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Conspiracy Theory Endorsement Profiles: A Cluster Validation Study

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ABSTRACT

A substantial body of research has investigated the determinants of conspiratorial beliefs, yet little is known about different conspiracy theory endorsement profiles. The present study used cluster analysis on a set of 52 conspiratorial statements tapping into six conspiracy theory types to identify and validate conspiracy theory endorsement clusters in a randomly drawn sample of the Finnish population ($N = 1077$). The cluster solution was then further validated in a social media-based convenience sample ($N = 772$). Four conspiracy theory endorsement clusters with distinct profiles were identified and validated across the samples. Participants who belonged to more conspiracy theory-endorsing clusters held more pseudoscientific beliefs and had lower political trust than participants in the less conspiracy theory-endorsing clusters. Mixed results were found concerning demographic differences. The results provide strong evidence for the existence of four conspiracy theory endorsement profiles and support the notion of a general conspiracy mindset.

1 | Introduction

Over the past two decades, there has been a surge of interest in why people endorse conspiracy theories—that is, beliefs that some malevolent actors are conspiring in secret to gain some form of benefit (Douglas and Sutton 2023). These theories vary greatly in their themes and in their specific contents, ranging from a belief that a celebrity has faked their own death to a belief that small but powerful secret organizations are responsible for major world events (Brotherton et al. 2013). Although some theories are generally more endorsed than others (Brotherton et al. 2013), studies have also found significant differences in the popularity of conspiracy theories between countries (Cordonier et al. 2021; Hornsey and Pearson 2022). Understanding why conspiracy theories are endorsed is important because the endorsement of these theories can have tangible societal consequences, such as decreased voting behaviour and rejection of science (Douglas and Sutton 2023; van Prooijen and Douglas 2018), and conspiratorial narratives are increasingly being used to influence politics (Sutton and Douglas 2020; Marie and Petersen 2022). One way to gain knowledge about what drives conspiratorial beliefs is to focus on what endorsers of such beliefs have in common, which was the aim of the present study. More specifically, the current study utilized cluster analysis to identify distinct conspiracy theory endorsement profiles based on how strongly participants endorsed different types of conspiracy theories in order to shed light on unique endorsement patterns.

1.1 | Theoretical and Empirical Background

A significant body of research has studied why people endorse conspiracy theories (for meta-analyses and systematic reviews, see Biddlestone et al. 2025; Bowes et al. 2023; Douglas et al.

2017; Douglas and Sutton 2023; and Stasielowicz 2022). In their literature review, Douglas et al. (2017) proposed that conspiracy theory endorsement may stem from epistemic (need for knowledge), existential (need for control) and/or social (need to feel unique) motives. According to this proposition, conspiracy theories may satisfy epistemic motives by offering explanations for events, and having knowledge about secret plots may satisfy existential and social motives by providing a sense of control and feelings of uniqueness. In line with this reasoning, conspiracy theory endorsement has been found to be stronger in individuals who hold other epistemically suspect beliefs like pseudoscientific beliefs, which offer alternative—often non-verifiable—explanations to phenomena (Stasielowicz 2022). Moreover, conspiracy theory and pseudoscientific beliefs have been found to be negatively related to analytic thinking, with more analytic people being more skeptical about both types of beliefs (Pennycook et al. 2015). Another crucial component of conspiracy theories is a general distrust in people and institutions. For example, studies have consistently found that individuals who distrust people and authorities are more likely to endorse conspiracy theories (Bowes et al. 2023), and having low political trust has been associated with higher conspiracy theory endorsement (Maglić 2023).

As already mentioned, conspiracy theories encompass a wide variety of beliefs (see, e.g., Brotherton et al. 2013), and new theories emerge over time (e.g., COVID-19 conspiracy theories; Douglas 2021; van Mulukom et al. 2022). Even though conspiracy theories are diverse, these theories often share some characteristics (Brotherton et al. 2013). In their study, Brotherton et al. (2013) identified five distinct conspiracy theory types based on common themes. The first type, named control of information, refers to beliefs that important information is being controlled or withheld from the public. The second type, extraterrestrial cover-up, refers to beliefs that the existence of aliens is being covered up. The third type, government malfeasance, describes beliefs that governments are routinely involved in conspiratorial criminal activities. The fourth type, malevolent global, refers to beliefs that the world is being controlled by secret societies. The final fifth type called personal well-being refers, for example, to beliefs that some actors are spreading diseases intentionally. An extension of this typology—which included COVID-19 conspiracy theories (Sambol et al. 2024)—was used in the present study for identifying conspiracy theory endorsement profiles. It is worth to note that although several of the COVID-19 conspiracy theories might fit Brotherton et al. (2013) categorizations (e.g., personal well-being and control of information), it was sensible to examine COVID-19 conspiracies separately, due to the plethora of COVID-19 conspiracy theories that arose during the COVID-19 pandemic.

Despite the comprehensive investigation of correlates to conspiracy theory endorsement and of different conspiracy theory types, far less is known about specific conspiracy theory endorsement profiles. In other words, there is currently a lack of robust evidence about whether people who endorse one type of conspiracy theories—for example, COVID-19 conspiracy theories—are the same as those who endorse other types of conspiracies—for example, conspiracy theories concerning alien cover-ups. One way to identify conspiracy theory endorsement profiles is the use of cluster analysis.

1.2 | Conspiracy Theory Endorsement Profiles

Previous studies have identified conspiracy theory endorsement profiles both directly (Frenken and Imhoff 2021) and indirectly (Sambol et al. 2024), with results consistently showing that such profiles mainly differ in their level of conspiracy theory endorsement. In their study, Sambol et al. (2024) used a clustering approach called latent profile analysis (LPA) to identify different executive functioning profiles based on tests of specific executive functions and investigated how these profiles relate to the endorsement of the five conspiracy types identified by Brotherton et al. (2013) and to COVID-19 conspiracy theories. Sambol et al. identified three executive functioning profiles and discovered that participants belonging to profiles with lower executive functioning generally endorsed conspiracy theories more than participants belonging to profiles with higher executive functioning.

In another study utilizing LPA, Frenken and Imhoff (2021) instead directly identified conspiracy theory endorsement profiles based on people's responses to different measures of conspiracy theory endorsement. They demonstrated that such profiles tend to differ in their general level of conspiracy theory endorsement, that is, profiles that strongly endorse one theory tend to strongly endorse other theories as well. Although Frenken and Imhoff concluded that these results support the idea of a general conspiracy mindset, they made no claims about the number or the validity of the identified profiles themselves. Even though they investigated endorsement profiles in five separate studies, the differences in measures between the studies and the use of convenience samples make it difficult to draw conclusions about the generalizability of their results. For example, the number of profiles identified in the studies ranged from five to seven, but it is unclear whether the difference in the number of profiles was caused by the differences in the samples or by differences in the measures.

Accuracy and replicability of conspiracy theory endorsement profiles are important for ensuring that the profiles are useful and applicable beyond a specific sample. In order to make claims about the number, robustness and generalizability of conspiracy theory endorsement profiles, the profiles need to be appropriately validated, for example, by investigating whether the results from a cluster analysis are repeatable across different samples. Ullmann et al. (2022) proposed a framework for this purpose, in which they suggest collecting or putting aside a validation data set and then examining the (1) internal (2) external, (3) visual and (4) stability properties of the cluster solutions. Internal properties refer to how well the cluster solution fits the data, which can be assessed using indices such as the average silhouette width (ASW)[1]. External properties refer to how well the cluster solution relates to other constructs not used in the clustering process. This can, for example, be assessed by examining whether the clusters differ on other theoretically or empirically important factors, like pseudoscientific beliefs and political trust in the case of conspiracy theory endorsement (Bowes et al. 2023; Maglić 2023; Stasielowicz 2022). Examination of visual properties refers to the inspection of plots to gain insight into the unique patterns exhibited by the clusters. Lastly, stability refers to whether the cluster solutions are stable across different methods and samples. Utilizing the proposed framework in conspiracy

theory research could yield valuable information about how robust and generalizable conspiracy theory endorsement profiles are.

1.3 | The Finnish Context

Finland has typically ranked among the countries with the highest levels of trust in political institutions (Bäck et al. 2024; Listhaug and Ringdal 2008). Political trust refers to the confidence citizens have in a political system to act in accordance with their best interests and needs (Hetherington 1998), and it reflects how well political institutions and actors can meet citizens' expectations without constant scrutiny (van der Meer and Zmerli 2017). High political trust is positively associated with perceiving the political system as legitimate and responsive, whereas low trust correlates with political cynicism and systemic alienation (Citrin and Stoker 2018). Although political trust in Finland has fluctuated in response to economic and social shocks such as the COVID-19 pandemic, there has not been a sharp decline over the past decades (Bäck et al. 2024; Kestilä-Kekkonen et al. 2022). This high level of trust extends beyond political institutions: Finland is broadly characterized as a high-trust society in which citizens on average perceive both institutions and other people as fair and trustworthy (Bäck et al. 2024; Newton and Zmerli 2011).

Research has shown country-level differences in conspiracy theory beliefs (Cordonier et al. 2021), with political trust suggested as a major explanatory factor behind these differences (Maglić 2023). This is consistent with meta-analytic evidence showing that distrust toward individuals, institutions and political actors is one of the strongest predictors of conspiracy theory endorsement (Bowes et al. 2023). Given the central role of distrust in conspiracy endorsement, the Finnish context offers a theoretically informative setting in which to examine conspiracy endorsement profiles. Although a high-trust environment may be expected to suppress conspiracy endorsement more broadly, it remains an open question whether distinct profiles characterized by political distrust persist even within such a context.

1.4 | The Present Study

The aim of the present study was to gain knowledge about different conspiracy theory endorsement profiles. To the best of our knowledge, the present study is the first to identify and validate conspiracy theory endorsement profiles based on a comprehensive set of different types of conspiracy theories while utilizing the novel cluster validation framework proposed by Ullmann et al. (2022). In line with the framework, a randomly drawn sample from the Finnish population ($N = 1077$) was first split into a discovery sample (T1 discovery sample, $N = 538$) and a validation sample (T1 validation sample, $N = 539$). Next, *k*-means cluster analysis was used to identify conspiracy theory endorsement clusters in the T1 discovery sample. Then, the cluster analysis was repeated with the T1 validation sample and finally repeated once more with a separate convenience sample (T2 sample, $N = 772$) to validate the identified clusters. The internal, external, visual and stability properties were analysed and compared between all samples. Additionally, LPA was used as a complementary robustness check. Although cluster analysis is an exploratory method, we expected—based on previous findings (Frenken and Imhoff 2021; Sambol et al. 2024)—to identify between three to seven clusters that would differ in their overall level of conspiracy theory endorsement.

2 | Methods

All studies, measures, manipulations and data/participant exclusions are reported below or in the Supporting Information files.

2.1 | Ethics Statement

The present study was approved by Ethics Committee for Human Sciences of the University of Turku and was conducted in accordance with the Declaration of Helsinki.

2.2 | Participants and Procedure

For an overview of sample demographics, see Table S1 in the S1 File.

2.2.1 | T1 Samples

A randomly drawn sample ($N = 5000$) of the adult Finnish mainland population was provided by the Digital and Population Data Services Agency (2023). In September 2021, a survey was sent to this sample by mail. The survey included questions concerning people's beliefs surrounding topics such as conspiracy theories and pseudoscience. A reminder was sent in October 2021 to those that had not completed the survey by that point. Altogether, 1126 (22.5%) people responded to the survey. Seventeen participants were excluded from the study because they failed to respond to over a third of the belief questions. Thirty-two participants were excluded because they failed the attention check (see Section 2.3 for more information about the attention check). Thus, the final sample was $N = 1077$. The sample was split randomly into a discovery sample (T1 discovery, $N = 538$) and a validation sample (T1 validation, $N = 539$) for the analyses. Participants were offered the chance to participate in a draw of four €50 gift cards.

2.2.2 | T2 Sample

From November 2021 to October 2022, a shorter version of the survey used at T1 was advertised online to people living in mainland Finland. Altogether 866 people responded to the survey, of which 44 were excluded because they failed to respond to over a third of the belief questions. Twenty-four participants were excluded because they failed the attention check. Twenty-five participants were excluded due to failure of reporting their age or for being younger than 18 years old. Lastly, one person was excluded due to missing responses in all items for the personal well-being conspiracy type. Thus, the final T2 sample was $N = 772$. Participants were offered the chance to participate in a draw of four €50 gift cards.

2.3 | Measures

For the English version of the questionnaire used in this study, see https://osf.io/brkfc/overview?view_only=fb0fd13bad694739a3d99fc4b334baec.

2.3.1 | Conspiracy Theory Endorsement

To measure conspiracy theory endorsement, participants were asked to rate their agreement with 52 conspiratorial statements on a Likert scale ranging from 1 = 'Completely disagree' to 7 = 'Completely agree'. These statements tapped into six different conspiracy theory types: COVID-19, control of information, extraterrestrial cover-up, government malfeasance, malevolent global and personal well-being (for more information about the statements and the conspiracy types, see the S2 File). For each participant, an average endorsement score was calculated for each conspiracy theory type. The internal consistency was acceptable for the six conspiracy theory types in all samples (all standardized Cronbach's α's > 0.70; see Table S1 in the S2 File for individual values). The average endorsement scores were used in the cluster analyses.

2.3.2 | Pseudoscientific Beliefs

The survey included 10 pseudoscientific statements like 'Telepathy is a real phenomenon, although it has not been scientifically verified', which could be answered on a Likert scale ranging from 1 = 'Completely disagree' to 7 = 'Completely agree'. Four of the statements were derived from a previous study (Ervasti 2006), and six from posts found on social media sites. The pseudoscientific belief measures indicated a good internal consistency (T1 discovery $\alpha = 0.86$, T1 validation $\alpha = 0.85$, T2 $\alpha = 0.92$). Thus, an average pseudoscientific belief score was calculated for each participant.

2.3.3 | Political Trust

To measure political trust, participants were asked to rate how much they trust (1) Finnish political parties, (2) the current parliament of Finland and (3) the current government of Finland. To rate their level of trust, participants could answer on a fully labelled Likert scale ranging from 1 = 'Fully distrust' to 5 = 'Trust a lot'. The scale also included the response option 'I don't know' (0.6%–2.8% of responses depending on the item), which was treated as a missing response. The political trust measures indicated acceptable internal consistency (T1 discovery $\alpha = 0.77$, T1 validation $\alpha = 0.75$, T2 $\alpha = 0.88$). An average political trust score was calculated for each participant.

2.3.4 | Demographics

Participants were asked about their age, gender, education level, and which party they voted for in the last municipal elections.[2] Participants answered the gender and voting questions with a free text response. Non-binary gender responses were coded as 'Other'. Parties with less than 10 responses and responses such as 'I do not want to disclose this information', were coded as 'Other' (see the S3 File for the analysis script with more details on how responses were cleaned and coded). For information about the Finnish political parties, see Ministry of Justice (2025).

2.3.5 | Attention Check

Two statements in the belief survey were used as an attention check as these measured the same belief with opposite wordings. These statements were (1) 'People will be unwillingly microchipped along with coronavirus vaccinations', and (2) 'There are no microchips in corona vaccines'. The second statement was reverse coded, and the difference between the two scores was calculated. Participants for whom the absolute difference was greater than two were considered to have failed the attention check.

2.4 | Statistical Analyses

All analyses were conducted using R (v4.5.1; R Core Team 2025) in RStudio (v 2026.1.0.392; Posit Team 2026). Cohen's kappa and Cronbach's alpha values were calculated using the psych package (Revelle 2024). Chi-squared tests were used to examine the representatives of participants' age, gender, education level and voting behaviour as compared to population estimates. *K*-Means cluster analysis was used to identify distinct conspiracy theory endorsement clusters. ASW was used for the internal validation of the cluster solution (Everitt et al. 2011; Ullmann et al. 2022). External validation was done by examining cluster differences in participants' pseudoscientific beliefs and political trust. Analysis of variance (ANOVA) was used for the external validation step and for analysing age differences between clusters. Statistically significant ANOVA results were followed by pairwise comparisons with independent samples *t*-tests with Bonferroni correction. Visual validation was conducted by examining parallel coordinate plots for each cluster solution, which were plotted using the ggplot2 package (Wickham 2016). The stability of the cluster solutions was examined using the Adjusted Rand Index[3] (ARI; Rand 1971; Hubert and Phipps 1985; Ullmann et al. 2022). Gender and education differences between clusters were analysed with chi-squared tests. The rstatix package (Kassambara 2023) was used for the *t*-tests and the chi-squared tests. In addition to the four-step cluster validation framework, LPA was used as an additional robustness check of the cluster solution. The tidyLPA package (Rosenberg et al. 2018) was used for the LPAs. The optimal LPA solutions were decided on the basis of the Akaike's information criterion (AIC; lower = better), Bayesian information criterion (BIC; lower = better), entropy (values above 0.80 indicate high certainty) and profile size. Although there is no universally accepted standard for what is considered a sufficient profile size, commonly used rules are that profiles should consist of no less than 50 participants or no less than 5% of the total sample (e.g., Łada-Maśko et al. 2025; Ning and Downing 2014).

3 | Results

3.1 | Representativeness of Samples

To examine the representativeness of the samples, participants' age, gender, education level and voting behaviour were compared

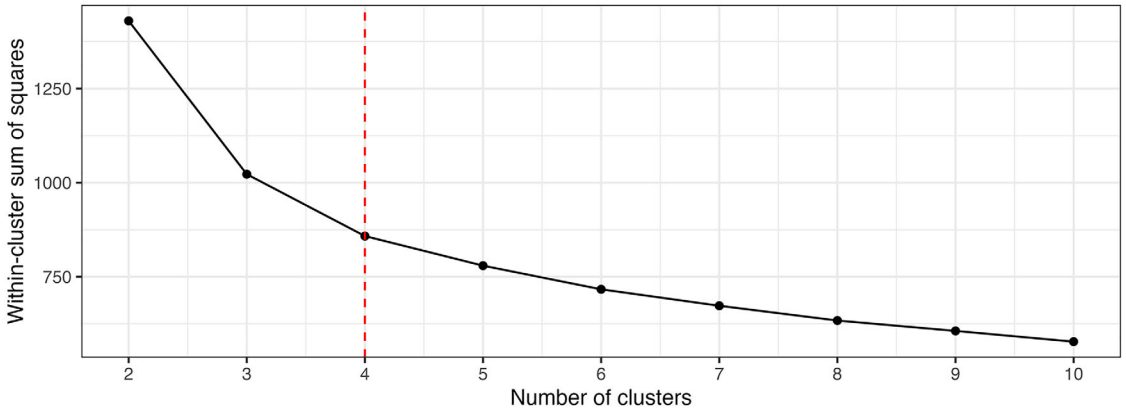

FIGURE 1 | Elbow plot for the T1 discovery sample cluster solutions. The red dotted line signifies the suggested cluster solution.

to official Finnish population statistics obtained from Statistics Finland (Statistics Finland 2025). The T1 discovery, T1 validation and T2 samples differed significantly from the population concerning age, education and voting behaviour, but there were no significant gender differences (see Table S2 in the S1 File). The study participants were generally older, more educated and more politically left-leaning compared to the population estimates.

3.2 | Identification and Validation of Conspiracy Theory Endorsement Clusters

3.2.1 | *K*-Means Cluster Analysis

3.2.1.1 | Step 1: Initial Cluster Solution and Internal Validation. Four conspiracy theory endorsement clusters were identified in the T1 discovery sample based on the elbow plot (see Figure 1). Because the elbow method is to some degree subjective, the four- and five-cluster solutions were compared in parallel-coordinate plots to investigate whether the five-cluster solution would provide a meaningful additional cluster. Inspection of the plots revealed that the five-cluster solution did not add a qualitatively distinct cluster (see Figure S1 in the S1 File). Thus, the four-cluster solution was retained as the optimal solution.

The ASW for the four-cluster solution indicated a weak but acceptable clustering performance (ASW = 0.30). The total within-cluster sum of squares and ASWs for the tested cluster solutions are presented in Table S3 in the S1 File. For the internal validation of the cluster solution, the *k*-means cluster analysis was first repeated in the T1 validation sample while specifying a four-cluster solution (method-based validation). This yielded an ASW = 0.29, which suggested that the clustering performance was as good in the T1 validation sample as in the initial T1 discovery sample.

Then, the *k*-means cluster analysis was again repeated in the T1 validation sample; however, this time with the extracted cluster centres identified in the T1 discovery sample (result-based validation). This again yielded an ASW = 0.29, indicating that the clustering performance was similar in both samples.

Next, the method- and result-based validation steps were repeated in the T2 sample. Repeating the *k*-means cluster analysis while specifying a four-cluster solution yielded an ASW = 0.33, and repeating the analysis with the extracted cluster centres from the T1 discovery sample yielded an ASW = 0.33. Again, these results supported the four-cluster solution, as the clustering performance was as good if not better for the T2 sample compared to the T1 discovery sample.

In sum, the internal validation results supported the initial four-cluster solution, as the clustering performance was acceptable and consistent both across the samples and the models.

3.2.1.2 | Step 2: External Validation. There were statistically significant differences between the clusters in all three samples for pseudoscientific beliefs, T1 discovery: $F(3, 499) = 183.74$, $p < 0.001$, $\eta_p^2 = 0.52$; T1 validation: $F(3, 500) = 135.70$, $p < 0.001$, $\eta_p^2 = 0.45$; T2: $F(3, 746) = 542.60$, $p < 0.001$, $\eta_p^2 = 0.69$, and for political trust, T1 discovery: $F(3, 527) = 48.76$, $p < 0.001$, $\eta_p^2 = 0.22$; T1 validation: $F(3, 533) = 32.30$, $p < 0.001$, $\eta_p^2 = 0.15$; T2: $F(3, 764) = 252.52$, $p < 0.001$, $\eta_p^2 = 0.50$. For the follow-up external validation *t*-test results, see Table S4 in the S1 File. In general, clusters that endorsed conspiracy theories more also endorsed pseudoscientific beliefs more and had lower political trust.

3.2.1.3 | Step 3: Visual Validation. The conspiracy theory endorsement clusters were highly similar between the samples (see Figure 2). Notably, the fourth cluster in the T2 sample exhibits more extreme values than the corresponding clusters in the T1 discovery and T1 validation samples. The visual inspection of the clusters supports the four-cluster solution.

3.2.1.4 | Step 4: Stability Evaluation. The ARI was 0.95 for the T1 validation sample and 1.00 for the T2 sample, indicating excellent and perfect stability, respectively. These results indicate that the method- and result-based cluster solutions were almost identical for the T1 validation sample and identical for the T2 sample.

3.2.2 | Latent Profile Analysis

The results from the LPAs were less definite than from the *k*-means cluster analyses, with different fit indices suggesting different solutions as optimal (see Table S5 in the S1 File). However, an inspection of the profile sizes revealed that for

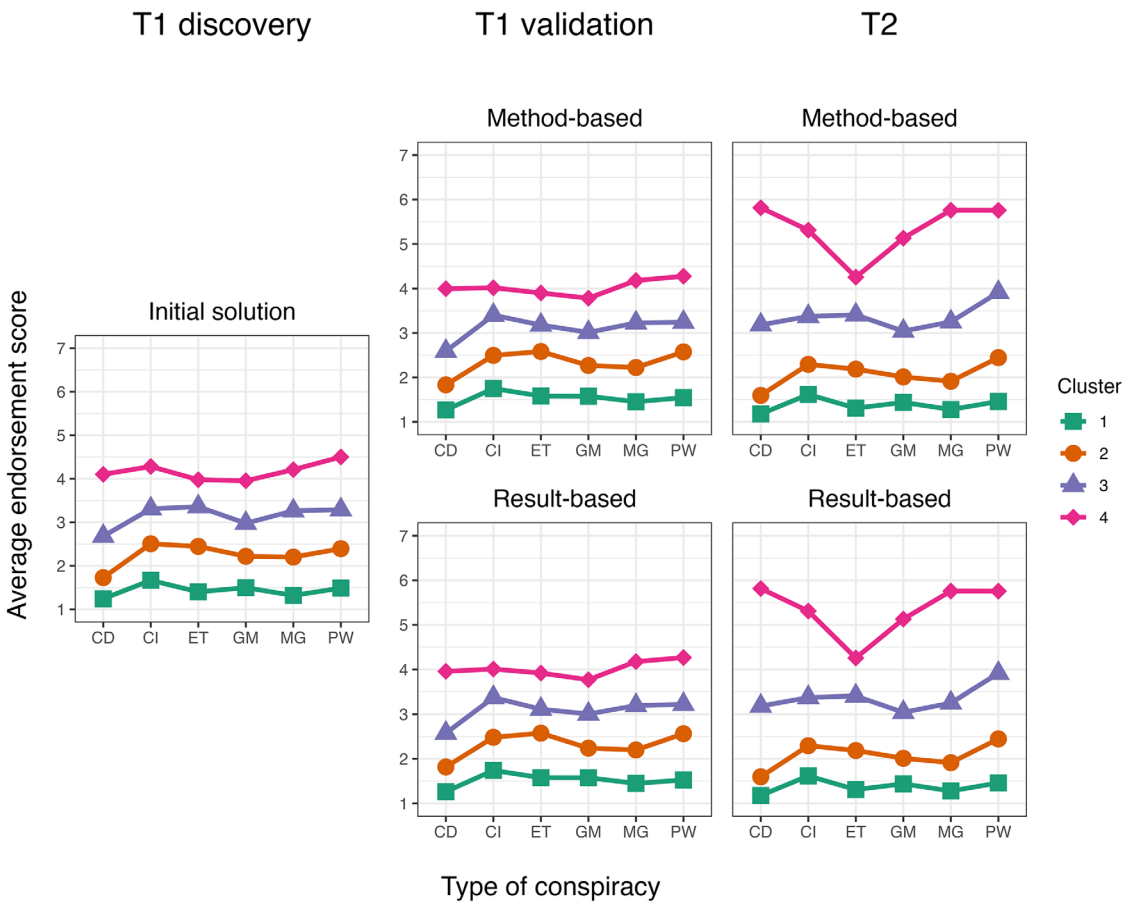

FIGURE 2 | Average conspiracy theory endorsement scores by sample, method and cluster. Initial solution—chosen *k*-means solution in the discovery sample ($k = 4$), method-based—*k*-means with $k = 4$, result-based—*k*-means with specified cluster centres that were extracted from the initial solution, CD—COVID-19, CI—control of information, ET—extraterrestrial cover-up, GM—government malfeasance, MG—malevolent global, PW—personal well-being.

solutions with more than four profiles at least one of the profiles would be undersized with less than 50 participants and/or with less than 5% of the total sample (see Table S6 in the S1 File). Thus, the best fitting solution with sufficiently large profile sizes was determined to be the four-profile solution in all samples. The four LPA profiles exhibited similar conspiracy theory endorsement patterns as the four *k*-means clusters, with the only exception being that the members of Profile 3 in the T2 sample exhibited proportionally higher endorsement of COVID-19 and control of information conspiracy theories than the corresponding Cluster 3 (see Figure 3).

3.3 | Conspiracy Theory Endorsement Cluster Profiles

As all cluster validation strategies supported the four-cluster solution, the cluster profiles are presented below for the combined result-based *k*-means cluster solutions of the T1 validation sample and the T2 sample ($N = 1311$). For summary tables on conspiracy theory endorsement, external variables and demographic variables for the combined T1 validation and T2 sample clusters, see Tables S7 and S8 in the S1 File. For a visual summary of the average conspiracy theory endorsement, pseudoscientific beliefs and political trust scores by cluster, see Figure 4.

Cluster comparisons revealed statistically significant differences between the clusters concerning pseudoscientific beliefs, $F(3, 1307) = 404.30$, $p < 0.001$, $\eta_p^2 = 0.57$; political trust, $F(3, 1305) = 205.7$, $p < 0.001$, $\eta_p^2 = 0.32$; average age, $F(3, 1295) = 3.58$, $p = 0.013$, $\eta_p^2 = 0.01$; and education level, $\chi^2(3, N = 1291) = 89.14$, $p < 0.001$. Follow-up *t*-tests indicated that all clusters differed significantly from each other on pseudoscientific beliefs and political trust, and that participants in Cluster 3 were older on average than participants in Cluster 2 (see Table S9 in the S1 File). The proportion of highly educated individuals (bachelor's degree or higher) was lower in the more conspiracy theory-endorsing clusters. There were no statistically significant gender differences between the clusters, $\chi^2(3, N = 1281) = 2.40$, $p = 0.493$. Due to low counts in several of the municipal vote response options, cluster differences in voting behaviour will only be described and not statistically tested.

3.3.1 | Cluster 1: Non-Endorsers

Participants in Cluster 1 ($n = 548$, 41.8%) consistently endorsed conspiracy theories the least, with participants endorsing on average 1.29 (2.5%) of the 52 conspiracy theory statements—that is, Likert scale responses above the middle point of the seven-point scale. The most endorsed conspiracy theory type in this cluster

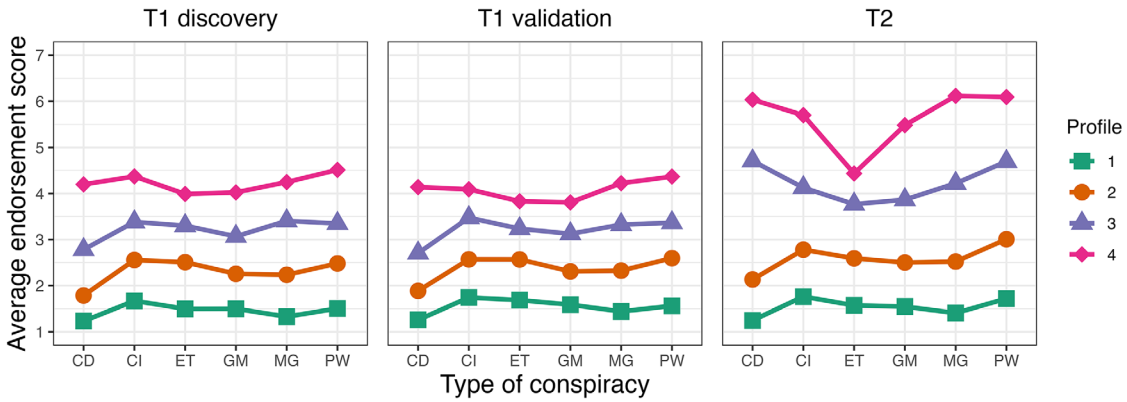

FIGURE 3 | Average conspiracy theory endorsement scores by sample and latent profile. CD—COVID-19, CI—control of information, ET—extraterrestrial cover-up, GM—government malfeasance, MG—malevolent global, PW—personal well-being.

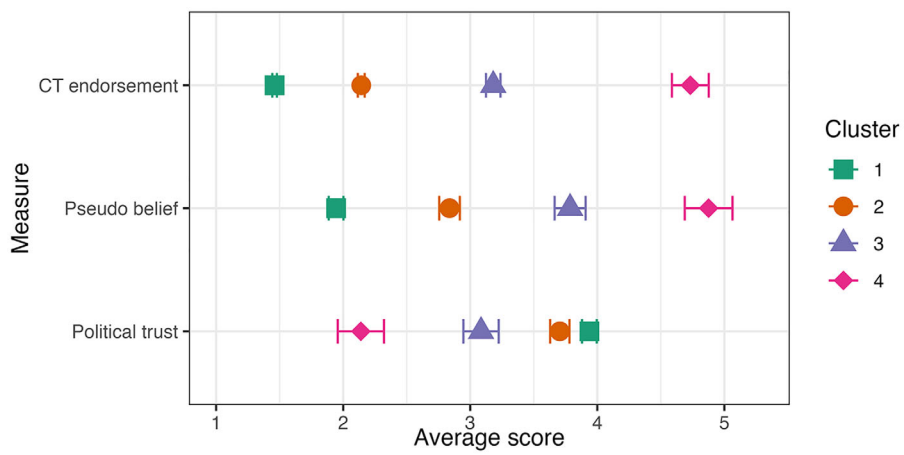

FIGURE 4 | Average conspiracy theory endorsement, pseudoscientific beliefs and political trust scores with 95% confidence intervals by cluster. CT endorsement—average conspiracy theory endorsement score across all conspiracy theory types (range 1–7), Pseudo belief—average pseudoscientific belief score (range 1–7), Political trust—average political trust score (range 1–5), Cluster—combined result-based clusters of the T1 validation sample and the T2 sample.

was control of information conspiracies (M = 1.66, SD = 0.35), and the least endorsed type was COVID-19 conspiracies (M = 1.21, SD = 0.25), but it should be noted that the overall endorsement of any type of conspiracies was very low in this cluster. Participants in Cluster 1 endorsed pseudoscientific beliefs the least (M = 1.94, SD = 0.70) and had the highest political trust (M = 3.95, SD = 0.71). These participants had an average age of 48.4 years, showed comparable proportions of men (51.8%) and women (46.2%) and were mostly highly educated (71.5% bachelor's degree or higher). The three most common responses to the municipal vote question were the Greens (23.4%), the Left Alliance (18.2%), and, in a shared third place, the National Coalition Party (14.8%) and missing responses (14.8%).

3.3.2 | Cluster 2: Low Endorsers

Participants in Cluster 2 (n = 426, 32.5%) endorsed conspiracy theories slightly more than participants in Cluster 1, with participants endorsing on average 3.84 (7.4%) conspiracy theories. The most endorsed conspiracy type in this cluster was personal well-being conspiracies (M = 2.49, SD = 0.68), and the least endorsed was COVID-19 conspiracies (M = 1.68, SD = 0.48). Participants in this cluster had the second lowest endorsement of pseudoscientific beliefs (M = 2.84, SD = 0.85) and had the second highest political trust (M = 3.71, SD = 0.81). These participants had an average age of 47.7 years, showed similar proportions of men (46.9%) and women (50.7%) and were mostly highly educated (61.7% bachelor's degree or higher). The three most common responses to the municipal vote question were the Greens (19.7%), missing responses (18.8%) and the Left Alliance (16.4%).

3.3.3 | Cluster 3: Low-Moderate Endorsers

Participants in Cluster 3 (n = 192, 14.6%) had the second highest endorsement of conspiracy theories, with participants endorsing on average 10.54 (20.3%) conspiracy theories. The most endorsed conspiracy type in this cluster was personal well-being conspiracies (M = 3.54, SD = 0.87), and the least endorsed type was COVID-19 conspiracies (M = 2.85, SD = 0.86). These participants had the second highest endorsement of pseudoscientific beliefs

(M = 3.79, SD = 0.86) and had the second lowest political trust (M = 3.11, SD = 1.00). Participants in this cluster had an average age of 51.7 years, showed fairly equal proportions of men (47.4%) and women (49.0%) and were generally less educated than participants in Clusters 1 and 2 (41.7% bachelor's degree or higher). The three most common responses to the municipal vote question were missing responses (29.2%), the Social Democratic Party (14.1%) and the National Coalition Party (12.5%).

3.3.4 | Cluster 4: Moderate Endorsers

Participants in Cluster 4 (n = 145, 11.1%) consistently endorsed conspiracy theories the most, with participants endorsing on average 26.84 (51.7%) conspiracy theories. The most endorsed conspiracy type in this cluster was personal well-being conspiracies (M = 5.07, SD = 1.14), and the least endorsed type was extraterrestrial conspiracies (M = 4.10, SD = 1.33). Participants in Cluster 4 endorsed pseudoscientific beliefs the most (M = 4.88, SD = 1.15) and had the lowest political trust (M = 2.18, SD = 1.16). These participants had an average age of 47.7 years, showed comparable proportions of men (51.0%) and women (47.6%) and were the least educated (37.2% bachelor's degree or higher). The three most common responses to the municipal vote question were missing responses (30.3%), 'Other' (20.0%) and the Finns Party (15.2%).

4 | Discussion

The present study identified and validated four distinct conspiracy theory endorsement profiles which mainly differed in their levels of conspiracy theory endorsement, pseudoscientific beliefs and political trust. This was accomplished by utilizing both k-means cluster analysis—with a cluster validation framework (Ullmann et al. 2022)—and LPA in a randomly drawn sample from the population and in a convenience sample, with a comprehensive set of 52 different conspiracy theories tapping into six conspiracy theory types.

The four conspiracy theory endorsement clusters exhibited similar endorsement patterns but differed in their overall endorsement of the six conspiracy types. Considering that the results are consistent with previous studies that have shown variability in how strongly people endorse conspiracy theories (Agley and Xiao 2021; Frenken and Imhoff 2021; Schäfer et al. 2022), and that all validation steps supported the identified cluster solution, the current study adds to the literature by providing strong evidence for the existence of four separate conspiracy theory endorsement profiles. Moreover, the uniform endorsement patterns across the profiles are in line with Frenken and Imhoff's findings (2021) and support the already well-established literature on the idea of a general conspiracy mindset.

However, the pattern was somewhat different for the Moderate Endorsers profile, as the endorsement of extraterrestrial cover-up conspiracies remained proportionally lower than the endorsement of other conspiracy types. This is consistent with prior research which has suggested that extraterrestrial cover-up conspiracies are qualitatively different from other types of conspiracy theories (e.g., Frenken and Imhoff 2021). In contrast to the other conspiracy theory types examined in the present study, the majority of the extraterrestrial conspiracy theories did not describe overtly threatening or harmful events. For example, many of the personal well-being conspiracies posed explicit threats to individual health (e.g., 'In spite of evidence that fluoride is extremely toxic, authorities continue to add fluoride to our water supplies'.), and although the extraterrestrial cover-up conspiracies would arguably be of public interest, most of these did not pose any direct threats (e.g., 'The United States uses a secret military base known as Area 51 to investigate aliens'.). Although prior theoretical and empirical work have linked conspiracy theories to threat perception (Bowes et al. 2023; van Prooijen 2019), the results from the present study add to the literature by suggesting that the threat part of conspiracy theories may play a larger role in the general conspiracy mindset than the aspect of secrecy. Future studies could attempt to (dis)confirm this by experimentally manipulating the presence of threats and secrecy in theories. A higher general conspiracy mindset could be expected to be more strongly related to a higher endorsement of theories containing threat cues than to theories that only posit secrecy.

Examining how many of the 52 conspiracy theories participants at least slightly agreed with—Likert scale responses above the middle point of the seven-point scale—revealed that participants endorsed on average 1.29 (2.5%) conspiracy theories in Cluster 1, 3.84 (7.4%) in Cluster 2, 10.54 (20.3%) in Cluster 3 and 26.86 (51.7%) in Cluster 4. The two least endorsing clusters held a large majority of all participants (74.3%), which implies that conspiracy theories are seldomly endorsed in Finland. In fact, the average endorsement rate across all clusters was 12.1%, which is almost identical with the average endorsement rate found in other Western countries (11.9%) and lower than the endorsement rate found in non-Western countries (18.6%; Cordonier et al. 2021). Thus, although the large majority of participants fell into the two lowest endorsing clusters, a distinct profile characterized by markedly low political trust and substantially higher endorsement rates did emerge. This suggests that although high societal trust may broadly suppress conspiracy endorsement, the individual-level link between political distrust and conspiracy endorsement persists regardless of the broader trust climate. Future research could examine whether this pattern replicates in other high-trust societies, and more precise cross-national comparisons using equivalent measures would help clarify the extent to which societal-level trust moderates the individual-level dynamics underlying conspiracy endorsement.

The most endorsed conspiracy type in Clusters 2, 3 and 4 was the personal well-being conspiracy. This type consisted of statements like 'Drug companies aim to keep people sick to reap profits', which could reflect distrust in the medical industry. These results stand in slight contrast to those of the study by Sambol et al. (2024), in which control of information appeared to be the most endorsed conspiracy type. The popularity of personal well-being conspiracy theories may have been heightened due to the timeliness of the topic, as both samples were collected in quick succession during the COVID-19 pandemic when personal well-being and medical industries were in the centre of societal attention. However, the fact that the COVID-19 conspiracy theories were the least endorsed seems to be at odds with this reasoning, given the conceptual overlap between the two

conspiracy theory types. A possible explanation for why the average endorsement of COVID-19 conspiracies was low, compared to the endorsement of personal well-being conspiracies, could lie in the amount of COVID-19-related information that was available and provided by government officials and distributed via national news outlets. In other words, great efforts were made to prebunk misinformation specifically about COVID-19, and thus, the public may have been inoculated against the various conspiracy theories and other types of misinformation related to COVID-19 (e.g., Smith et al. 2023). Although COVID-19 conspiracy theories were under active scrutiny during the pandemic, other types of conspiracy theories relating to personal well-being were probably not scrutinized to the same extent. This interpretation would also be consistent with recent meta-analytic results suggesting that conspiracy theory interventions work best when these are tailored for specific conspiracy theories (Stasielowicz 2025). In other words, this result could be an indication of the communicative efforts having been successful in mitigating COVID-19 conspiracy theory endorsement, but this is of course purely speculative. It is also worth noting that there was a large difference between Cluster 4 and the other clusters on the endorsement of COVID-19 conspiracies, with participants in Cluster 4 endorsing COVID-19 conspiracies substantially more than participants of other clusters. This may in turn be an indication of how polarized the COVID-19 topic was during the pandemic.

Participants in the more conspiracy theory-endorsing clusters also endorsed pseudoscientific beliefs more on average. This result is in line with recent meta-analytic evidence of a moderate correlation between the endorsement of conspiracy theories and pseudoscientific beliefs ($r = 0.46$; Stasielowicz 2022). Although the current study does not reveal why these beliefs are connected, it has been suggested that both are epistemically suspect beliefs that stem from the same cognitive processes (Pennycook et al. 2015).

Consistent with prior research, participants in the more conspiracy theory-endorsing clusters had lower political trust (Maglić 2023). This could partly be explained by the fact that many of the conspiracy theories included in this study were either directly or indirectly related to governments and political figures. This result suggests that having low trust in political actors and/or the political system might make individuals more receptive to beliefs about hidden malicious schemes, even in a high-trust environment such as Finland. However, the opposite could also be true, meaning that beliefs about government malfeasance could instead be the cause of lower political trust. Noteworthily, participants in the more conspiracy theory-endorsing clusters were also more likely to not report what party they had voted for in the last municipal elections. This difference was revealed to be statistically significant in a post hoc analysis, $\chi^2(3, N = 1311) = 29.60$, $p < 0.001$. However, due to how the question was constructed, it is unclear whether a missing response indicates a refusal to share this information or whether it indicates that a participant had not voted in the last municipal elections. The latter explanation is supported by previous research, as people have been found to be less willing to vote in elections after being exposed to conspiracy theories (Douglas and Sutton 2023; van Prooijen and Douglas 2018). Nevertheless, the former explanation cannot be excluded, which is why this result should be interpreted with caution.

The present study found no clear evidence of age and gender differences between clusters, but participants in the more conspiracy-endorsing clusters were less educated on average. Although previous research has found that younger people endorse conspiracy theories more than older people (Bordeleau and Stockemer 2024), there was no obvious relationship between age and cluster membership. A closer inspection revealed that participants in Cluster 3 were slightly older than participants in Cluster 2; however, the other clusters were balanced age-wise. Here, it is worth noting that the overrepresentation of older individuals in the sample, compared to the population, may have obscured potential age-related effects. In line with previous findings (Enders et al. 2024), there were no notable gender differences between the clusters, which suggests that men and women are equally susceptible to conspiratorial beliefs. Moreover, in line with previous research (Enders et al. 2024), participants in the more conspiracy theory-endorsing clusters were less educated in general. This suggests that education may protect against conspiratorial beliefs, or alternatively, that people who seek out higher education are less likely to endorse conspiracy theories to begin with. A recent randomized controlled trial showed that encouraging participants to think scientifically decreased their endorsement of conspiracy theories (Georgiou et al. 2023). This supports the idea that education—in the form of improved critical thinking skills—may safeguard against conspiracy theory endorsement. Then again, other studies suggest that the association between education and conspiracy theory endorsement is a far more complex interplay of cognitive and social factors such as feelings of powerlessness, trust in institutions and belief in simple solutions for complex problems (Ballová Mikušková 2023; Kaakinen et al. 2025; van Prooijen 2017).

4.1 | Strengths and Limitations

The current study has a number of strengths and limitations that are worth noting. First, both samples consisted of participants living in Finland, which provided a unique context for investigating conspiracy theory endorsement, especially as the Finnish population is, among other things, known to have a high level of trust in political institutions (Bäck et al. 2024; Listhaug and Ringdal 2008). However, the generalizability of the identified profiles to other countries and cultures—especially non-WEIRD nations and countries with low political trust—may be limited, and future studies are encouraged to attempt replicating these findings in other cultural contexts. Next, even though the profiles were validated following the procedure suggested by Ullmann et al. (2022), it is worth noting that the fit indices indicated only a weak to moderate fit for the initial cluster solution. Furthermore, the LPA results were less consistent than the *k*-means clustering results, with the different fit indices for the LPAs suggesting different optimal solutions. Together, the results from the *k*-means cluster analyses and the LPAs suggest that the profiles are major simplifications of the similarities and differences between conspiracy theory-endorsing individuals. Even so, simplifications like these are necessary for future research and interventions that may aim to tailor communication strategies to address conspiratorial beliefs. Concerning the samples, the differences in demographic variables between all samples and the population estimates, as well as the more extreme responses observed in the T2 sample, may point to sampling biases. For example, it

is possible that people with stronger opinions on the topic of conspiracy theories were more likely to respond to an online survey (the T2 sample) than people who were somewhere in-between the extremes or, alternatively, that people with stronger opinions were less likely to respond to a survey that was addressed to them specifically (the T1 samples). However, the fact that the present study investigated and validated the profiles in both a randomly drawn sample from the population and in an online-collected convenience sample is a major strength and provides strong evidence for the number and characteristics of the identified profiles. Lastly, it is possible that participants who responded to the mailed T1 survey could also have responded to the online T2 survey, but considering the sizes of and differences between the recruitment pools, it is unlikely that a substantial proportion of participants responded to both surveys.

5 | Conclusion

The present study makes three main contributions to the literature on conspiracy theory endorsement. First, the identification of four distinct and robust conspiracy theory endorsement profiles exhibiting progressively stronger endorsement of all types of conspiracy theories provides strong additional support for the notion of a general conspiracy mindset (Frenken and Imhoff 2021). Second, this study suggests that although a high-trust environment may broadly suppress conspiracy theory endorsement, the individual-level connection between political distrust and conspiracy theory endorsement persists in high-trust environments. Third, the results can help inform and simplify the design of studies, interventions and communication strategies aimed at mitigating the spread and impact of conspiracy theories by showing compelling evidence that the target audiences of conspiracy theory endorsement interventions can be reduced to only four profiles (non-endorsers, low endorsers, low-moderate endorsers and moderate endorsers), and by showing that the differences between profiles are merely in the strength of beliefs rather than in their qualitative features. Considering the broader implications of these findings, people belonging to the more conspiracy theory-endorsing profiles may be more susceptible to politically motivated conspiratorial narratives—such as unsubstantiated claims about electoral fraud (Schnaudt 2024).

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Ethics Statement

The present study was approved by the Ethics Committee for Human Sciences of the University of Turku and was conducted in accordance with the Declaration of Helsinki.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are openly available in OSF at https://osf.io/brkfc/overview?view_only=fb0fd13bad694739a3d99fc4b334baec.

Endnotes

[1] Average silhouette width is a measure of how similar observations are to their designated clusters compared to the other clusters. Values closer to 1 indicate good cluster quality, values closer to 0 indicate poor cluster quality, and values closer to −1 indicate that observations may be misassigned.

[2] Municipal elections differ from parliamentary elections in that not all parties have candidates in all municipalities, and the voting decisions often revolve around localized political questions and a few influential political figures in the municipality.

[3] The Adjusted Rand Index quantifies how similar cluster solutions are. Values closer to 1 indicate good stability, and values closer to 0 indicate poor stability.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.

Supporting File 1: ejsp70080-sup-0001-SuppMat1.docx **Supporting File 2**: ejsp70080-sup-0002-SuppMatS2.docx **Supporting File 3**: ejsp70080-sup-0003-SuppMatS3.html