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Conspiracy mentality and political orientation across 26 countries

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People differ in their general tendency to endorse conspiracy theories (that is, conspiracy mentality). Previous research yielded inconsistent findings on the relationship between conspiracy mentality and political orientation, showing a greater conspiracy mentality either among the political right (a linear relation) or amongst both the left and right extremes (a curvilinear relation). We revisited this relationship across two studies spanning 26 countries (combined *N* = 104,253) and found overall evidence for both linear and quadratic relations, albeit small and heterogeneous across countries. We also observed stronger support for conspiracy mentality among voters of opposition parties (that is, those deprived of political control). Nonetheless, the quadratic effect of political orientation remained significant when adjusting for political control deprivation. We conclude that conspiracy mentality is associated with extreme left- and especially extreme right-wing beliefs, and that this non-linear relation may be strengthened by, but is not reducible to, deprivation of political control.

In the wake of major events, whether these be terrorist attacks[1], global pandemics such as the coronavirus disease 2019 (COVID-19) outbreak[2,3] or presidential elections[4], conspiracy theories predictably surge across the Internet. Conspiracy theories, defined as beliefs that a group of actors are colluding in secret to reach a malevolent goal[5,6], are common across times, cultures and populations[7,8]. Accumulating research has revealed that a reliable predictor of belief in one conspiracy theory is belief in another conspiracy theory[1,9–11]. It therefore appears that people differ in their predisposition to explain events as conspiracies, which is sometimes referred to as 'conspiracy mentality' or the 'conspiracy mindset'[12–14]. The conspiracy mindset is closely associated with belief in a wide range of existing specific conspiracy theories, as well as the endorsement of conspiracy theories created by researchers for experimental purposes[15]. It differs from concrete conspiracy beliefs in that it taps into the general propensity to suspect that conspiracies are at play, uncontaminated by concrete events, actors or contexts.

The political realm in particular is one key area where conspiracy beliefs are salient and thriving[16]. For instance, conspiracy theories are intrinsically connected to the rhetoric of populist political leaders who arguably exploit conspiracy theories for strategic reasons[17,18]. Importantly, citizens' belief in conspiracy theories predicts voting behaviour and intentions[19,20] and non-normative political action[21,22]. Traditionally, conspiracy beliefs have been associated with authoritarian worldviews[23,24], as exemplified by positive relations between conspiracy beliefs and right-wing authoritarianism[25–27]. Stripping a politically right-wing stance from the surplus meaning of authoritarianism (and its strong connection to traditions and authorities), many studies have found a linear relationship between self-reported political orientation and conspiracy endorsement[16,28,29], suggesting that conspiracy beliefs are more common at the political right than at the political left[30–33].

However, in contrast to this simple, linear relation, numerous findings point to a curvilinear relation between political orientation

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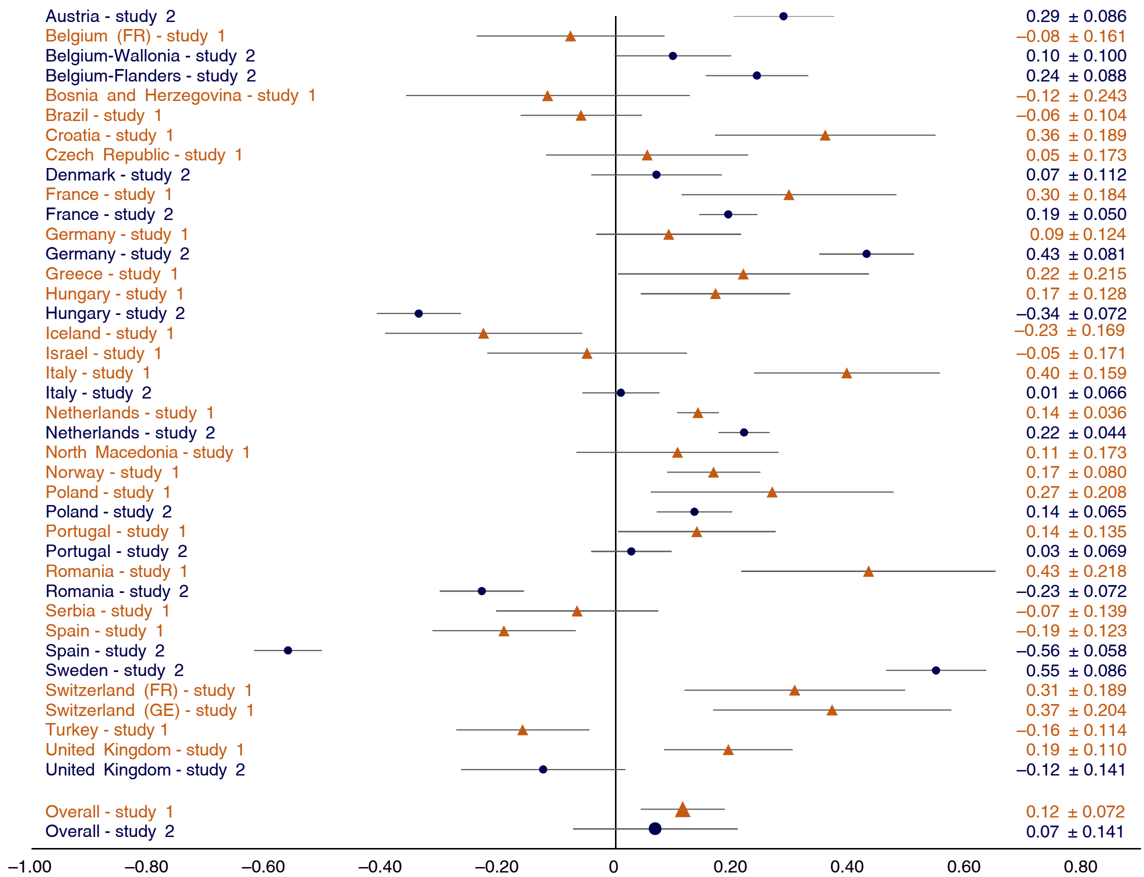

Fig. 1 | Linear relation of political orientation and conspiracy mentality (with 95% CI) in all samples separately and overall in multi-level models for both studies (controlling for quadratic relation). Data from study 1 (orange triangles) and study 2 (blue circles). Numbers denote change in scale point on conspiracy mentality per change in political orientation in unit of standard deviation (N = 104,253).

and endorsement of conspiracy theories, such that people at both political extremes endorse conspiracy theories more strongly than people in the political centre do. Such a U-shaped function across the political spectrum was described for conspiracy beliefs in samples collected in the United States, the Netherlands[34], Belgium[35] (for conspiracy theories targeting elite groups), Sweden[36], Poland[37] and Germany[24,38] (for conspiracy mentality). The fact that such a U-shaped function has so far been revealed in only a handful of countries that share a high degree of economic prosperity calls for further scrutiny and more thorough explanation.

One way to make sense of such a U-shaped relation between political orientation and conspiracy mentality is grounded in the content-based overlap between conspiracy beliefs and worldview explanations on the political extremes. This worldview explanation is based on the notion that extreme political movements at both the left and right share a common set of features[39], which include a pronounced tendency to distrust and reject groups and ideas that differ from their own[40–46]. The left and right extremes share a worldview that centres on Manichaean demonization of ideological outgroups, which are represented not only as wrong but as immoral and dangerous[47]. Conspiracy theories similarly represent outgroups as evil[20], and are associated with Manichaean views of history as a struggle between good and evil forces vying for control of societies[20,48]. Research on authoritarianism, a key antecedent of conspiracy beliefs, sometimes points to an authoritarianism symmetry hypothesis: authoritarian views in which dissent is not tolerated are observed on both the right- and left-wing extremes[49,50]. Likewise, both extreme positions show an affinity to a belief in simple solutions, which is also associated with conspiracy beliefs[34]. This worldview explanation thus suggests that the curvilinear relation in which conspiracy mentality is associated with extreme (left or right) political ideology is more or less universal across national contexts. Indeed, across time and cultures, conspiracy theories are common in the discourse of extremist fringe groups independent of ideology (extreme left, extreme right, religious fundamentalism and anti-technology)[51].

There is, however, another reason to predict a U-shaped function, independent of worldview content, but as a reaction to perceived lack of political control. Political control deprivation can result from losing elections, so that one's political values are not represented by governing parties. The experience of lack of control, in general, stimulates a desire to make sense of the social environment[52–54]. More recently, this general effect has been called into question[55], but there is strong evidence that deprivation of political control, in particular, increases conspiracy theorizing[16,56]. When people feel locked out of power, they may be more motivated to endorse beliefs that delegitimize incumbent authorities and the outcomes of political processes[57]. Two recent US elections demonstrate the notion that conspiracy theories are for (political) losers[58]: After the election, supporters of the winning party showed weaker, and supporters of the defeated party stronger, beliefs in election-related conspiracy theories[59]. Supporters of extreme parties may therefore endorse conspiracy theories because they are not represented in governmental decisions (at least, in most Western countries).

This explanation, however, would suggest context dependence rather than universality. To the extent that parties from one of the

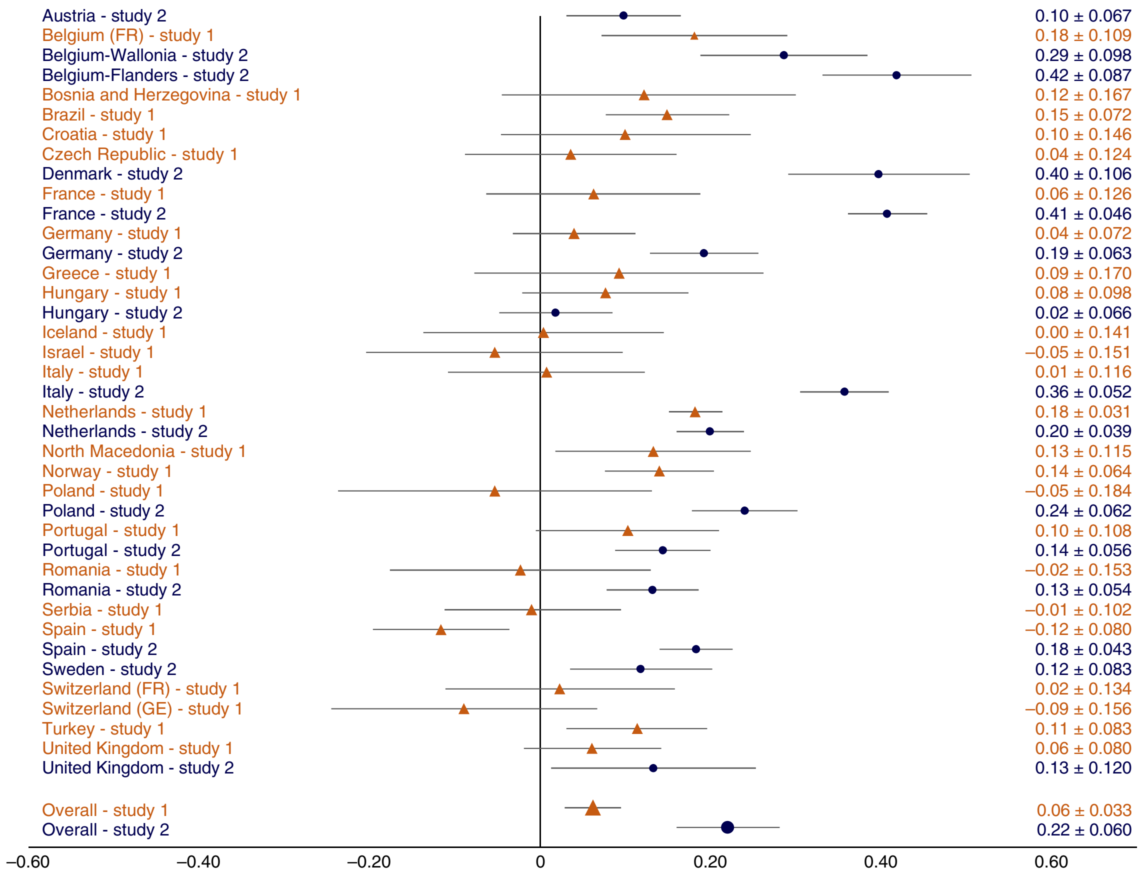

Fig. 2 | Quadratic relation of political orientation and conspiracy mentality (with 95% CI) in all samples separately and overall in multi-level models for both studies (controlling for linear relation). Data from study 1 (orange triangles) and study 2 (blue circles) (N = 104,253).

extreme ends of the political continuum are in power or holding government positions, endorsement of conspiracy theories should be less pronounced among the supporters of these parties. This allows for the prediction that, in countries with a far-right government, conspiracy mentality should be particularly present on the political left (that is, a negative linear relation), whereas in countries with a far-left government, we would expect conspiracy theories particularly at the political right (a positive linear trend).

The present research sought to provide more definitive evidence regarding the nature, universality and explanations of the relationship between political orientation and conspiracy mentality, the mindset that secret sinister forces are at play. As the Conspiracy Mentality Questionnaire (CMQ) mentions no concrete agents or events, it assesses this worldview without being contaminated by political bias. Study 1 investigated the relationship between political orientation and conspiracy mentality in a large and unique dataset from 23 countries (N = 33,431), allowing us not only to test the link between political orientation and conspiracy mentality in a more generalizable and fine-grained manner but also to examine whether deprivation of political control (with one's political party excluded from government) can account for this link. A second study (N = 70,882) complemented these analyses with larger samples from 13 European countries that allowed weighting of data to match population-based distributions of age, gender, education and political leaning.

In both studies, we measured political orientation in two complementary ways. As a first approach, we measured participants' political orientation on a single-item scale ranging from (extremely) left wing to (extremely) right wing[60]. Although a very brief measure, the single item is widely used in political psychology studies[61,62] yielding strong evidence of validity (for example, predicting 80–90% of variance in voting behaviour[63]) and comparability for international research[64].

While being common, economical and intuitive, there are some caveats to relying exclusively on this self-placement approach on a single item. Subjective political orientation may be susceptible to context-specific interpretations of the left–right spectrum[65] because what is considered left or right can differ across countries. 'Left wing' in the United States might be 'centric' in Central Europe or 'right of centre' in various Northern European countries. Moreover, the left–right continuum may be interpreted differently by citizens of different countries as referring to economic or cultural issues[66]. These issues may lead to differences between countries that are attributable to the interpretation of the scales rather than to actual political differences.

To address this limitation, it is desirable to triangulate findings involving self-reported political orientation with a measure that is less susceptible to self-referencing and differing standards. As a second approach, we thus relied on voting intentions for political parties. These choices have no scale anchoring issues and may be more intuitively accessible to participants than their self-positioning on a Likert-type scale. Connecting voting intentions to international expert coding[67] (see below) allowed us to differentiate between different aspects of the left–right continuum across different political contexts.

Results

For both studies, we dropped one item (albeit different ones, see Supplementary Sect. 2 and Supplementary Tables 3 and 4) from the Conspiracy Mentality scale to improve measurement invariance and achieve both configural and metric invariance for the four-item

Table 1 | Fixed effects predicting conspiracy mentality from linear and quadratic term of political orientation, whether preferred party was in power at time of data collection and demographic data in both studies

	Study 1				Study 2			
Predictors	**B**	**s.e.**	**P**	**95% CI**	**B**	**s.e.**	**P**	**95% CI**
(Intercept)	7.196	0.151	<0.0001	6.900 to 7.492	6.341	0.188	<0.0001	5.973 to 6.709
Linear effect	0.139	0.041	0.0029	0.059 to 0.219	0.124	0.075	0.1180	−0.023 to 0.271
Quadratic effect	0.096	0.021	0.0003	0.055 to 0.137	0.188	0.025	<0.0001	0.139 to 0.237
Preferred party currently in government (1 = yes)	−0.587	0.032	<0.0001	−0.650 to −0.524	−0.756	0.024	<0.0001	−0.803 to −0.709
Sex (study 1: 1 = male; study 2: 1 = female)	0.049	0.028	0.0888	−0.006 to 0.104	0.339	0.020	<0.0001	0.300 to 0.378
Sex (study 1: 1 = other)	−0.451	0.259	0.0816	−0.959 to 0.057	–	–	–	–
Age	0.001	0.001	0.1236	−0.001 to 0.003	0.013	0.001	<0.0001	0.011 to 0.015
Low education (1 = less than high school)	0.184	0.057	0.0013	0.072 to 0.296	0.383	0.037	<0.0001	0.310 to 0.456
High education (1 = university degree)	−0.694	0.032	<0.0001	−0.757 to −0.631	−0.692	0.024	<0.0001	−0.739 to −0.645

scale, which was computed by averaging the four remaining items ($\alpha = 0.82$ in study 1, ranging from 0.62 in Macedonia to 0.89 in Poland; $\alpha = 0.83$ in study 2). Parallel analyses with the five-item measure ($\alpha = 0.84$) are available for both studies in Supplementary Sect. 7 but do not yield any different results. This scale should tap into respondents' general propensity to accept conspiracy theories. To test this, we had inquired about the agreements with context-specific conspiracy theories in study 1. Across countries (random-effect meta-analytic models with strong heterogeneity; I^2 values >0.96), conspiracy mentality correlated positively with left-leaning ($r = 0.37$, $P < 0.001$, 95% CI 0.28–0.45), neutral ($r = 0.42$, $P < 0.001$, 95% CI 0.33–0.51) and right-leaning conspiracy theories ($r = 0.29$, $P < 0.001$, 95% CI 0.23–0.35) (see Supplementary Figs. 1–3 for forest plots). As the arguably more adequate approach, we aggregated agreement with the diverse conspiracy theories in each country to tap into the general propensity to endorse specific conspiracy beliefs. This aggregate correlated substantially with our generic conspiracy measure that excludes any reference to concrete events or actors ($r = 0.49$, $P < 0.001$, 95% CI 0.41–0.56). Correcting for attenuation due to imperfect reliability of both measures yielded a corrected average of $r = 0.73$ ($P < 0.001$, 95% CI 0.63–0.82; Supplementary Table 5).

Analyses based on self-reported political orientation. To address the question of whether conspiracy mentality is particularly pronounced on one side of the political spectrum, we tested linear and quadratic effects of self-reported political orientation on CMQ scores, respectively. Specifically, we predicted conspiracy mentality from (country-centred) political orientation, squared centred political orientation and random slopes for both. In study 1, endorsement of the CMQ items was more pronounced on the political right than the political left, as exhibited by a positive linear effect ($B = 0.115$, s.e. 0.037, $P = 0.005$, 95% CI 0.042–0.187). Study 2 did not replicate this linear relation ($B = 0.068$, s.e. 0.072, $P = 0.362$). The 95% confidence interval (−0.073 to 0.210) included both zero and the estimate obtained in study 1 (0.115). A closer look at the estimates within country suggested large heterogeneity in the linear relation (Fig. 1). While there was a clear positive relation suggestive of greater conspiracy mentality at the political right in countries spanning the centre–north of Europe such as Austria, Belgium (particularly Flanders), France, Germany, the Netherlands, Poland and Sweden, the conspiracy mentality was more pronounced on the left in countries spanning the centre–south of Europe such as Hungary, Romania and Spain.

The predicted positive quadratic relation, in contrast, was significant in study 1 ($B = 0.062$, s.e. 0.017, $P = 0.001$, 95% CI 0.029–0.095) as well as study 2 ($B = 0.220$, s.e. 0.031, $P < 0.001$, 95% CI 0.160–0.281). Unlike the linear relation, this pattern of greater conspiracy mentality at both political extremes was less heterogeneous (Fig. 2). To test whether conspiracy mentality is greater at the political extremes than at the political centre, we used the two-lines technique to check for a U-shaped relation[68]. This would be indicated by two significant interrupted regression lines and a sign change (negative slope for low values, positive slope for high values). To enhance interpretability, we relied on the raw, non-centred scores of political orientation, but results remain identical for within-country centred political orientation. For study 1, our analyses suggested that there was indeed a linear decrease in conspiracy mentality among the left extreme to a value of 3.4 (the break point was determined by the Robin Hood algorithm[68]) ($b = -0.40$, $P < 0.001$, 95% CI −0.46 to −0.33) and a linear increase from there to the extreme right ($b = 0.17$, $P < 0.001$, 95% CI 0.10–0.24) (Fig. 3). Likewise, in study 2, there a significant decrease from the left extreme to the break point of 5 ($b = -0.28$, $P < 0.001$, 95% CI −0.30 to −0.26), followed by a linear increase ($b = 0.16$, $P < 0.001$, 95% CI 0.13–0.18) (Fig. 4).

To explore the heterogeneity in both linear and quadratic relationships across countries, we conducted exploratory analyses to examine whether the size and direction of these meaningfully related to the current national government's position on a left–right-wing scale in general, economically and socially. Due to the small number of countries in study 2, we restricted these analyses to the study 1 sample and conducted three separate analyses for each potential moderator by adding two interaction terms with the linear and the quadratic effect of political orientation, and Bonferroni-adjusted the critical value to $P = 0.008$ for six tests. None of these moderating analyses yielded significant interactions of either the linear or the quadratic effect (see Supplementary Sect. 6 for detailed analyses in Supplementary Tables 8–10 and corresponding scatterplots in Supplementary Figs. 5–7). This is potentially due to the lack of statistical power given the (still) small number of countries.

The control deprivation perspective allows the speculation that the relationship between political orientation and conspiracy mentality might appear because people with more extreme political views find themselves less frequently represented in the government. We thus dummy-coded whether the preferred (study 1) or recently voted (study 2) political party was in government at the time of data collection and included this as well as demographic variables

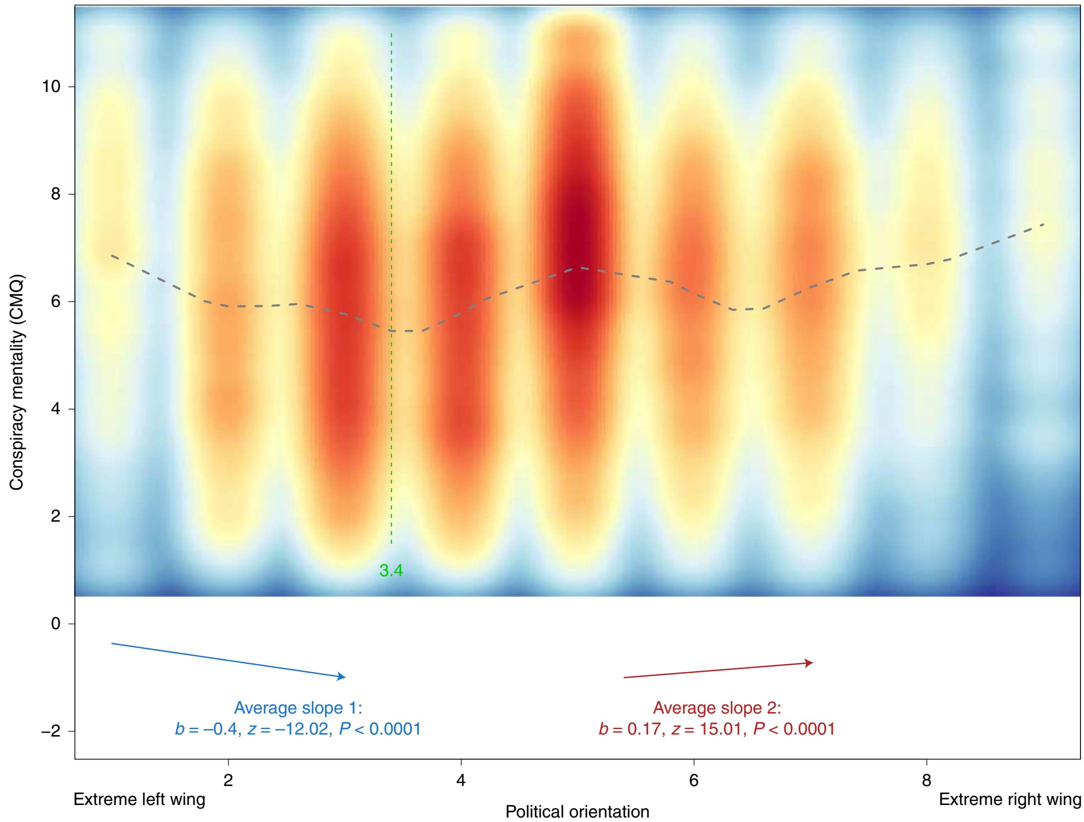

Fig. 3 | U-shaped relationship (tested with two-lines technique) of self-reported political orientation (raw) and conspiracy mentality in study 1 (*N* = 37,692). Higher density of data points is indicated by warmer colours (blue, no data points; red, a lot of data points). The dashed curve represents an unbiased but smoothed estimation of the mean at each position of the *x* axis. The dashed vertical line represents the break point from negative to positive slopes as estimated by the Robin Hood algorithm.

(sex, age and education) as control variables. Conspiracy mentality was higher for supporters of parties not in power, as well as for less educated people (with those who did not obtain a high-school degree scoring higher than those with a high-school degree, who in turn scored higher than people with a university degree), while sex and age showed inconsistent results (Table 1). Independent of these associations, however, the quadratic term of political orientation (and the linear one in study 1) remained incrementally valid predictors (Table 1). Thus, aggregated across countries, we found support for greater conspiracy mentality at the political extremes, independent of control deprivation or level of education.

On an exploratory basis, we also tested the idea that the effect of political orientation might be attenuated once the preferred party gains power. To do so, we predicted conspiracy mentality with the linear and quadratic terms of standardized political orientation, the coding of whether the preferred party was in power at time of data collection (with random slopes per country for all three variables) and their interaction. In study 1, there was no longer a main effect of party in power ($B = -0.139$, s.e. 0.108, $P = 0.208$, 95% CI −0.350 to 0.071), but an interaction with both the linear ($B = -0.184$, s.e. 0.038, $P < 0.001$, 95% CI −0.259 to −0.109) as well as the quadratic term of political orientation ($B = -0.092$, s.e. 0.026, $P < 0.001$, 95% CI −0.142 to −0.042). These interactions indicate that people at the far right are especially prone to conspiracy mentality when their party is not in power (Fig. 5). Study 2 largely replicated this exploratory finding, also in its shape (Fig. 6). The interaction with both the linear ($B = -0.164$, s.e. 0.029, $P < 0.001$, 95% CI −0.220 to −0.107) as well as the quadratic term of political orientation ($B = -0.138$, s.e. 0.022, $P < 0.001$, 95% CI −0.180 to −0.096) indicated a significant attenuation of the relation between political orientation and conspiracy mentality for supporters of parties in power. The relation to whether the voted party was in power became substantially weaker (albeit still significant) ($B = -0.497$, s.e. 0.186, $P = 0.017$, 95% CI −0.861 to −0.132).

Analyses based on voting intentions. To address the limitations of self-placement on a political orientation scale, we also inquired about respondents' party preferences by asking which political party they would vote or had voted for if there were an election. We used these hypothetical voting intentions (study 1) or the party that participants had voted for at the last national elections (study 2) to give participants three numerical indicators (general left–right, economic left–right and green alternative libertarian versus traditional authoritarian nationalistic (GAL–TAN)) of their political orientation corresponding to the party they indicated. For each of these (standardized) indicators, we repeated the multi-level analyses to test for linear and quadratic effects of political position on the general, economic and social left–right spectrum, while statistically controlling for sex, age, education and whether the preferred/voted party was in power (for detailed results, see Supplementary Table 17).

For the analyses based on the respective party's stance on the general left–right dimension, both studies suggested a small quadratic relationship to conspiracy mentality as well as a descriptive but non-significant positive linear relation mirroring the results for self-reported political orientation (Table 2). Following up on the quadratic relation with a two-lines technique (that ignores the nested structure of the data and does not include control variables) suggested two significant interrupted regression lines with a sign change, indicating a U-shaped relationship for both studies.

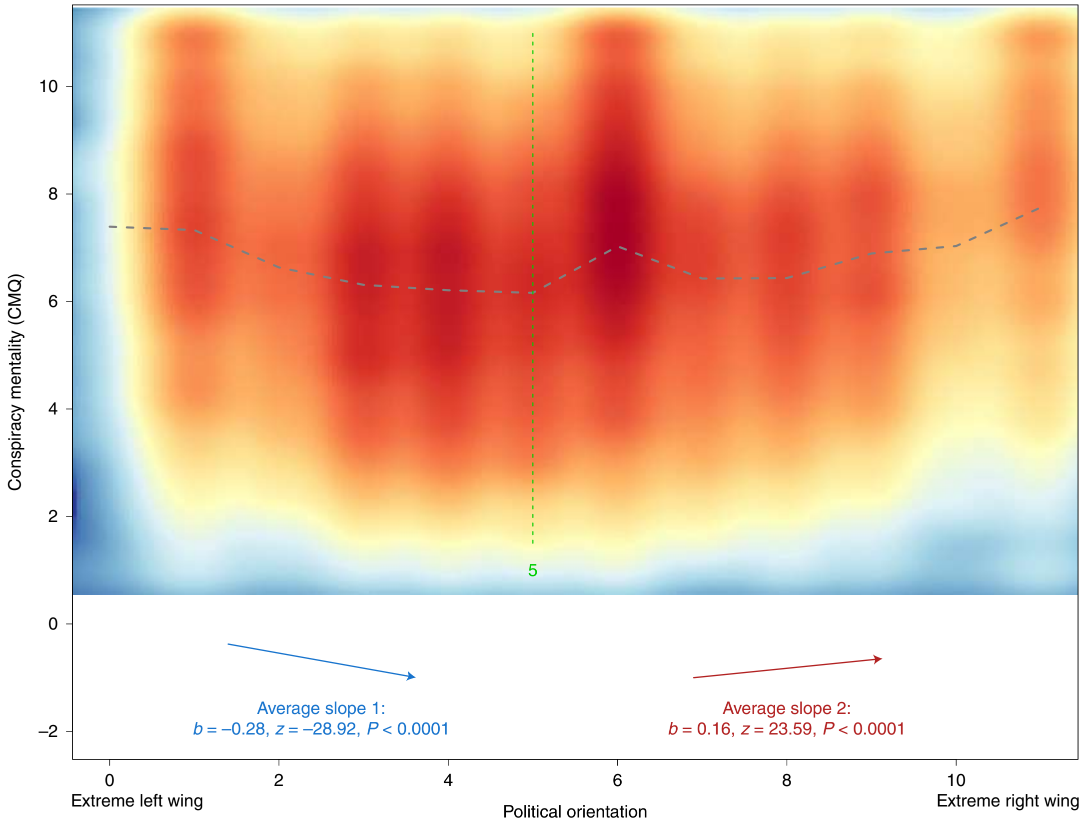

Fig. 4 | U-shaped relationship (tested with two-lines technique) of self-reported political orientation (raw) and conspiracy mentality in study 2 (*N* = 70,882). Higher density of data points is indicated by warmer colours (blue, no data points; red, a lot of data points). The dashed curve represents an unbiased but smoothed estimation of the mean at each position of the *x* axis. The dashed vertical line represents the break point from negative to positive slopes as estimated by the Robin Hood algorithm.

Specifically, in study 1, there was a negative linear trend on the left side of the political spectrum ($b = -0.69$, $z = -12.72$, $P < 0.0001$, 95% CI −0.80 to −0.59) and a positive linear trend on the right side of the political spectrum ($b = 0.79$, $z = 23.23$, $P < 0.0001$, 95% CI 0.66 to 0.87). Likewise, in study 2, we observed a negative slope from extreme left to the break point 0.37 ($B = -0.75$, $z = -22.00$, $P < 0.0001$, 95% CI −0.82 to −0.69) and a positive slope from the break point to the extreme right ($B = 1.00$, $z = 39.68$, $P < 0.0001$, 95% CI 0.93–1.08).

When we replaced political party preference with a quantitative indicator of the party's stance on economic issues, no relationship between political orientation and conspiracy mentality was sufficiently strong to show when including statistical control. This was markedly different for the social left–right stance on democratic rights and freedom (GAL–TAN). Here, both studies exhibited clear positive linear relations with pronouncedly greater conspiracy mentality for supporters and voters of parties coded as traditional, authoritarian and nationalistic as opposed to green, alternative and liberal (Table 2).

Taken together, supporters of political parties that are judged as extreme on either end of the political spectrum in general terms have increased conspiracy mentality. Focusing on the position of parties on the dimension of democratic values and freedom, the link with conspiracy mentality is linear, with higher conspiracy mentality among supporters of authoritarian right-wing parties. Thus, supporters of (extreme) right-wing parties seem to have a consistently higher conspiracy mentality, whereas the same only counts for (extreme) left-wing parties of a more authoritarian make-up and with less focus on ecological and liberal values.

Discussion

Across a large sample of respondents from 26 countries and two studies, estimating self-reported political orientation and voting intentions for political parties, we found support for consistent relations between political orientation and the propensity to believe in conspiracies. Respondents at the extreme ends of the political continuum expressed more pronounced beliefs that the world is governed by secret forces operating in the dark. We had proposed two (not necessarily mutually exclusive) explanations of this pattern: (political) control deprivation and worldview consistency. In the former case, conspiracy mentality is a reaction to the fact that one's political ideas are not part of the political mainstream, whereas in the latter, one's general outlook on the world also determines one's political preferences. In line with the (political) control deprivation idea, supporters of parties not included in the government harboured higher levels of conspiracy mentality in both studies. Crucially, however, controlling for whether one's preferred party is in power still leaves the quadratic effect of political orientation intact in both studies, thus allowing the speculation that individual levels of conspiracy mentality are at least partly associated with one's general worldview.

Which aspects of extreme political ideologies and conspiracy mentality overlap and thus create such a U-shaped relation? One prominent candidate is their Manichaean view of a black-and-white world[48]. Conspiracy allegations typically blame a few powerful evil people for prioritizing their own sinister goals over the welfare of all others[69]. Likewise, identifiable 'evil' groups take a prominent role in the rhetoric of both extreme right-wing parties (for example, Muslims or foreigners) as well as of extreme left-wing parties

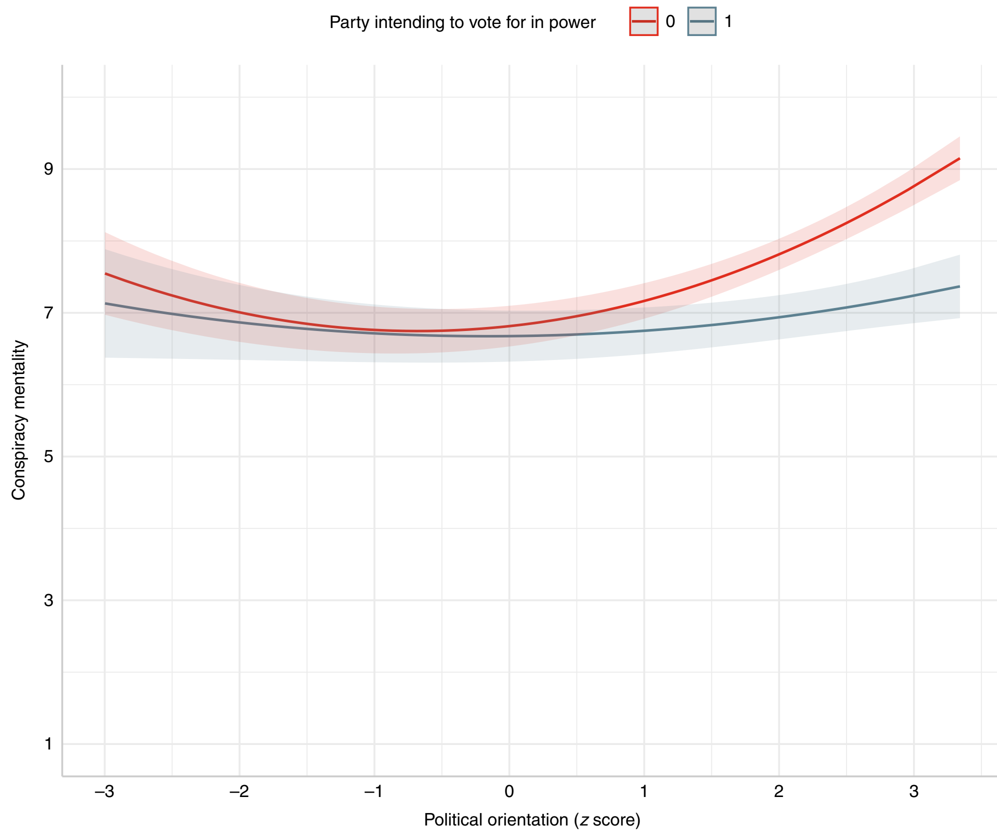

Fig. 5 | Conspiracy mentality as a function of linear and quadratic political orientation, inclusion of party intending to vote for in government (0 = no, 1 = yes) and their interaction in study 1 (*N* = 25,910) with predicted 95% confidence interval. Detailed results of model in Supplementary Sect. 12 (Supplementary Table 25).

(for example, bank and hedge fund managers or the European Union). By dividing the social realm into clearly antagonistic forces of good and evil, complexity is reduced and taking a firm (and moral) position is comparatively easier. Although this seems to align well with the finding that belief in simple political solutions is a common denominator of both political extremism and belief in conspiracy theories[34], the robust association even after controlling for education does not strongly support this as the relevant link.

As an important caveat, however, we have not tested the worldview hypothesis directly. Rather, we set up a critical test of whether the observed pattern may be reducible to political control deprivation (that is, not feeling represented by the parties in power). It has survived this potential falsification and therefore remains a plausible account to explain the residual connection between political orientation and conspiracy mentality. Other explanations are conceivable as well, however. Future research may further elucidate this connection and test the worldview hypothesis more directly.

Our findings add a further nuance to the observation of conspiracy mentality at both ends of the political spectrum. While conspiracy mentality peaks for supporters of parties that are either seen as extreme left wing or right wing in general, it is specifically the case for supporters of parties that are socially right wing and do not endorse liberal values. Supporters of extreme left-wing parties do not exhibit particularly strong conspiracy mentality, to the extent that these parties take a liberal stance on social issues. This is in line with the observations of a connection between conspiracy beliefs and variables tapping into non-egalitarian attitudes such as binding foundations[70].

The fact that there is a strong connection between social conservatism rather than economic conservatism and conspiracy mentality also aligns well with the presumed function of conspiracy beliefs. Endorsing conspiracies results from the need to manage threat and uncertainty by creating an illusion of control[52] and clear answers[71]. Social (rather than economic) conservatism has been connected to these same needs[66,72], speaking further to the intimate connection between conspiracy mentality and social (but not economic) right-wing political orientation.

Across both studies, our findings strongly corroborate the notion that 'conspiracy theories are for losers'[58]. We have interpreted this through the lens of political control deprivation (higher conspiracy mentality because one lost the vote) or as a reaction to power[73]. We want to caution, however, against ignoring a potential reverse causation. It is certainly feasible that the experience of losing an election increases conspiracy mentality, but as well or instead, anti-mainstream parties that a priori have very low chances of winning an election may appeal to conspiracy believers (because of their populist anti-elite rhetoric or because they can quench a need for uniqueness[15]). In study 1, respondents indicated which party they intended to vote for, whereas in study 2 they reported which party they had voted for at the most recent elections (thus constituting a more direct test). Comparing the beta weights of the two models (including equally scaled variables) suggests that the association was 52% larger in study 2 than in study 1 (−0.636 versus −0.418) and confidence intervals did not overlap. Although one would expect this pattern if the experience of having lost an election does indeed have an effect above the preference for non-mainstream parties, it does not offer proof. Strong tests of the causal direction can only be conducted on longitudinal data (for such data on election fraud conspiracies, see ref. [57]).

In an exploratory fashion, we also examined whether diverging patterns for political orientation depended on whether one's preferred party was in power. We found remarkably strong support

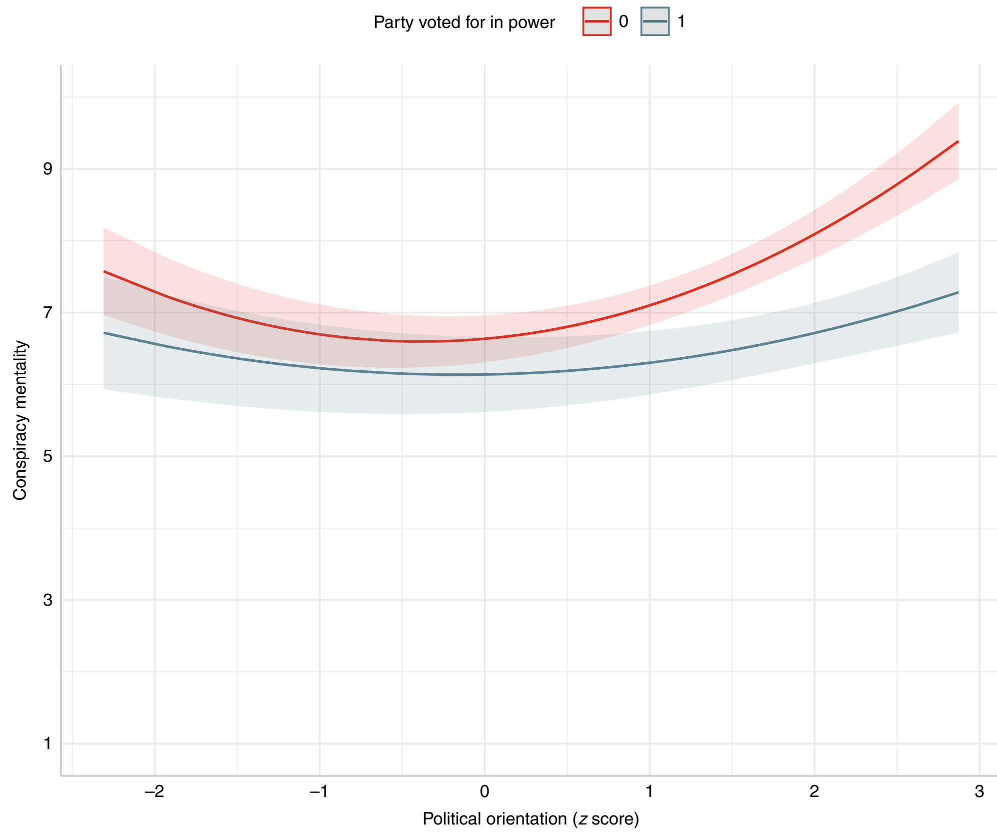

Fig. 6 | Conspiracy mentality as a function of linear and quadratic political orientation, inclusion of party voted for in government (0 = no, 1 = yes) and their interaction in study 2 (*N* = 45,260) with predicted 95% confidence interval. Detailed results of model in Supplement Sect. 12 (Supplementary Table 25).

for this speculation showing that, in fact, control deprivation was accompanied by an increase in conspiracy mentality almost exclusively for the (extreme) political right. This finding resonates with an ideological asymmetry observed in the US context whereby conservatives' trust in the government is more contingent on whether the president shares their ideology than liberals' trust in government[74]. Likewise, not being in power was accompanied by strong generalized anti-establishment beliefs (that is, conspiracy mentality) for the political right but not the left.

Although not the focus of the present research, our data also provided further support for greater conspiracy mentality among people with lower levels of education. According to previous analyses, low formal education is associated with belief in simple solutions as well as reduced feelings of control, which again boost belief in conspiracy theories[75]. Political orientation, however, had a robust association with conspiracy mentality, even after controlling for education, further ruling out that their association is due to a confound with education and resulting control deprivation.

Despite these consistent findings across a large array of diverse national contexts, we should highlight two qualifications to our findings. First, the effect sizes are overall modest. In both studies, supporting a non-governmental party and having a low education level had substantially larger associations with conspiracy mentality than either the linear or quadratic term of political orientation. Although it was not reducible to either of the two, its contribution to the prediction of conspiracy mentality was overall modest. That said, there was remarkable heterogeneity across national contexts. In particular, the linear relation ranged from strongly negative (more conspiracy mentality among self-reported leftists, as in Spain) to strongly positive (more conspiracy mentality among the political right, as in France, Poland or Sweden). Future research will have to provide an even greater diversity of national samples to explore these differences in more detail. In contrast to this diversity, the positive quadratic relation (more conspiracy mentality at the extremes) was more consistent, in particular in samples similar to the population in terms of key demographics in study 2.

As the attentive reader will notice, heterogeneity was present not only between countries but also within countries when comparing the two studies. We can only speculate about the exact reasons for this. One obvious candidate might be different compositions of the samples or slightly different recruiting strategies (for example, study 2 matches demographic population parameters but focuses on self-selected participants in panels on political research, probably with an above-average interest in politics). Another, equally speculative possibility is that these associations are more volatile than is commonly assumed. Although, in general, conspiracy mentality is a relatively stable disposition, political events and rhetoric of political elites might fuel the endorsement of such worldviews and affect the course/direction of conspiratorial beliefs of citizens.

We will illustrate the latter point with two examples. Let us consider the case of Romania. During the collection of data for study 2 (February–May 2018), the governing (leftist) government party (PSD) changed criminal procedure. The alleged aim was to fight a deep state orchestrated by George Soros, while in reality arguably to save their party leader, Liviu Dragnea, from conviction due to corruption. Throughout that period, leftists in Romania endorsed conspiracy mentality to a greater degree than right-wingers. At the (later) time of study 1 (June 2019), Dragnea had been officially convicted for over a year and the (more common) positive linear relationship was also observed in Romania. On the other hand, such a positive linear relationship was present in the Hungarian data in study 1 (July 2017), but it turned to a negative correlation in study

Table 2 | Fixed effects predicting conspiracy mentality from linear and quadratic term of three left–right codings (general, economic and social) of political party participants intended to vote for (study 1) or voted for at last national elections (study 2), while controlling for whether preferred party was in power at time of data collection, and demographic data

	Study 1				Study 2			
Predictors	***B***	**s.e.**	***P***	**95% CI**	***B***	**s.e.**	***P***	**95% CI**
General left–right coding								
(Intercept)	6.963	0.198	<0.001	6.575 to 7.351	6.146	0.284	<0.001	5.589 to 6.703
Linear effect	0.113	0.052	0.054	0.011 to 0.215	0.135	0.161	0.415	−0.181 to 0.451
Quadratic effect	0.155	0.068	0.040	0.022 to 0.288	0.301	0.125	0.032	0.056 to 0.546
Economic left–right coding								
(Intercept)	7.164	0.186	<0.001	6.799 to 7.529	6.560	0.225	<0.001	6.119 to 7.001
Linear effect	0.050	0.045	0.287	−0.038 to 0.138	0.010	0.184	0.958	−0.351 to 0.371
Quadratic effect	0.114	0.079	0.169	−0.041 to 0.269	0.053	0.214	0.809	−0.366 to 0.472
Social left–right coding (GAL–TAN)								
(Intercept)	7.298	0.185	<0.001	6.935 to 7.661	6.531	0.216	<0.001	6.108 to 6.954
Linear effect	0.290	0.072	0.001	0.149 to 0.431	0.334	0.086	0.005	0.165 to 0.503
Quadratic effect	−0.007	0.062	0.913	−0.129 to 0.115	0.140	0.131	0.325	−0.117 to 0.397

Note. All estimates for model including dummy-coded variable for whether party was in government, sex, age and education.

2 (Spring 2018). This might be another indication for the role of rhetoric by the political elites. Namely, 2017 was a pre-electoral year in Hungary, and Viktor Orban and his right-wing party intensified their attacks on the 'Soros mafia' and 'Brussels' and gained more and more control over the Hungarian media[76]. At the same time, in the run-up to the elections in April 2018, conspiracy narratives became abundant on the left, with narratives such as the Hungarian Prime Minister being an agent of Vladimir Putin and leading Fidesz politicians secretly taking psychiatric care in Austria. In line with study 2, another public opinion poll from after the elections (autumn 2018) found strong conspiracy narratives on the left and, also, higher conspiracy mentality among left-wing opposition than among governmental voters[77]. Such post hoc explanations of unexpected differences (albeit indicative) remain speculative, but they might serve as welcome inspiration for further explorations on the role of sample characteristics and political elite rhetoric in future studies. All in all, our study provides the largest investigation to date of conspiracy mentality in terms of both number of participants and included countries, showing consistent support for stronger conspiracy mentality at both ends of the political spectrum with two different methodological approaches. Moreover, our study adds further nuance to this U-shaped function, showing that this is not symmetric, but that conspiracy mentality is particularly pronounced on the political right, particularly among voters of traditional, nationalistic and authoritarian parties. The fact that this pattern remained intact even after controlling for being in power or not also resonates with the observation that some winning parties and candidates do not just abandon their conspiracy rhetoric once they are in office (although being in power significantly curbed the asymmetrically greater conspiracy mentality on the political right wing). Instead, their anti-elite rhetoric remains intact even when they constitute a personification of exactly this elite and, our data might add, so does the anti-elite conspiracy mentality of their electorate.

Methods

To test the link between conspiracy mentality and political orientation, we aimed at collecting data from a diverse set of (predominantly European) countries. To this end, two authors (R.I. and J.-W.v.P.) issued an open call for participation via the EU COST Action network 'Comparative Analysis of Conspiracy Theories (COMPACT)'. Specifically, we invited collaborators to contribute datasets that included all required variables from at least 300 respondents. The study was conducted in accordance with the 2016 American Psychological Association Ethical Principles of Psychologists and Code of Conduct[78]. As the project did not involve deception, vulnerable populations, identifiable data, intensive data or interventions, it was exempt from ethical approval at most participating institutions. Specifically, it was deemed to be exempt from ethics approval at Johannes Gutenberg University (Germany), Université Libre de Bruxelles (Belgium), University of Banja Luka (Bosnia and Herzegovina), University of Brasília (Brazil), University of Zagreb (Croatia), the Czech Academy of Sciences, Brno (Czech Republic), University of Rennes (France), University of Oxford (data collection in Greece), University of Iceland (Iceland), Interdisciplinary Center Herzliya (Israel), Sapienza University of Rome (Italy), the Macedonian Academy of Sciences and Arts (North Macedonia), University of Warsaw (Poland), Universidade Católica Portuguesa (Portugal), University of Bucharest (Romania) and University of Neuchâtel (Switzerland). The project received ethics approval by Eötvös Loránd University, Budapest (approval no. 188/2017; Hungary), the School Research Ethics Panel at Anglia Ruskin University and University of Kent Psychology Ethics (no. 201714894944604000; United Kingdom), the Ethical Board of the Institute for Political Studies, Belgrade (Serbia), the University of Bern (#2016-02-00005; Switzerland) and the Norwegian Data Protection Authority (Norway). Spanish data came from the Panel Ciudadano para la Investigación Social en Andalucía, which has an internal review of compliance with European and Spanish ethical and data protection regulations. Data collected by Kieskompas (the Netherlands and Turkey) received ethical approval under a cluster approval to J.-W.v.P. by the Vrije Universiteit Amsterdam (VCWE-2015-138R1; approved in October 2015 for 5 years). All participants in all countries provided explicit consent to participate before data collection and had the right to terminate participation at any time. Participants received no compensation with the exception of the United Kingdom and potentially the samples recruited via a panel company where this information is not publicly shared (Belgium, Germany, Israel, Norway, Spain and Switzerland).

This was complemented with a second study based on a large-scale two-wave online panel study conducted in 13 EU countries (we coded Belgium-Flanders and Belgium-Wallonia separately in the data, yielding 14 national categories). Data collection for study 2 was conducted by Kieskompas ('Election compass') in accordance with the Dutch Authority for the protection of personal information ('Autoriteit Persoonsgegevens') and within the ethical norms of the VU University Amsterdam (approved under the same cluster approval as for study 1). Panels were acquired through online Voting Advice Applications (VAAs) prior to elections. VAA users voluntarily agreed to join the panel and be contacted with research surveys. The potential respondents received an email invitation with an online link to participate. In countries where panel responses were insufficient (Austria, Belgium, Denmark, Germany, Hungary, Italy, Poland, Portugal, Romania and Sweden), respondents were also recruited via social media, where they were invited to take the same survey as the panel respondents. The study was conducted in each participating country's native language. For the current analyses, we relied on data from wave 1, for which data collection took place from February to May 2018.

Individual-level variables. Although individual collaborators in study 1 were free to assess additional variables or to include the questions of this study in larger surveys (to facilitate inclusion in ongoing large-scale national surveys), each contribution included the following variables (forward-translated to the local language by the respective local team; see OSF for all language versions): (a) the five-item CMQ[9] (for example, 'I think that government agencies closely monitor all citizens', 'I think that events which superficially seem to lack a connection are often the result of secret activities', 'I think that there are secret organizations that greatly influence political decisions') on an 11-point scale ranging from certainly not (0%) to certain (100%); (b) a measure of political orientation ('Please indicate your political orientation on a scale from left to right') with very left-wing coded as 1 to very right-wing coded as 9; (c) a question tapping into voting intentions for political parties ('Who would you vote for at the next national elections?'); (d) endorsement of at least three country-specific conspiracy theories (chosen to reflect a local left-wing, a local right-wing and a local conspiracy theory without clear political partisanship; complete list on OSF) on a scale from strongly disagree (1) to strongly agree (7). The latter were included to serve as validation of the CMQ. Finally, all surveys included demographic information on gender, age and education. As educational systems differ drastically amongst all involved countries, we recoded education in a simplified manner as low (no high-school diploma), medium (high-school diploma) and high (university degree) by means of two dummy-coded variables with high-school diploma serving as the reference category.

For study 2, as part of a larger survey, participants completed the five-item Conspiracy Mentality scale[9], as well as their self-reported political orientation on a 11-point left–right scale ranging from 0 to 10 ('In politics, people talk of 'the left' and the 'the right'. How would you place your own views on a scale from 0 to 10, where 0 is 'left' and 10 is 'right'?'). In addition, they indicated which party they voted for in the last parliamentary election, level of education, sex and age.

Samples for analysis. Each collaborator in study 1 was encouraged to contribute as large a sample as possible, preferably matching population in terms of age and gender distribution, and excluding solely student samples. No statistical methods were used to pre-determine sample sizes, but we encouraged to collected samples as large as feasible. Supplement Set. 1 lists all included samples with demographic information, descriptive statistics for the central variables and details on data collection.

The total sample contained a total of $N=37{,}692$ participants (15,073 men, 22,469 women; 87 other; $M_{age}=43.32$ years, s.d. 16.53 years) from 23 countries (Supplementary Table 1). Due to its large size and potential undue influence, we also conducted control analyses without the sample from the Netherlands. All relevant results remain unaltered, and these analyses can also be obtained online.

For study 2, we relied on data from the European Voter Election Studies[79] (EVES). For 13 European countries (with two separate samples for the Belgian regions), we had sufficiently large samples to allow weighing by age, gender, education, region and vote in the last election to match population distribution on these variables. The data are weighted by post-stratification and Iterative proportional fitting[80,81], accounting for respondents' age, education and gender. To determine the extent of sample imbalance, we compared our observed geographic and demographic characteristics with that of the likely voter population as of 2011 (the Eurostat Census, to our knowledge, the best publicly available EU-wide data source). Moreover, we calculated additional weights for vote recall in the last parliamentary election in each country to adjust for partisan bias.

The raw sample contains a total of 70,882 participants (45,957 men, 24,925 women; $M_{age}=48.51$ years, s.d. 16.75 years) from 13 countries (Supplementary Table 2), while the weighted sample had 47,801 participants from 13 countries (the raw number of UK respondents was too low for meaningful weighting). All analyses here are reported for the full sample. Results for the weighted sample were virtually identical and can be found in Supplementary Sect. 9 (Supplementary Tables 17–21).

Data preparation. All scale values were rescaled to bring them into a common metric (for example, transforming scales from 0 to 10 into ones from 1 to 11). To translate the voting intentions for certain political parties into a meaningful metric, we re-coded these into numerical values taken from the 2014 Chapel Hill Expert Survey[67] (CHES) database. The CHES includes coding of a large number of European political parties, and aggregates scores obtained by surveying multiple experts per country (specializing predominantly in areas of political science). Most relevant for our current purposes were the coding for each party's position on a left–right continuum in terms of its broad ideological stance (LRGEN), its stance on economic issues (LRECON) and its stance on democratic freedoms and rights (GAL–TAN). Thus, for each participant, we replaced the categorical variable on which they indicated the party they would vote with three numerical variables of the respective party's stance on the left–right continuum. For parties or countries that were not included in the CHES ratings, these analyses could not be conducted and the corresponding analyses are thus based on an overall smaller sample (study 1: $N=24{,}324$; study 2: $N=38{,}702$). Given the sample sizes, data distribution was assumed to be normal for all variables, but this was not formally tested. All tests are reported with two-tailed P values.

Analytical strategy. As a first step, we aimed at establishing the measurement invariance and construct validity of the CMQ. Establishment of measurement invariance is a desirable procedure for cross-cultural analyses, as it ensures that there are no construct biases in the different versions of the scale. In light of the very large sample, we adopted liberal criteria recommended for such large samples[82]. For construct validity, we aimed to establish the validity of the CMQ by showing that it does meaningfully relate to the endorsement of country-specific conspiracy theories (that have a left-wing, right-wing or no political connotation). This was done to provide support for the notion that the CMQ is a valid indicator of a general propensity to endorse specific conspiracy beliefs.

As a second step, to estimate the (linear or curvilinear) relation between political orientation and the CMQ, we pursued a twofold strategy. One was based on respondents' self-positioning on the political orientation scale ranging from left to right, and the other one was based on which party respondents intended to vote for (study 1) or voted for in the last election (study 2). We combined this information with reliable expert ratings of a party on the left–right continuum, as well as separate ratings for economic and social issues. Whenever we found support for a curvilinear relation, we followed up with the two-lines technique to establish support for an actual U shape[68].

We report the unstandardized coefficient for the (within-country) z-standardized predictors. These weights can thus be easily interpreted as the increase or decrease on the Conspiracy Mentality scale corresponding to an increase of one s.d. on the political orientation scale (for example, $B=-0.50$ suggests that an increase of one standard deviation on the political orientation scale corresponds to a decrease of half a scale point on the Conspiracy Mentality scale).

In both approaches, we controlled for demographics (sex, age and education) and whether the political party the respondent intended to vote for was in power at the time of data collection (a proxy for political control deprivation). We then tested whether controlling for this proxy would attenuate or eliminate potential quadratic effects of political orientation (speaking strongly to the notion that the curvilinear relation is due to political control deprivation) or not (suggesting residual variance compatible with the notion of worldview compatibility). Explanatorily, we also tested whether the effect of political orientation was moderated by political control deprivation (that is, whether one's party was in power at the time of data collection).

Reporting summary. Further information on research design is available in the Nature Research Reporting Summary linked to this article.

Data availability

All data for study 1 and 2 are available at https://osf.io/jqnd6/.

Code availability

Custom code that supports the findings of this study is available as R markdown at https://osf.io/jqnd6/.

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Author contributions

R.I. and J.-W.v.P. initiated the project with an open call. R.I., O.K., J.H.C.A., M.Bi., A.B., M.Ba., N.B., K.B., R.B., A.C., S.D., K.M.D., A.D., B.G., S.G., G.H., A.K., P.K., A.K., S.M., J.M.D., M.S.P., M.P., L.P., G.P., A.R., R.N.R., F.A.S., M.S., R.M.S., V.S., H.T., V.T., P.W.-E., I.Ž. and J.-W.v.P. contributed to the conception of study 1 and collected data in their respective country. A.K., Y.K. and T.E. provided the data for study 2. R.I. and F.Z. analysed and interpreted the data with helpful input from O.K. R.I. drafted the article. All authors provided critical revision and approved the final version of the article.

Competing interests

The authors declare no competing interests.

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Recruitment	For Study 1, the first and last authors issued an open call for participation via the EU COST Action network “Comparative Analysis of Conspiracy Theories (COMPACT)”. Specifically, we invited collaborators to contribute datasets that included all required variables from at least 300 respondents. Each collaborator in Study 1 was encouraged to contribute as large a sample as possible, preferably matching population in terms of age and gender distribution, and excluding solely student samples. No statistical methods were used to pre-determine sample sizes, but we encouraged to collected samples as large as feasible. This was complemented with a second study based on a large-scale two-wave online panel study conducted in 13 EU countries (we coded Belgium-Flanders and Belgium-French Speaking separately in the data, yielding 14 national categories). Data collection for Study 2 was conducted by Kieskompas (“Election compass”) in accordance with the Dutch Authority for the protection of personal information (“Autoriteit Persoonsgegevens”). Panels were acquired through online Voting Advice Applications (VAAs) prior to elections. VAA users voluntarily agreed to join the panel and be contacted with research surveys. The potential respondents received an email invitation with an online link to participate. In countries where panel responses

were insufficient (Austria, Belgium, Denmark, Germany, Hungary, Italy, Poland, Portugal, Romania and Sweden), respondents were also recruited via social media, where they were invited to take the same survey as the panel respondents.

Ethics oversight

The study was conducted in accordance with the 1 2016 American Psychological Association Ethical Principles of Psychologists and Code of Conduct78. As the project did not involve deception, vulnerable populations, identifiable data, intensive data, or interventions it was exempt from ethical approval at most participating institutions. Specifically, it was deemed to be exempt from ethics approval at Johannes Gutenberg University (Germany), Université Libre de Bruxelles (Belgium), University of Banja Luka (Bosnia and Herzegovina), University of Brasília (Brazil), University of Zagreb (Croatia), the Czech Academy of Sciences, Brno (Czech Republic), University of Rennes (France), University of Oxford (data collection in Greece), University of Iceland (Iceland), Interdisciplinary Center Herzliya (Israel), Sapienza University of Rome (Italy), the Macedonian Academy of Sciences and Arts (North Macedonia), Universtiy of Warsaw (Poland), Universidade Católica Portuguesa (Portugal), University of Bucharest (Romania), University of Neuchâtel (Switzerland). The project received ethics approval by Eötvös Loránd University, Budapest (approval number: 188/2017; Hungary), the School Research Ethics Panel at Anglia Ruskin University and University of Kent Psychology Ethics (No. 201714894944604000; UK), the Ethical Board of the Institute for Political Studies, Belgrade (Serbia), the University of Bern (#2016-02-00005; Switzerland), and the Norwegian Data Protection Authority (Norway). Spanish data came from the IESA-CSIC PACIS Panel, which has an internal review of compliance with European and Spanish ethical and data protection regulations. Data collected by Kieskompas (Netherlands and Turkey) received ethical approval under a cluster approval to the last author by the Vrije Universiteit Amsterdam (VCWE-2015-138R1; approved in October 2015 for 5 years). All participants in all countries provided their explicit consent to participate before data collection and had the right to terminate participation at any time. Participants received no compensation with the exception of the UK and potentially the samples recruited via a panel company where this information is not publicly shared (Belgium, Germany, Israel, Norway, Spain, Switzerland).
Study 2 was conducted within the ethical norms of the VU University Amsterdam (approved under the same cluster approval as for Study 1).

Note that full information on the approval of the study protocol must also be provided in the manuscript.