal effects for each subgroup separately. Figure 2 shows that individuals with low support for independence tend to choose the uncertain outcome more (+60%) when facing a loss under the federal framework and a gain in the case of independence (+80%) compared to the reference category. The coefficient associated with a loss under independence is not statistically significant. This is consistent with the general pattern observed in Figure 1. Among participants with moderate support (n = 93), a similar but weaker pattern emerged: both the conditions of a loss with the federal framework (+48%) and a gain in case of independence (+40) were associated with a higher likelihood of choosing the uncertain outcome, though the latter remained statistically indistinguishable from the reference category. Among strong supporters of independence (8, 9, and 10 on the scale), a different pattern emerged. The condition where participants face a loss with the federal framework was positively associated with choosing the uncertain outcome (+32%) compared to the reference category, whereas the condition of a gain in the case of independence was no longer statistically significant. Notably, the condition of a loss in the case of independence was also associated with an increased likelihood of choosing the uncertain outcome (+29%). This difference approached but did not reach the 95% level of confidence expected (p = 0.056).

Discussion

A referendum on secession is a complex and divisive issue with consequences for individuals and groups. In such contexts, emotions can serve as intuitive shortcuts to reduce information and lead voters to depend on their intuition (Marcus et al., 2000; Couture and Breux, 2021).

Loss aversion is a bias in which individuals prefer avoiding losses to acquiring equivalent gains. This tendency has been demonstrated in psychology experiments involving individual risk dilemmas. Yet in politics, voters face high-stakes choices that involve both personal and societal risks, which can be difficult to assess when those risks are widespread at the collective level and develop over the long term. Loss aversion may vary depending on whether the decision is personal, collective, or both, and can be substantially reduced when choices are made on behalf of others or for one's future self, particularly under conditions of temporal uncertainty (when alternatives correspond to an unknown future).

This study examined the extent to which loss aversion influences voters in a referendum on secession. By framing choices as gains or losses in political dilemma scenarios that capture implications for personal and collective well-being, we examined the role of risk preferences in contexts that varied in familiarity and were not presented as logically equivalent, but were instead

10.3389/fpos.2026.1805138

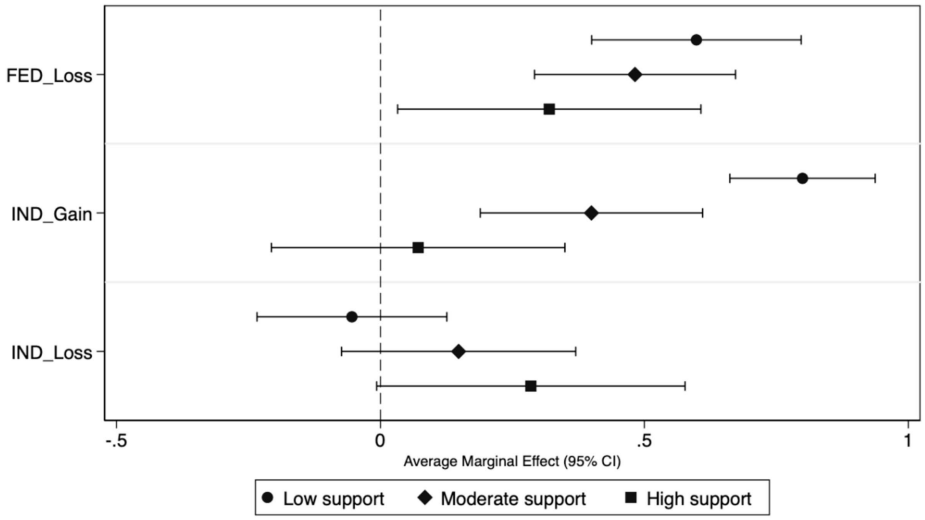

FIGURE 2
Average marginal effects to predict support for an uncertain scenario. Confidence intervals are estimated using robust standard errors and a 95% level of confidence.

designed to elicit substantive information processing, as is typical in real-world political decision-making.

When it comes to secession, the combination of scenario and information framing appears to influence how voters perceive risks. When the scenario suggests that the regional government remains part of a larger federal union, the data describe a pattern broadly consistent with loss aversion and the reflection effect (e.g., Brown et al., 2024; Walasek et al., 2024). Voters seem more willing to take risks when outcomes are framed as potential losses, and more caution when they are framed as potential gains. However, when the scenario implies that the regional government becomes an independent country, the response pattern shifts: outcomes framed as gains appeared to increase risk propensity, while outcomes framed as losses tended to favor risk aversion. Regression analyses suggest that participants who identified as undecided voters were more likely to take risks when the status quo was framed as a potential loss. Framing secession in terms of potential gains also led to increased risk-taking.

Results of the present study suggest that the combination of framing and the political scenario influences the tendency to choose safer versus riskier options. One possible explanation is that framing effects may be stronger in high-stakes decisions, particularly when outcomes bear both personal and societal consequences, as in political contexts. The importance of a decision may increase the likelihood that gain- and loss-framed outcomes elicit opposing emotional responses (Gosling et al., 2020). Although evidence indicates that both low- and high-stakes decision dilemmas are influenced by loss aversion (Bleichrodt and L'haridon, 2023), political dilemmas may intensify loss aversion.

An alternative interpretation is that remaining in the federal state may increase the propensity to engage in risky behavior, with voters seeking to minimize losses in situations they perceive as plausible. It is possible that citizens have well-developed institutional and economic reference points. Being accustomed to typical ups and downs in a country's economy and recognizing that periods of slower growth or setbacks are not permanent and have been overcome before, may provide an intuitive basis for taking on additional risks when future projections suggest potential losses. From this perspective, the data are consistent with the idea that loss aversion may be stronger in scenarios rooted in the voter's personal experience, as they have 'lived through' them. When decisions involve familiar, current realities, loss aversion could reflect both personal experience and the emotional significance of real-world stakes that the voter can more easily relate to, thereby reinforcing loss aversion when this familiar order appears threatened.

The observed pattern may reflect the endowment effect: attachment to familiar options could increase perceived value and loss aversion, which may in turn encourage a status quo bias (Alesina and Passarelli, 2019; Litovsky et al., 2022). On the other hand, participants might have found it harder to assess the substance of a problem space without familiar landmarks. Familiarity may partly structure how citizens perceive and interpret an established political order. In a scenario in which the regional government becomes an independent country, information could be perceived as abstract and speculative, leading people to be more willing to adopt a risk-tolerant approach. For undecided voters specifically, this scenario could remain abstract and hypothetical. For many voters, especially those who are undecided, this absence of familiar institutional markers could reduce the subjective weight of potential losses and thereby increase tolerance for risk, especially regarding potential gains. Incidentally, they would not show the emotional tendency to defend what is theirs because the dilemma they face seems fictional and part of an imagined future. This appears to fall within the boundaries of loss aversion, which includes situations where decisions are made for an alternative future self-corresponding to another person (Cheng and He, 2017).

Although the mechanisms of familiarity, temporal uncertainty, and the endowment effect have not been directly tested, they offer a plausible, partial explanation for the observed patterns, which helps specify the limits of loss aversion (Novemsky and Kahneman, 2005). Accordingly, these explanations should be

understood as inferential rather than as processes directly isolated in the present study.

The findings have implications for how people make political decisions, particularly in cases that may involve divisive issues whose implications include some degree of temporal uncertainty. When voters face decisions that combine private and collective well-being and cannot be readily assessed through purely logical evaluation, loss aversion may be one factor influencing their behavior, leading individuals to adopt risk-seeking attitudes toward unlikely scenarios they have not personally experienced.

The study did not directly measure scenario plausibility, clarity, credibility, familiarity, or emotional valence, which we acknowledge as a modest limitation concerning the construct validity of the manipulations. It should be noted that built on a preregistered design, balanced treatment groups, and a theoretically grounded experimental framework, the studycontributes evidence within its empirical domain. However, it is important to emphasize the scope of the findings by clarifying the conditions under which the conclusions apply. A limitation of the present study is that the scenarios did not vary solely in terms of gains versus losses or certainty versus risk, but also in the economic and institutional content and phrasing of the consequences described. Wording aimed at greater political realism entails a trade-off with formal equivalence. As a result, part of the observed effect may reflect the specific presentation of each political scenario; nevertheless, the study advances our understanding of how gain and loss frames operate in politically meaningful contexts. In addition, some analyses rely on subgroup comparisons, notably among undecided voters and individuals highly supportive or opposed to secession. These subgroups vary in size, and the statistical power for some comparisons (especially interaction effects) may be reduced. Future studies could stratify sampling based on prior attitudes or increase sample sizes to allow more precise estimation of heterogeneous effects.

Although the experiment aimed to replicate realistic political dilemmas, the scenarios inevitably simplify the complexity of actual secession debates. Framing manipulations and probabilistic structures cannot fully capture the multidimensional nature of political, economic, and identity-based considerations that voters experience in real referendums. Research on loss aversion tends to rely on experimental tasks that precisely structure the problem space (see Kelman, 2011). However, one may assume that the uncertainty encountered in a static, well-defined decision task differs from that in tasks that capture the complexity of politics. In practice, political decision-making unfolds differently. Doing so requires the ability to anticipate potential side effects, adapt to feedback, consider many variables that evolve dynamically and change the problem space, and forecast, as best as possible, long-term, unpredictable consequences. Such cognitive tasks largely exceed those typically covered by laboratory experiments with fixed parameters and a highly structured nature (e.g., puzzles, towers, scripted dilemmas).

Open-ended simulations have proven useful in laboratory settings for replicating the complex uncertainties encountered in real-world contexts (Dörner and Funke, 2017). Simulations can capture both the passage of time and information processing involved in balancing personal and collective implications in political decision-making (e.g., Béchard et al., 2023, 2025). They could prove particularly useful for measuring the effect of temporal uncertainty in situations that mirror the consequential global challenges faced today (Funke, 2021). While framing loss aversion within a dynamic experimental task environment presents its own challenges, researchers might be surprised by how it manifests in contexts that more accurately capture the challenges of political decision-making.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation, upon request.

Ethics statement

Ethical approval was not required for this study involving human participants in accordance with local legislation and institutional requirements. Participation in the study was considered to imply informed consent. Accordingly, written informed consent to participate was not required from the participants or their legal guardians/next of kin under national legislation and institutional policies.

Author contributions

BB: Conceptualization, Data curation, Methodology, Project administration, Validation, Writing – original draft, Writing – review & editing, Investigation, Supervision. MB: Conceptualization, Formal analysis, Methodology, Visualization, Writing – original draft, Writing – review & editing. JC: Formal analysis, Validation, Writing – review & editing. FM-G: Methodology, Validation, Writing – review & editing.

Funding

The author(s) declared that financial support was not received for this work and/or its publication.

Conflict of interest

The author(s) declared that this work was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declared that Generative AI was not used in the creation of this manuscript.

Any alternative text (alt text) provided alongside figures in this article has been generated by Frontiers with the support of artificial intelligence and reasonable efforts have been made to ensure accuracy, including review by the authors wherever possible. If you identify any issues, please contact us.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpos.2026.1805138/full#supplementary-material

References

Alesina, A., and Passarelli, F. (2019). Loss aversion in politics. *Am. J. Polit. Sci.* 63, 936–947. doi: 10.1111/ajps.12440

Andersson, O., Holm, H. J., Tyran, J. R., and Wengström, E. (2016). Deciding for others reduces loss aversion. *Manag. Sci.* 62, 29–36. doi: 10.1287/mnsc.2014.2085

Austin, P. C. (2009). Balance diagnostics for comparing the distribution of baseline covariates between treatment groups in propensity-score matched samples. *Stat. Med.* 28, 3083–3107. doi: 10.1002/sim.3697

Balcells, L., and Kuo, A. (2023). Secessionist conflict and affective polarization: evidence from Catalonia. *J. Peace Res.* 60, 604–618. doi: 10.1177/00223433221088112

Baucells, M., and Villasís, A. (2010). Stability of risk preferences and the reflection effect of prospect theory. *Theor. Decis.* 68, 193–211. doi: 10.1007/s11238-009-9153-3

Béchard, B., Hodgetts, H., Morneau-Guérin, F., Ouimet, M., and Tremblay, S. (2023). Political complexity and the pervading role of ideology in policy-making. *J. Dyn. Decis. Mak.* 9, 1–16. doi: 10.11588/jddm.2023.1.94755

Béchard, B., Hodgetts, H. M., Teyssier-Roberge, G., Morneau-Guérin, F., Ouimet, M., and Tremblay, S. (2025). Breaking through the 'wall of complexity' in a politically themed microworld: a challenge for elected officials and the general public. *Cogn. Process.* 26, 689–706. doi: 10.1007/s10339-025-01257-w

Berg Bilbao, S., and Navia, P. (2025). The perception of insecurity and vote choice in national referendums: the case of Chile in 2022. *Politics*, 02633957241313423. doi: 10.1177/02633957241313423

Blais, A., Martin, P., and Nadeau, R. (1995). Attentes économiques et linguistiques et appui à la souveraineté du Québec: une analyse prospective et comparative. *Can. J. Polit. Sci.* 28, 637–657. doi: 10.1017/S0008423900019338

Bleichrodt, H., and L'haridon, O. (2023). Prospect theory's loss aversion is robust to stake size. *Judgm. Decis. Mak.* 18:e14. doi: 10.1017/jdm.2023.2

Brown, A. L., Imai, T., Vieider, F. M., and Camerer, C. F. (2024). Meta-analysis of empirical estimates of loss aversion. *J. Econ. Lit.* 62, 485–516. doi: 10.1257/jel.20221698

Cheng, Q., and He, G. (2017). Deciding for future selves reduces loss aversion. *Front. Psychol.* 8:1644. doi: 10.3389/fpsyg.2017.01644

Chong, D. (2013). "Degrees of rationality in politics," in *Oxford Handbook of Political Psychology*, eds. L. Huddy, D. O. Sears and J. S. Levy. 2nd ed (New York, NY, US: Oxford University Press), 96–129.

Couture, J., and Breux, S. (2021). A new tunnel effect? The impact of stress on vote choice. *Front. Polit. Sci.* 3:589548. doi: 10.3389/fpos.2021.589548

Dörner, D., and Funke, J. (2017). Complex problem solving: what it is and what it is not. *Front. Psychol.* 8:1153. doi: 10.3389/fpsyg.2017.01153

Dörner, D., and Güss, C. D. (2013). PSI: a computational architecture of cognition, motivation, and emotion. *Rev. Gen. Psychol.* 17, 297–317. doi: 10.1037/a0032947

Dörner, D., and Güss, C. D. (2022). Human error in complex problem solving and dynamic decision making: a taxonomy of 24 errors and a theory. *Comput. Hum. Behav. Rep.* 7:100222. doi: 10.1016/j.chbr.2022.100222

Ferland, B., and Desrochers, É. (2023). Les (in)égalités de représentation en politique québécoise. *Can. J. Polit. Sci.* 56, 525–549. doi: 10.1017/S0008423923000434

Fisher, P. J., and Montalto, C. P. (2011). Loss aversion and saving behaviour: evidence from the 2007 US survey of consumer finances. *J. Fam. Econ. Issues* 32, 4–14. doi: 10.1007/s10834-010-9196-1

Fournier, P., and Blais, A. (2025). Expectations and Support for Quebec Sovereignty: What Drives What?. *Canadian Journal of Political Science/Revue canadienne de science politique*, 58, 426–438.

Füllbrunn, S. C., and Luhan, W. J. (2017). Decision making for others: the case of loss aversion. *Econ. Lett.* 161, 154–156. doi: 10.1016/j.econlet.2017.09.037

Funke, J. (2010). Complex problem solving: a case for complex cognition? *Cogn. Process.* 11, 133–142. doi: 10.1007/s10339-009-0345-0

Funke, J. (2021). It requires more than intelligence to solve consequential world problems. *J. Intelligence* 9:38. doi: 10.3390/jintelligence9030038

Gagné, G., and Langlois, S. (2002). *Les raisons fortes: nature et signification de l'appui à la souveraineté du Québec*. Montréal, Québec, Canada: Presses de l'Université de Montréal (PUM).

Gal, D., and Rucker, D. D. (2018). The loss of loss aversion: will it loom larger than its gain? *J. Consum. Psychol.* 28, 497–516. doi: 10.1002/jcpy.1047

Gao, R. (2023). Research on loss aversion and its formation in prospect theory. *Adv. Econ. Manag. Polit. Sci.* 10, 232–237. doi: 10.54254/2754-1169/10/20230472

Geddes, B. (2018). "Uses and limitations of rational choice," in *Latin America in Comparative Perspective*, ed. P. H. Smith (New York, NY: Routledge), 81–108.

Gigerenzer, G. (2023). *The Intelligence of Intuition*. Cambridge, United Kingdom: Cambridge University Press.

Gigerenzer, G., and Gaissmaier, W. (2015). "Intuition und Führung: Wie gute Entscheidungen entstehen," in *Emotion und Intuition in Führung und Organisation*, eds. M. W. Fröse, S. Kaudela-Baum and F. E. P. Dievernich (Wiesbaden: Springer Fachmedien Wiesbaden), 19–42.

Gisbert-Perez, J., Marti-Vilar, M., and Gonzalez-Sala, F. (2022). Prospect theory: a bibliometric and systematic review in the categories of psychology in web of science. *Healthcare* 10:2098. doi: 10.3390/healthcare10102098

Gonzalez, C., Vanyukov, P., and Martin, M. K. (2005). The use of microworlds to study dynamic decision making. *Comput. Hum. Behav.* 21, 273–286.

Gosling, C. J., Caparos, S., and Moutier, S. (2020). The interplay between the importance of a decision and emotion in decision-making. *Cogn. Emot.* 34, 1260–1270. doi: 10.1080/02699931.2020.1741340

Hainmueller, J., and Hopkins, D. J. (2014). Public attitudes toward immigration. *Annu. Rev. Polit. Sci.* 17, 225–249. doi: 10.1146/annurev-polisci-102512-194818

Hartwell, C. A. (2022). The limits of institutions and the reliance on heuristics during the COVID-19 pandemic. *J. Appl. Soc. Sci.* 16, 419–441. doi: 10.1177/19367244221077410

Higgins, E. T., and Liberman, N. (2018). The loss of loss aversion: paying attention to reference points. *J. Consum. Psychol.* 28, 523–532. doi: 10.1002/jcpy.1045

Hochman, G., and Yechiam, E. (2011). Loss aversion in the eye and in the heart: the autonomic nervous system's responses to losses. *J. Behav. Decis. Mak.* 24, 140–156. doi: 10.1002/bdm.692

Kahneman, D. (2011). *Thinking, fast and slow*. ed. D. Kahneman. New York, NY: Farrar, Straus and Giroux.

Kahneman, D., and Tversky, A. (2013). "Prospect theory: an analysis of decision under risk," in Dans Handbook of the Fundamentals of Financial Decision Making: Part I, eds. L. C. MacLean and W. T. Ziemba (Singapore: Toh Tuck Link) 99–127. Original article published in 1979

Karle, H., Kirchsteiger, G., and Peitz, M. (2015). Loss aversion and consumption choice: theory and experimental evidence. *Am. Econ. J. Microecon.* 7, 101–120. doi: 10.1257/mic.20130104

Karlson, K., Holm, A., and Green, R. (2012). Comparing regression coefficients between same-sample nested models using logit and probit: a new method. *Sociol. Methodol.* 42, 286–313. doi: 10.1177/0081175012444861

Kelman, M. (2011). *The Heuristics Debate*. ed. M. Kelman. New York, NY: Oxford University Press.

Lévy-Garboua, L., Maafi, H., Masclet, D., and Terracol, A. (2012). Risk aversion and framing effects. *Exp. Econ.* 15, 128–144. doi: 10.1007/s10683-011-9293-5

Liñeira, R., and Henderson, A. (2021). Risk attitudes and independence vote choice. *Polit. Behav.* 43, 541–560. doi: 10.1007/s11109-019-09560-x

Litovsky, Y., Loewenstein, G., Horn, S., and Olivola, C. Y. (2022). Loss aversion, the endowment effect, and gain-loss framing shape preferences for noninstrumental information. *Proc. Natl. Acad. Sci.* 119:e2202700119. doi: 10.1073/pnas.2202700119

Marcus, G., Neuman, R., and MacKuen, M. (2000). *Affective Intelligence and Political Judgment*. eds. G. E. Marcus, W. Russel Neuman and M. MacKuen. Chicago, Illinois: University of Chicago Press, 199.

Maria Schaffer, L., and Spilker, G. (2019). Self-interest versus sociotropic considerations: an information-based perspective to understanding individuals' trade preferences. *Rev. Int. Polit. Econ.* 26, 1266–1292. doi: 10.1080/09692290.2019.1642232

Martin, P. (1994). Générations politiques, rationalité économique et appui à la souveraineté au Québec. *Can. J. Polit. Sci.* 27, 345–359. doi: 10.1017/S0008423900017388

Mendelsohn, M. (2003). Rational choice and socio-psychological explanation for opinion on Quebec sovereignty. *Can. J. Polit. Sci.* 36, 511–537. doi: 10.1017/S0008423903778743

Mercer, J. (2005). Prospect theory and political science. *Annu. Rev. Polit. Sci.* 8, 1–21. doi: 10.1146/annurev.polisci.8.082103.104911

Nadeau, R., Martin, P., and Blais, A. (1999). Attitude towards risk-taking and individual choice in the Quebec referendum on sovereignty. *Br. J. Polit. Sci.* 29, 523–539. doi: 10.1017/S0007123499000241

Neumann, N., and Böckenholt, U. (2014). A meta-analysis of loss aversion in product choice. *J. Retail.* 90, 182–197. doi: 10.1016/j.jretai.2014.02.002

Novemsky, N., and Kahneman, D. (2005). The boundaries of loss aversion. *J. Mark. Res.* 42, 119–128. doi: 10.1509/jmkr.42.2.119.62292

Osmundsen, M., and Petersen, M. B. (2020). Framing political risks: individual differences and loss aversion in personal and political situations. *Polit. Psychol.* 41, 53–70. doi: 10.1111/pops.12587

Petersen, M. B., and Aarøe, L. (2013). Politics in the mind's eye: imagination as a link between social and political cognition. *Am. Polit. Sci. Rev.* 107, 275–293. doi: 10.1017/S0003055413000026

Pinard, M. (1992). The dramatic reemergence of the Quebec independence movement J. Int. Aff. 45 471–497. Available online at: http://www.jstor.org/stable/24357366 (Accessed January 19, 2026).

Pinard, M., and Hamilton, R. (1986). Motivational dimensions in the Quebec independence movement: a test of a new model. *Res. Soc. Mov. Confl. Chang.* 9, 225–280.

Polman, E. (2012). Self–other decision making and loss aversion. *Organ. Behav. Hum. Decis. Process.* 119, 141–150. doi: 10.1016/j.obhdp.2012.06.005

Rahmandad, H., Repenning, N., and Sterman, J. (2009). Effects of feedback delay on learning. *Syst. Dyn. Rev.* 25, 309–338. doi: 10.1002/sdr.427

Romanova, E., and Hutchens, M. J. (2024). Does anxiety make us "informed" citizens? The mediating role of information-seeking and internal political efficacy in forming political attitudes. *Polit. Stud. Rev.* 22, 571–584. doi: 10.1177/14789299231179090

Sacks, G. D., Dawes, A. J., Tsugawa, Y., Brook, R. H., Russell, M. M., Ko, C. Y., et al. (2021). The association between risk aversion of surgeons and their clinical decision-making. *J. Surg. Res.* 268, 232–243. doi: 10.1016/j.jss.2021.06.056

Sokol-Hessner, P., and Rutledge, R. B. (2019). The psychological and neural basis of loss aversion. *Curr. Dir. Psychol. Sci.* 28, 20–27. doi: 10.1177/0963721418806510

Soman, D. (2004). "Framing, loss aversion, and mental accounting," in Blackwell Handbook of Judgment and Decision Making, eds. D. J. Koehler and N. Harvey, 379–398.

Sterman, J. D. (2006). Learning from evidence in a complex world. *Am. J. Public Health* 96, 505–514. doi: 10.2105/AJPH.2005.066043

Thaler, R. H., and Sunstein, C. R. (ed.) (2009). *Nudge. Improving Decisions about Health, Wealth, and Happiness*. London, UK: Penguin Books.

Vis, B. (ed.) (2011). Prospect theory and political decision making. *Political Stud. Rev*. 9, 334–343. doi: 10.1111/j.1478-9302.2011.00238.x

Walasek, L., Mullett, T. L., and Stewart, N. (2024). A meta-analysis of loss aversion in risky contexts. *J. Econ. Psychol.* 103:102740. doi: 10.1016/j.joep.2024.102740

Wooldridge, J. M. (ed.) (2016). *Introductory Econometrics a modern Approach*. Boston, MA, USA: South- Western Cengage Learning.