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Do voting and election outcomes predict changes in conspiracy beliefs? Evidence from two high-profile U.S. elections

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ABSTRACT

Despite widespread recognition that conspiracy theories carry the potential for serious harm, relatively little research has investigated possible antidotes to conspiracy beliefs. Previous theorizing posits that belief in conspiracy theories is driven in part by existential motives related to a sense of control and social motives aimed at maintaining a positive image of oneself and one's ingroup. Using electoral contests as the context, we investigated whether the act of voting (i.e., addressing existential motives) and seeing one's preferred candidate win (i.e., addressing social motives) were associated with a reduction in conspiracy beliefs. In two two-wave studies of high-profile U.S. elections, we measured endorsement of conspiracy beliefs before the election and after the results were known, thereby tracking change in conspiracy belief endorsement over time. Both Study 1 (2020 U.S. Presidential election) and Study 2 (2021 Georgia Senate runoff election) showed a significant decrease in conspiracy beliefs among people who supported the winning candidate, consistent with the importance of social motives. The findings highlight the merits of one's political ideology receiving support and recognition for potentially abating conspiracy beliefs.

Social life today seems replete with conspiracy beliefs. From politics to public health to science, conspiracy beliefs — beliefs that elite groups with malicious intent exert control over important events (Douglas, Sutton, & Cichocka, 2017) — are rife. Subjects of these conspiracy beliefs vary from institutions such as political parties, government institutions, and the media, to conjectures about diseases, wealthy individuals, and the integrity of the electoral system (Alter, 2020; Cohen, 2021; Gogarty & Hagle, 2020; Greenspan, 2021; Lewis, 2020).

Regardless of who or what these conspiracy beliefs target, embracing such beliefs is associated with problematic attitudes and behaviors. For instance, people who embrace conspiracy beliefs have lower trust in experts and authorities (Imhoff & Lamberty, 2018; Imhoff, Lamberty, & Klein, 2018), and are less likely to comply with public policies compared to people who do not endorse such beliefs (Imhoff & Lamberty, 2020; Pummerer et al., 2021). Simply being exposed to conspiracy theories can cause a reduction in prosocial tendencies (Jolley & Douglas, 2014; van der Linden, 2015). Given such detrimental effects, the merits of research on reducing conspiracy beliefs are clear. Yet research on factors that ameliorate conspiracy beliefs is relatively rare (Douglas et al., 2019; Douglas & Sutton, 2018), perhaps because conspiracy beliefs are often considered to be "resistant to change" (Swami, Voracek, Stieger, Tran, & Furnham, 2014, p. 582).

The current research examined political elections as events that may bring about a reduction in conspiracy beliefs in part because elections and their outcomes may satisfy the underlying motives that draw people to conspiracy beliefs. Two two-wave studies assessed conspiracy beliefs before and after an election. This approach allowed us to examine whether conspiracy beliefs changed in response to the electoral outcome and whether patterns of change differed among participants who did and did not vote.

1. What underlies belief in conspiracy theories?

Previous research has identified psychological factors that may drive conspiracy beliefs. These include dispositional characteristics, such as the desire to find patterns and meaning (Whitson & Galinsky, 2008), as well as situational factors, such as high levels of uncertainty (van Prooijen & Jostmann, 2013), feelings of powerlessness (Abalakina-Paap, Stephan, Craig, & Gregory, 1999), and threats to positive self- and group-identities (Cichocka, Marchlewska, & Golec de Zavala, 2016). In an effort to provide a comprehensive account of these diverse psychological factors, Douglas et al. (2017) proffered that beliefs in conspiracy

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theories (compared to non-conspiracy explanations) reflect desires to satisfy epistemic, existential, or social motives. Herein we focus on two of these motives, existential and social.

Existential motives refer to a desire to exert control over the environment (Douglas et al., 2017). Situations that threaten instrumental control (e.g., negative events) may prompt people to seek alternative sources of control, such as by endorsing certain beliefs or worldviews. Conspiracy beliefs might seem to function as a source of compensatory control by reestablishing a sense of order and structure in people's environment (Kay, Whitson, Gaucher, & Galinsky, 2009). Social motives, defined as a need to belong and maintain a positive image of the self and the in-group (Douglas et al., 2017), may also become salient when people experience uncertainty and isolation. Heightened social needs could encourage people to seek explanations that indirectly validate them by painting others in a more negative light (Douglas, 2021). In this context, conspiracy beliefs can valorize the ingroup by attributing negative outcomes to outgroups (Imhoff et al., 2018; Imhoff & Bruder, 2014).

If conspiracy beliefs can arise from an insufficient satisfaction of psychological needs, it might follow that endorsing conspiracy beliefs can help to satisfy such motives. Yet if anything, prior research has shown the opposite (Liekefett, Christ, & Becker, 2021). Being exposed to, or having embraced conspiracy beliefs, may exacerbate psychological needs by discouraging social participation (Imhoff, Dieterle, & Lamberty, 2021) or further invoking distrust of institutions and experts (Jolley & Douglas, 2014). Left unabated, conspiracy beliefs can fuel further conspiracy beliefs rather than reduce the need to endorse them (Douglas et al., 2017). Therefore, it is unlikely that conspiracy beliefs would subside on their own; rather, weakened conspiracy beliefs may follow from individual or societal events that satisfy the motives undergirding what makes conspiracy beliefs attractive in the first place. We propose that political elections may be associated with weakened conspiracy beliefs because they can help satisfy existential and social motives.

2. Voting and underlying motives of conspiracy beliefs

Why do people vote? Voting is often characterized as a civic duty, as the act incurs a non-trivial amount of time and effort while providing no tangible benefits at the individual level. Nonetheless, many people vote out of their own volition. Despite the “paradox of voting,” which highlights the fact that a single vote can rarely decide the electoral outcome, a significant portion of the population still vote because they believe that their vote could have an impact on the electoral outcome (Acevedo & Krueger, 2004; Quattrone & Tversky, 1984). This notion suggests that people consider voting as a means to achieve their desired ends (Downs, 1957), making the electoral outcome — whether one's preferred candidate wins — an important factor in its own right. The current research focused on two aspects of the electoral process: whether citizens voted and their degree of support for the winning candidate. We propose that voting and the outcome of an election, as two separate factors, may be associated with weakened conspiracy beliefs because they can satisfy existential and social motives, respectively.

First, voting in an election can satisfy people's existential motives by providing a sense of control over the environment. Previous laboratory research has indicated that increased control can lead to a reduction in conspiracy beliefs (van Prooijen & Acker, 2015). Voting can increase voters' perceived control by making it evident that they have made a conscious choice (Langer, 1975) and that they participated in a process that determines the sociopolitical landscape of the society to which they belong (Harder & Krosnick, 2008; Lind, Kanfer, & Earley, 1990). Indeed, voting has been associated with a sense of empowerment (Zimmerman & Rappaport, 1988) — a psychological state posited to reduce conspiracy beliefs (van Prooijen, 2018; van Prooijen, Krouwel, & Pollet, 2015).

Second, we considered whether one's preferred candidate wins the election. If so, this outcome may satisfy social motives by enabling citizens to see the group with which they identify in a positive light. By design, elections put involved groups (e.g., political parties and their supporters) into intergroup conflict as specified by a winner-loser framework (Balliet, Tybur, Wu, Antonellis, & Van Lange, 2018), thereby aligning voters' behaviors and attitudes with the goals of one's ingroup (Davis & Hitt, 2017). The broader psychological literature suggests that people tend to identify more strongly with their group when the group succeeds as opposed to fails (Snyder, Lassegard, & Ford, 1986). For example, in the context of 2008 presidential elections, yard and window signs supporting the winning candidate were displayed longer than signs supporting the losing candidate (Miller, 2009). What is more, having supported the winning candidate can positively affect voters' attitudes and beliefs about the government and themselves for years after the election (Loveless, 2020; Toshkov & Mazepus, 2020).

The notion of studying conspiracy beliefs in the context of voting or elections is not new. Existing studies have tested the inverse of our proposal — the impact of conspiracy beliefs on intentions to vote and actual voting behavior (Imhoff et al., 2021; Jolley & Douglas, 2014; Jolley, Douglas, Marchlewska, Cichocka, & Sutton, 2021) — or treated elections as a context in which people's conspiracy beliefs come to the fore (Golec de Zavala & Federico, 2018). By contrast, we propose that elections themselves (through the act of voting and the election's outcome) can impact conspiracy beliefs. To our knowledge, research has not investigated voting behavior and electoral outcomes as potential antecedents to changes in conspiracy beliefs. Furthermore, our investigation made use of two-wave designs and in doing so answers calls by conspiracy belief scholars to go beyond cross-sectional designs (Douglas et al., 2019; Imhoff & Bruder, 2014).

As outlined, we viewed voting behavior (whether one voted) and the electoral outcome (whether one's preferred candidate wins the election) as factors that could diminish the pull of conspiracy beliefs. We expected to observe a significant decrease in general conspiracy beliefs from before to after an election among people who voted (vs. did not vote), and among people who supported winning (vs. losing) candidates. To this end, we tested two models specifying two-way interactions between time and either political attitudes (Model 1) or time and voting (Model 2). We surmised that if political support and voting behavior have independent effects on changes in conspiracy beliefs, we would see significant interactions between time and political attitudes as well as time and voting. Finally, to explore the possibility of the effects of these two factors reinforcing each other (e.g., such that a decrease in conspiracy theories required both factors — voting and supporting the winning candidates), we specified a model with time X political attitudes X voting three-way interaction (Model 3).

3. The current research

Two studies investigated change in conspiracy beliefs over time in two high-stakes elections. We observed participants' voting behavior (whether they voted or not) and their support for Republican and Democrat candidates in two elections in the United States. For each election, people's conspiracy beliefs were measured before election day and again after the electoral outcome was announced. We tested whether the act of voting and whether the election outcome aligns with people's political preferences predicted a decrease in conspiracy beliefs. We report all measures, participant exclusions (though there were none), and how we determined our sample size for our studies.

4. Study 1: 2020 U.S. presidential election

Study 1 was conducted during the 2020 U.S. presidential election, which was held on November 3, 2020. We surveyed participants the day before the election (Time 1; T1) and again after the results were known (Time 2; T2). Amidst the COVID-19 pandemic and economic impact that followed, the presidential race between Donald Trump (Republican) and

Joe Biden (Democrat) was viewed as one of the most important elections in decades, with 83% of the registered voters saying who wins the election matters (Pew Research Center, 2020). This suggests that the electoral outcome was perceived to be highly consequential to the general population.

We used two conspiracy beliefs measures. One was the Conspiracy Mentality Questionnaire (CMQ; Imhoff & Bruder, 2014). This single-factor scale measures the propensity to believe in conspiracy theories with items that tap general conspiracist ideations regarding power-holders and elites (Sample item: There are many very important things happening in the world about which the public is not informed.). The other conspiracy beliefs scale was the Generic Conspiracist Beliefs Scale (GCBS; Brotherton, French, & Pickering, 2013), which is a multi-factor scale assessing the tendency toward conspiracy thinking in five domains (Sample item: The government permits or perpetrates acts of terrorism on its own soil, disguising its involvement.).

4.1. Method

4.1.1. Participants and timeline

The study was conducted online through Amazon Mechanical Turk. There were two measurement points: on November 2, 2020 (T1; one day before the election), and again on November 8–10 (T2) after the results were called (Democrat victory) by major news outlets. At T1, participants were $N = 600$ U.S. adults (44.80% female; $M_{age} = 39.17$, $SD = 11.91$). Among those, $N = 525$ (87.50%) returned for T2.

Participants first passed a bot check item. There were no participant exclusions. Initial sample size was established so as to ensure we had sufficient number of participants even after T2 attrition, and no data analyses were performed before data collection was completed. A sensitivity analysis for multi-level models (Green & MacLeod, 2016) yielded 80% power to detect the effect sizes of $b = 0.12$ (time X political attitudes), $b = 0.39$ (time X voting) and $b = 0.50$ (time X political attitudes X voting) with 1000 Monte Carlo simulations at $\alpha = 0.05$.

4.1.2. Measures

At both T1 and T2, we measured participants conspiracy beliefs with the CMQ (T1 $\alpha = 0.93$; T2 $\alpha = 0.94$; test-retest reliability $r(523) = 0.89$, $p < .001$) and GCBS (T1 $\alpha = 0.96$, T2 $\alpha = 0.97$, test-retest reliability $r(523) = 0.93$, $p < .001$).

Support for candidates was measured using candidate preference ratings and political ideology. At T1, two items measured support for the Democrat and Republican candidates ("How much do you want Donald Trump [Joe Biden] to win the election?"; 1 = not at all; 100 = very much so; Donald Trump: $M = 33.03$, $SD = 42.22$, Joe Biden: $M = 59.82$, $SD = 42.80$), and two items measured liberal and conservative ideologies ("To what extent do you hold conservative [liberal] political views or attitudes?"; 1 = not at all; 100 = very much so; liberal: $M = 59.34$, $SD = 33.34$, conservative: $M = 39.36$, $SD = 33.47$). After reverse-coding responses supporting the Democrat candidate and in line with liberal ideology, items were standardized and averaged to form a political attitude index (median = −0.29, $\alpha = 0.90$; higher scores indicate stronger support for the conservative candidate). Note that mean scores of political attitudes items before standardization were significantly lower than the midpoint of the respective scales, with political ideology, 40.01, $t(599) = 7.70$, $p < .001$, and candidate support, 36.61, $t(599) = 8.14$, $p < .001$, suggesting that the sample tended toward liberal views (Clifford, Jewell, & Waggoner, 2015).

At T2, participants indicated whether they voted in the election (no = 0, yes = 1). The voter turnout was 80.3%, which was descriptively higher than the general population (66.8%). In addition to the aforementioned measures, this study measured dispositional traits, better-than-average effects, and basic demographics (see https://osf.io/prmec/?view_only=d6126b1736444d22868d7abcf3f0cf28).

4.1.3. Analytical notes

Given the nested nature of the data (time is nested within participants), we used multilevel models, with time (T1 vs. T2) as the within-subject factor, political attitudes and voting behavior as between-subjects factors, and random effects for subject-level intercepts. The models were tested using the lme4 package in R. Denominator degrees of freedom was estimated with Kenward-Rogers approximation using LmerTest package (Kuznetsova, Brockloff, & Christensen, 2017). We report zero-order correlations among the variables for both Study 1 and 2 in the SOM.

4.2. Results

The full results of the multilevel models are presented in Table 1. First we report the results for CMQ. Time X political attitudes interaction was significant, $F(1, 530.15) = 9.70$, $p = .002$, $b = 0.13$ (Model 1), whereas time X voting interaction was not, $F(1, 523) = 0.13$, $p = .718$, $b = 0.05$ (Model 2). That is, supporting the winning candidate was associated with a decrease in conspiracy beliefs, while the act of voting was not.

Lastly, Model 3 showed that time X political attitudes X voting three-way interaction was significant, $F(1, 521) = 4.17$, $p = .042$, $b = 0.36$, suggesting that the effect of political attitudes on change in conspiracy beliefs could differ among voters and non-voters. While we acknowledge that the p-value associated with the three-way interaction is extremely close to the standard cut-off ($p = .05$), we nevertheless decided to

Table 1
Results of the multi-level models for Studies 1 and 2.

	CMQ		GCBS	
	b	P-Value	b	P-Value
Study 1, Model 1				
Time	−0.17	0.000	−0.11	0.002
Political Attitudes	0.32	0.001	0.39	0.000
Time X Political Attitude	0.13	0.002	0.09	0.014
Study 1, Model 2				
Time	−0.17	0.000	−0.11	0.002
Voting	0.53	0.146	0.48	0.205
Time X Voting	0.05	0.718	0.13	0.298
Study 1, Model 3				
Time	−0.16	0.000	−0.11	0.003
Political Attitudes	0.29	0.006	0.35	0.002
Voting	0.71	0.055	0.54	0.166
Time X Political Attitudes	0.11	0.007	0.08	0.029
Time X Voting	−0.07	0.636	0.06	0.623
Political Attitude X Voting	−1.07	0.017	−0.63	0.176
Time X Political Attitude X Voting	0.36	0.042	0.18	0.256
Study 2, Model 1				
Time	−0.11	0.031	0.11	0.015
Political Attitudes	0.21	0.095	0.33	0.016
Time X Political Attitude	0.11	0.039	0.09	0.080
Study 2, Model 2				
Time	−0.11	0.050	0.12	0.021
Voting	0.34	0.252	0.55	0.081
Time X Voting	0.02	0.900	−0.04	0.732
Study 1, Model 3				
Time	−0.10	0.084	0.13	0.012
Political Attitudes	0.20	0.143	0.32	0.030
Voting	0.28	0.376	0.49	0.149
Time X Political Attitudes	0.16	0.009	0.11	0.040
Time X Voting	0.07	0.631	−0.04	0.771
Political Attitude X Voting	−0.08	0.839	−0.22	0.605
Time X Political Attitude X Voting	−0.35	0.047	−0.15	0.344

decompose the interaction for transparency reasons and to get a better understanding of the patterns of change in conspiracy beliefs among voters and non-voters who supported the winning vs the losing candidates.

After testing the time X political attitudes interaction among voters and non-voters, we used the Johnson-Neyman procedure to determine whether the decrease in conspiracy beliefs was mostly experienced by voters and non-voters supporting the winning (i.e., liberal) candidates. We implemented Bonferroni corrections (0.05 to 0.0125) to account for four separate tests (voters and non-voters, two conspiracy beliefs scales).

Among voters, the time X political attitudes interaction was significant, $F(1, 480) = 7.69$, $p = .006$, $b = 0.11$. The Johnson-Neyman procedure pointed to significant changes in conspiracy beliefs at Bonferroni-corrected level of $p = .0125$. Among voters, the first Johnson-Neyman point for political attitudes was 0.47 with a negative regression coefficient ($b = -0.11$, $SE = 0.04$). The second Johnson-Neyman point was 15.48, which was outside the observed range of political attitudes for voters [−1.08, 1.73]. This result indicates that the decrease in CMQ between T1 and T2 was significant for participants with political attitudes more liberal than 0.47 on the standardized scale (70.3% of voters; Fig. 1, Panel A).

Among non-voters, the time x political attitudes interaction was significant, $F(1, 41) = 5.25$, $p = .027$, $b = 0.48$. However, the Johnson-Neyman interval indicating significant changes in CMQ at $p = .0125$ level was not found at the observed range of political attitudes in our sample.

Next we report the results for GCBS. Model 1 showed that time X political attitudes interaction was significant, $F(1, 527.37) = 6.10$, $p = .014$, $b = 0.09$, whereas time X voting interaction was not, $F(1, 523) = 1.09$, $p = .298$, $b = 0.13$. That is, similar to CMQ results, political attitudes predicted a change in conspiracy beliefs, while voting did not. Unlike the CMQ results, time X political attitudes X voting three-way interaction was not significant, $F(1, 521) = 1.29$, $p = .256$, $b = 0.18$ (Table 1).

To facilitate the comparison with the CMQ results reported above, we (despite the non-significant three-way interaction) proceeded to test time X political attitudes interactions per voter and non-voter groups. The interaction was significant for voters, $F(1, 480) = 4.67$, $p = .031$, $b = 0.18$, but not for non-voters, $F(1, 41) = 3.95$, $p = .053$, $b = 0.26$. For voters, the first Johnson-Neyman point for political attitudes was −8.27, which was well outside the observed range for political attitudes. The second Johnson-Neyman point among voters was 0.19 with a negative regression coefficient ($b = -0.09$, $SE = 0.04$). That is, voters with political attitudes more liberal than 0.19 (62.9% of voters) experienced a significant decrease in GCBS (Fig. 1, Panel C). No Johnson-Neyman interval was found for non-voters.

4.3. Discussion

Study 1 tested whether supporting an election winner predicted changes in conspiracy beliefs among voters and non-voters using the 2020 U.S. Presidential election as the context. Multi-level model results showed that the mere act of voting was not significantly associated with a reduction in conspiracy beliefs, while supporting the winning candidates was: participants' conspiracy beliefs significantly decreased for those who supported the winning (vs. losing) candidate. Looking at voters and non-voters separately, we observed that more liberal voters (supporting the election winner, Biden) experienced significant reductions in conspiracy beliefs, whereas conservative voters (supporting the election loser, Trump) did not experience such reductions. This pattern was similar among non-voters, yet not significant, potentially due to a small number of non-voters in the sample ($N = 43$).

5. Study 2: 2021 georgia senate runoff election

Study 2 was conducted during the 2021 U.S. Senate runoff election in Georgia, which was held on January 5, 2021 — just two months after Study 1's U.S. presidential election. The runoff election was in fact two

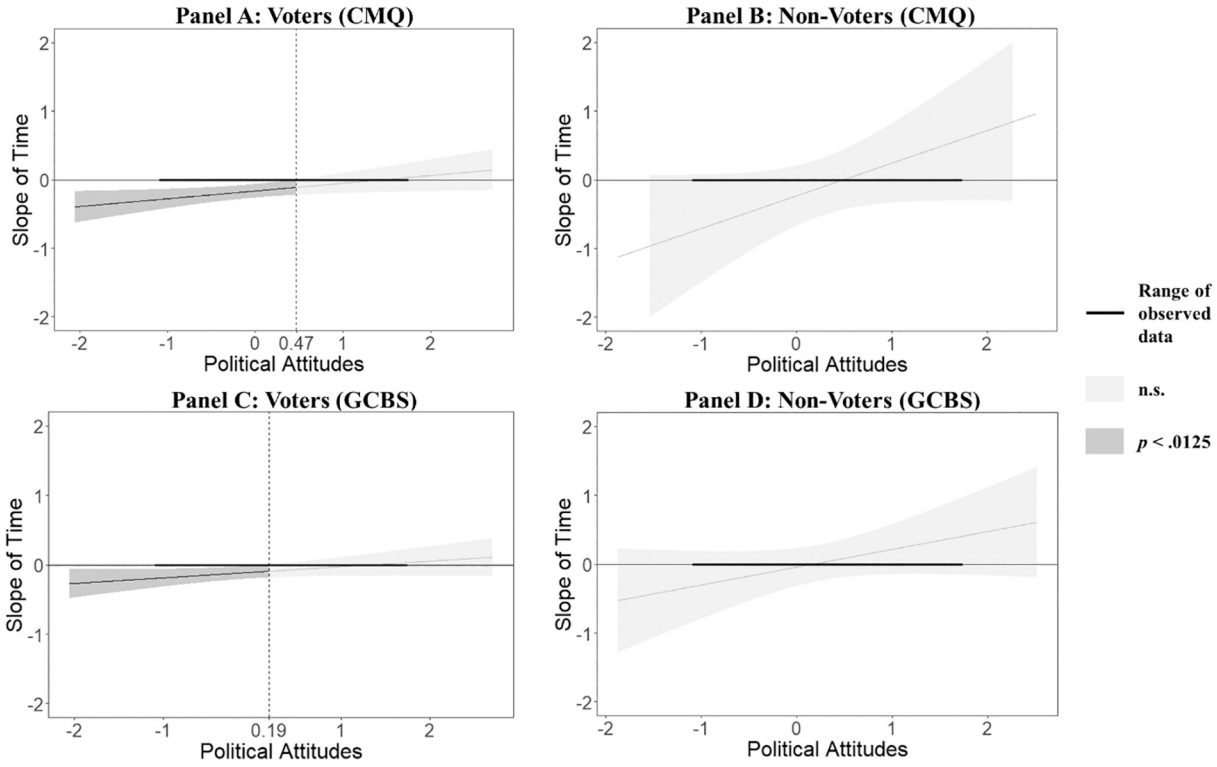

Fig. 1. Johnson-Neyman regions for the conditional effect of time (meaning, change from T1 to T2) on the two conspiracy belief scales (CMQ and GCBS) among voters and non-voters; Study 1.

races insofar as there were two open Senate seats. One race was between David Perdue (Republican) and Jon Ossoff (Democrat), and the other was between Kelly Loeffler (Republican) and Raphael Warnock (Democrat). Similar to the Presidential election, these contests also received a high degree of public attention due to the fact that the outcome of the elections would determine whether the Republicans retained their majority in the Senate (Broadwater, 2021).

5.1. Method

5.1.1. Participants and timeline

The study was conducted online through Prolific. Similar to Study 1, data collection took place before the election and after results (Democrats won both Senate seats) were announced (T1: December 30, 2020 to January 4, 2021; T2: January 7–12). At T1, participants were $N = 314$ U. S. adults who were Georgia residents (57.60% female; $M_{age} = 35.00$, $SD = 13.22$). Of those, $N = 256$ (81.50%) returned for T2. Participants first passed a bot check, and there were no participant exclusions. Although sample size determination was the same as in Study 1, the number of eventual participants was less than intended likely because of the geographic limitation (only people eligible to vote in Georgia could participate). No data analyses were performed before data collection was completed. Sensitivity analysis for multi-level models yielded 80% power to detect the effect sizes of $b = 0.15$ (time X political attitudes), $b = 0.34$ (time X voting) and $b = 0.48$ (time X political attitudes X voting) at $\alpha = 0.05$.

5.1.2. Measures

Participants in Study 2 had the opportunity to vote for two candidates. Support for the Republican and Democrat candidates were calculated by averaging ratings for the two Republican ("How much do you want conservative [liberal] candidates to win the election?"; 1 = not at all; 100 = very much so; David Perdue: $M = 23.07$, $SD = 35.65$, Kelly Loeffler: $M = 21.70$, $SD = 34.34$) and Democrat candidates (Jon Ossoff: $M = 69.18$, $SD = 38.85$, Raphael Warnock: $M = 68.49$, $SD = 40.05$), with each item worded in the same fashion as in Study 1. Political ideology was measured in the same way as in Study 1 ("To what extent do you hold conservative [liberal] political views or attitudes?"; 1 = not at all; 100 = very much so; conservative: $M = 33.56$, $SD = 29.60$, liberal: $M = 63.06$, $SD = 30.24$).

Then, the two aggregate measures for candidate support and two political ideology items were standardized and averaged to form a political attitude index (median = −0.25, $\alpha = 0.91$), with higher scores indicating stronger support for conservative candidates. Similar to Study 1, the mean scores of political attitudes items before standardization were significantly lower than the midpoint of the respective scales, with political ideology, 35.25, $t(255) = 8.42$, $p < .001$, and candidate support, 26.77, $t(255) = 10.71$, $p < .001$, indicating the liberal bias of our sample.

Conspiracy beliefs (CMQ: T1 $\alpha = 0.90$, T2 $\alpha = 0.92$, test-retest reliability $r(254) = 0.86$, $p < .001$; GCBS: T1 $\alpha = 0.94$, T2 $\alpha = 0.95$, test-retest reliability $r(254) = 0.94$, $p < .001$) and voting behavior were measured as in Study 1. Voter turnout was 78.9%, which was descriptively higher than that of the general population in Georgia (67.3%). This study also measured personality traits, better-than-average effects, and demographics (see https://osf.io/prmec/?view_only=d6126b1736444d22868d7abcf3f0cf28).

5.2. Results

The data were analyzed using the same methods as in Study 1. Starting with the CMQ, multi-level model results showed that the time X political attitudes interaction was significant, $F(1, 254) = 4.30$, $p = .039$, $b = 0.11$ (Model 1), whereas the time X voting interaction was not, $F(1, 254) = 0.02$, $p = .900$, $b = 0.02$ (Model 2). Like in Study 1, political attitudes predicted a change in conspiracy beliefs, while the mere act of voting did not. Lastly, the three-way interaction of time X political attitudes X voting was significant, $F(1, 252) = 3.97$, $p = .047$, $b = -0.35$ (Model 3).

As in Study 1, we decomposed the three-way interaction and tested the time X political attitudes interactions among voters and non-voters separately. The interaction among voters was significant, $F(1,200) = 7.03$, $p = .009$, $b = 0.16$. The first Johnson-Neyman point for political attitudes was −0.30, with a negative regression coefficient ($b = -0.15$, $SE = 0.06$). The second Johnson-Neyman point was 14.08, which was outside the observed range for voters' political attitudes, [−1.01, 2.21]. In other words, conspiracy beliefs as measured by the CMQ significantly decreased among voters with political attitudes more liberal than −0.30 (57.9% of voters; Fig. 2, Panel A). Among non-voters, the time x political attitudes interaction was not significant, $F(1, 52) = 1.34$, $p = .253$, $b = -0.19$.

Turning to the GCBS results, the time X political attitudes interaction, $F(1, 254) = 3.08$, $p = .080$, $b = 0.09$, and time X voting interaction were not significant, $F(1, 254) = 0.12$, $p = .732$, $b = -0.04$. Unlike CMQ, time X political attitudes X voting three-way interaction for GCBS was also not significant, $F(1, 252) = 0.90$, $p = .344$, $b = -0.15$ (see Table 1).

Following the procedure of Study 1, we examined the time X political attitudes interaction among voters and non-voters separately. The interaction was significant for voters, $F(1, 200) = 4.16$, $p = .043$, $b = 0.11$, but not for non-voters, $F(1, 52) = 0.07$, $p = .788$, $b = -0.04$. For voters, the first Johnson-Neyman point for political attitudes was 0.01, with a positive regression coefficient ($b = 0.13$, $SE = 0.05$). The second Johnson-Neyman point was 4.12, which was well outside the observed range for political attitudes, [−1.01, 2.21]. This suggests that voters with political attitudes more conservative than 0.01 (30.2% of voters) experienced an increase in GCBS (Fig. 2, Panel C).

5.3. Discussion

Study 2 was similar to Study 1 in several key ways (e.g, two-wave design; consequential political election) and therefore was an opportunity to see whether Study 1's results replicated. They did in terms of interaction tests. Like in Study 1, supporting the winning candidates was more robust in predicting changes in conspiracy beliefs than voting. When looking at voters and non-voters separately, there was a significant time X political attitude interaction among voters, which revealed a significant decrease in CMQ among liberal and some portion of moderate voters, and a significant increase in GCBS among conservative voters in the sample. Changes in conspiracy beliefs among non-voters for both CMQ and GCBS failed to reach significance at the Bonferroni-corrected level as in Study 1.

6. General discussion

Two studies tracked conspiracy beliefs before and after prominent political elections, one deciding the President of the United States and the other deciding two U.S. Senate seats (and control of the Senate as a result). We examined whether the two factors – the act of voting and support for the winning candidate – predicted change in conspiracy beliefs over time. Voting and supporting the winning candidates in an election may satisfy fundamental motives underlying conspiracy beliefs. Specifically, existential motives may be assuaged by the opportunity to make a meaningful choice and manifest control whereas social motives may be soothed by seeing that one's preferred candidate had the strongest support among the electorate. Our results indicated that the act of voting was not associated with a decrease in conspiracy beliefs in either of the studies, regardless of the conspiracy scale used. Supporting the winning candidate however predicted a decrease in both conspiracy scales in Study 1 (U.S. Presidential election) and in one out of two (CMQ) conspiracy scales in Study 2 (Georgia Senate runoff election). Overall, participants' political support for the candidates was more robust than their voting behavior in predicting changes in conspiracy beliefs over

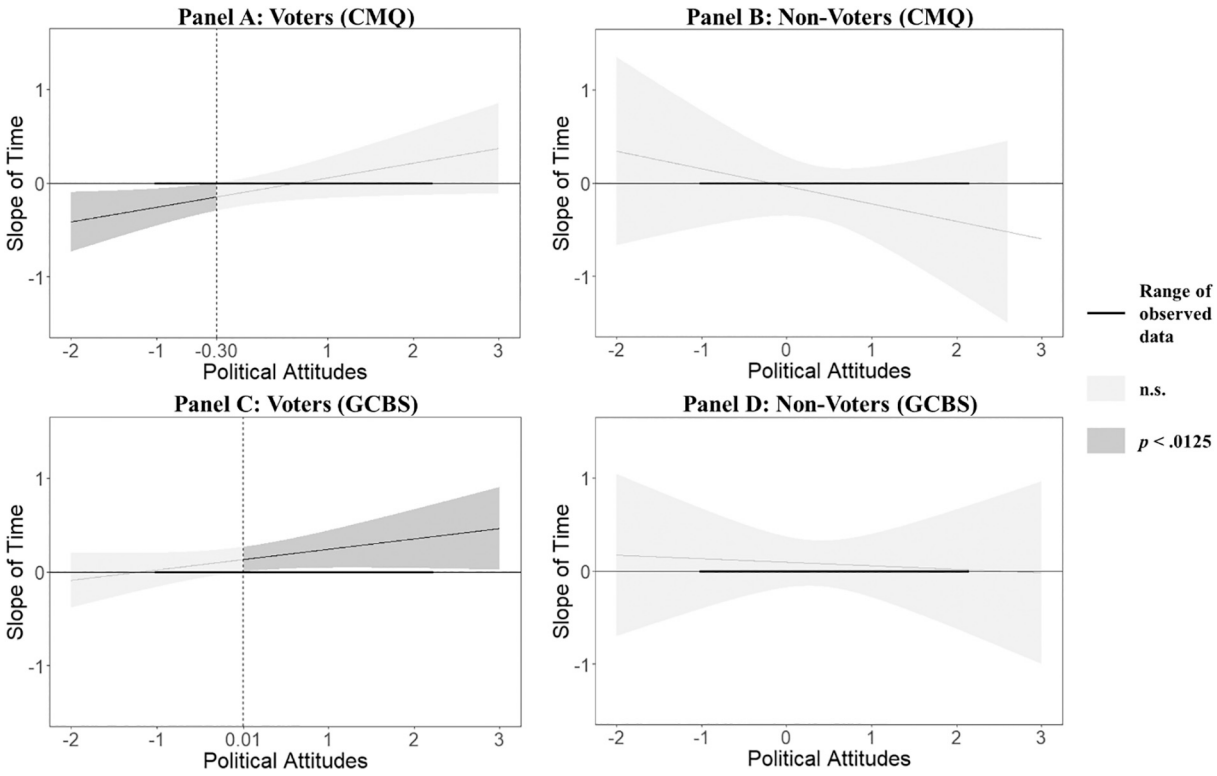

Fig. 2. Johnson-Neyman regions for the conditional effect of time on the two conspiracy belief scales (CMQ and GCBS) among voters and non-voters; Study 2.

time.

Finally, we found limited support for the possibility of the effects of voting and supporting the winning candidates reinforcing each other: while the three-way interaction among time, voting and political attitudes reached significance in both studies, the corresponding *p*-value was very close to the cut-off of $p = .05$, it only emerged for CMQ (and not GCBS) and a sensitivity power analysis showed that the effect size of this interaction was substantially smaller than the effect that could be reliably detected with 80% power given our sample size (see Participants sections for the details regarding sensitivity analyses).

It is noteworthy that political attitudes were weaker and less consistent in predicting changes on the GCBS scale compared to the CMQ. We surmise that these differences may be attributable to potentially different underlying constructs of the two scales. Whereas the CMQ aims to capture generalized attitudes toward powerful elites with a single factor (Imhoff & Bruder, 2014), the GCBS taps into five conspiracy domains representing different content and objectives of some conspiracy theories (Brotherton et al., 2013). Therefore, GCBS items may have reflected not only people's latent propensity to believe in conspiracy theories, but also which types of conspiracy theories they have encountered and embraced. The latter therefore may be more responsive to individuals' particular circumstances, which may have varied across participants.

The current research contributes to the conspiracy theory literature by providing supportive evidence for previously identified factors that could serve as remedy against conspiracy beliefs in more naturalistic settings. Our results dovetail with previous laboratory findings regarding the role of perceived control in weakening conspiracy beliefs (van Prooijen & Acker, 2015). The findings also pertain to research suggesting links between negative social influences, such as threats to a positive ingroup image (Cichocka et al., 2016) or social exclusion (Graeupner & Coman, 2017), and conspiracy beliefs. Hence, our studies conducted during national and state-wide elections extend previous laboratory findings in both empirical and methodological aspects (Douglas et al., 2019).

These results also add to the political psychology literature. Studies in this area have predominantly focused on identifying factors that affect civic participation, including voting in elections. Notably, endorsement of conspiracy beliefs is proposed to be one such factor (Imhoff et al., 2021; Jolley & Douglas, 2014). We add to this literature by showing that political participation might shape conspiracy beliefs as well. Perhaps ironically, our data suggest that the behavior – voting in elections – that might help reduce conspiracy beliefs seems less likely among the very individuals who need it most (i.e., those with strong conspiracy beliefs). Whether the belief that one's interests are receiving adequate political representation can act as a remedy for conspiracy beliefs would be a welcome focus of future research.

Despite the aforementioned contributions, this research is not without limitations. First, the studies did not use an experimental design, which therefore hampers causal inferences. For example, the decision to vote itself is affected by many sociopolitical factors, including people's conspiracy beliefs (Imhoff et al., 2021; Jolley & Douglas, 2014). That said, this work moved beyond the zero-order correlational designs that are prevalent in the conspiracy belief literature by implementing two-wave designs embedded in natural experiments. Instead of manipulating the event of interest (i.e., elections outcomes) in a laboratory setting, both studies observed people's reactions to naturally occurring events (elections and their outcomes). These design aspects ensure high ecological validity and, combined with the use of two-wave survey designs, help establish the temporal precedence of the independent to dependent variables. Further research investigating how experimentally manipulating involvement in a group decision process (approximating voting behavior) and whether the group decision accords with their position affect their conspiracy beliefs may be useful.

Second, although we acknowledge that the size of the reduction in conspiracy beliefs is small by standard metrics, it is notable nonetheless given that conspiracy beliefs are considered "resistant to change" (Swami et al., 2014, p. 582), and that the change happened in a relatively short amount of time (approximately 1 week). Third, the elections

in Study 1 and 2 resulted in Democratic wins, which limits interpretation of the candidate support factor to a single side of the political spectrum. Since past research finds liberals and conservatives differ in how much and what kind of conspiracy beliefs they embrace (Douglas et al., 2019; van Prooijen, Krouwel, & Pollet, 2015), future research could test whether voting and electoral outcomes predict changes in conservatives' conspiracy beliefs when conservative candidates win elections.

Fourth, people's existential and social motivations were not measured, leaving open the possibility that supporters of the winning candidates in our studies experienced a reduction in general conspiracy beliefs due to factors other than the satisfaction of those motivations. In addition, there may be cases where voting and one's preferred candidate winning an election do not satisfy existential and social motivations, depending on people's pre-election beliefs about the nature of the election or the electoral outcome. Future research could directly test the motivational account of conspiracy beliefs in an electoral context by measuring psychological correlates of those motivations, such as perceived control or social exclusion. Last, the studies were not pre-registered and therefore the results should be considered provisional upon further replication tests.

It is worthwhile to note the context in which our data were collected. The election results in Study 2 came on the heels (2 months) of the U.S. Presidential election, which means that liberal participants in Study 2 experienced two consecutive electoral wins in a relatively short amount of time (and showed a significant decrease in their general conspiracy beliefs). Although not the focus of the present research, the results herein might serve as a ground for investigating how long the positive effect of supporting the winning candidate on reducing conspiracy beliefs lasts (Loveless, 2020; Miller, 2009).

Given that both of our studies took place in the U.S., it would be worth to test our hypothesis with different national samples. A recent multinational study has reported little to no moderation by country on psychographic and demographic correlates of conspiracy beliefs (Walter & Drochon, 2022). On the other hand, a different recent multinational study reported significant heterogeneity across countries in regard to the relationship between political ideology and conspiracy beliefs (Imhoff et al., 2021). Although we do not view the proposed motivational account to be specific to the U.S., how it manifests outside the U.S. may depend on the political landscape of the country and how its citizens construe the nature of the election in question.

7. Concluding remarks

People who endorse conspiracy theories tend to feel ineffectual and socially isolated, often existing on the margins of society. The current research studied what might weaken the draw of conspiracy theories by focusing on a potent form of political engagement, voting, and watching one's candidate win. Perhaps feeling that one's political attitudes resonate among the electorate can soothe the concerns that make conspiracy theories so appealing in the first place.

Declaration of Competing Interest

The authors declare that the research was conducted in the absence of any financial, personal, or other relationships that could be construed as a potential conflict of interest to the research, authorship, and/or publication of this article.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jesp.2022.104396.

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