Routledge
Taylor & Francis Group

Read Between the Lines - How Linguistics Can Unearth Parties' True Voting Advice Application Positions

THILO I. DIEING [a] and LEON SIEFKEN [b]

[a]Institute of Political Science, TU Darmstadt, Darmstadt, Germany; [b]MZES, University of Mannheim, Mannheim, Germany

ABSTRACT

Voting Advice Applications (VAAs) offer a valuable tool for voters to shortcut the process of information gathering in a complex political landscape. However, parties have incentives to strategically employ neutral stances in VAAs while implicitly conveying policy positions in their detailed answers, thereby invalidating the final voting advice. This German case study focuses on what we call 'hedging' in VAAs, where parties hide their true policy preferences behind neutral self-classification. Using data from 20 German municipal VAAs from 2024, we analyse party responses to VAA statements, focusing on those categorised as 'neutral'. We argue that three linguistic features help to predict and detect hedging: the use of neutral words, temporal adverbs, and the subjunctive II. Our findings show that the prevalence of these factors significantly affects the likelihood of a party's 'neutral' statement containing an underlying policy position. Additionally, we provide evidence that parties generally claim false neutrality at a high frequency and are significantly more likely to do so when VAA statements present policy trade-offs. The findings indicate limitations of VAAs as a reliable source of party policy positions and highlight that neutral party responses should not be taken at face value by voters or scholars.

Introduction

In modern elections, online information tools such as Voting Advice Applications (VAAs) help millions of users comprehend the landscape of parties and their positions, in order to make a sound decision in the voting booth. With positive effects on knowledge (Kamoen et al. 2015; Westle, Begemann, and Rütter 2014; Munzert et al. 2020), political interest (Fivaz and Nadig 2010;

CONTACT Thilo I. Dieing thilo.dieing@tu-darmstadt.de Institute of Political Science, TU Darmstadt, Darmstadt, Germany

Heinsohn et al. 2019) and turnout (Gemenis and Rosema 2014), VAAs are much-used tools in pre-election times. In VAAs, parties and candidates are given a handful of statements regarding pressing political issues with the task of positioning themselves on how much they agree or disagree. Voters can then take the same test to find out which party or candidate they have the highest overlap with, ultimately guiding them to a more informed vote choice.

However, the way these tools work makes it possible for parties to act strategically[1]. Generally, parties are incentivised to convey their position as more centrist than in reality, as this will help them better match with potential voters (Garzia and Marschall 2019). Additionally, parties often use their answers in VAAs as a form of policy promises (Fivaz, Louwerse, and Schwarz 2014), leaving the possibility of strategically avoiding statements on which they might have a clear position but feel uncomfortable making direct promises. This is what we refer to as 'hedging' and it can be a strategic tool of politicians or parties to gain more appeal in VAAs, by using the neutral position to convey more centrist views and avoid promises, potentially increasing the matching with users, making VAAs a skewed information source.

In this paper, we argue that parties will use this option for strategic action to better match with users, as similar behaviour can be observed in other text data of political communication (Bossetta 2017; Crabtree et al. 2020; Lin and Osnabrügge 2018; Martin and Vanberg 2008). We determine three major linguistic factors that will help to predict if a 'neutral' VAA answer is truly neutral or if parties are 'hedging'. In addition, we will investigate some factors that lead parties to use hedging. Nevertheless, this study mainly focuses on detecting hedging, not on attempting to find the factors leading to it. For that, we recommend detailed party surveys as future research perspectives on this important topic. To detect hedging, we first expect the number of words with a neutral sentiment to be a strong indicator of a statement's neutrality. When the statement has low amounts of neutral words, it becomes more likely that the respective party is conveying a position. Second, we expect the use of subjunctive II (e.g. 'would', 'could') to be a determinant of non-neutrality. In VAAs, parties often claim neutrality when they do have a clear position on the issue but want to avoid making policy promises for the prospective legislative period, e.g. when they agree/disagree but do not see the policy goal as realistically implementable within the time frame. Lastly, we expect the use of temporal adverbs (e.g. 'soon', 'already') to indicate non-neutrality. Parties are expected to use temporal adverbs when they, again, have a clear position but feel like the policy goal is unrealistic or claim that the policy goal has already been implemented to a sufficient degree and needs no further attention.

To assess the linguistic covariates, we hand-coded over 800 neutral party answers from 20 German local-level VAAs. Binary coding was used to determine if the statements were truly neutral or if they contained a clear position

regarding the issue at hand. Assuring inter-coder reliability, we find that, generally, parties take a clear position roughly 80% of the time, despite answering neutrally. We also find slight variations between parties and issues and a higher possibility for hedging when the VAA statement is framed as a trade-off between possible policy actions. We find both evidence of hedging and that the parties' statements are more likely to contain a policy stance when they use a low number of neutral words, when they use subjunctive II, and when there is a high number of temporal adverbs, confirming all four hypotheses.

The findings of this paper have implications for voters and researchers who try to assess a party's or a politician's general ideological position. The results of VAAs for voters seeking to take an information shortcut (Kleinnijenhuis et al. 2019) have a high chance of being biased by parties strategically trying to appear more centrist than they are (Garzia and Marschall 2019). This will ultimately lead to skewed matchings in the VAA results. For researchers, the findings have multiple implications. First, those who seek to assess a party's ideological position by looking at their VAA answers should be careful with how to handle neutral answers (Gemenis 2013). As the majority appear to include a clear positioning on the issues, neutral answers should not be taken at face value but require a deeper look. Second, the findings deliver further evidence for parties trying to strategically appear more centrist (Garzia and Marschall 2019) and using VAAs in cases where they feel comfortable with making policy promises to their electorate (Fivaz, Louwerse, and Schwarz 2014) while hedging those statements where they can make no clear promises. Overall, this paper contributes to the computational social sciences by introducing the theoretical concept of hedging in VAA research, developing a methodological framework to identify its grammatical markers, and empirically mapping its usage in Germany.

Background

Party-Centric Perspectives on Voting Advice Applications

Over the last four decades, Voting Advice Applications (VAAs) have evolved from a simple high school tool (De Graaf 2010) to standard election aids (Marschall 2014; Garzia and Marschall 2016). By comparing user attitudes to those of parties on politically pressing and relevant topics, VAAs aim to lower information costs for users (Gemenis 2018), making the complex landscape of political parties more accessible to them. As such, VAAs encourage the general population to engage politically and help to inform voters by comparing party positions. In their most basic nature, VAAs can be regarded as 'essentially a small questionnaire' (van Camp, Lefevere, and Walgrave

2014, 18), collecting the answers of both users and parties to the VAA statements and in some cases even additional variables via supplementary surveys. This diverse data collection has resulted in many distinct study objectives and possibilities. From a user-centric perspective, results indicate that the online tools are mainly used by younger, well-educated males (van de Pol et al. 2014) for both first- and second-order elections (van de Pol et al. 2019). While these user characteristics mainly still exist in today's VAA user population, recent research shows first signs of diffusion effects with education being less relevant and gender being no influential factor anymore (Albertsen 2022).

Aside from user typologies, scholars have demonstrated that Voting Advice Applications help users manifest increased political knowledge (Garzia and Marschall 2016; Kamoen et al. 2015; Schultze 2013; Westle, Begemann, and Rütter 2014; Heinsohn et al. 2019) as well as political interest (Fivaz and Nadig 2010) and specifically campaign interest (Heinsohn et al. 2019). Additional studies further indicate effects on user vote choices (Israel, Marschall, and Schultze 2017; Kleinnijenhuis et al. 2019; Benesch et al. 2023; Tromborg and Albertsen 2023) and turnout (Gemenis and Rosema 2014). Nevertheless, some effects of VAAs are still contested. The literature offers contradictory results as to whether VAAs influence vote choice or actual turnout (Munzert et al. 2020; Benesch et al. 2023); some studies argue that positive results might be biased by study designs (Munzert and Ramirez-Ruiz 2021) and that VAAs do not influence vote choice altogether (Enyedi 2015). Further investigations into how users utilise VAAs have revealed that while there appears to be no strategic process in choosing certain VAA positions to influence voting advice, users do have a specific reason for choosing the neutral options. In their study, Baka, Figgou, and Triga (2012) demonstrate that users often choose the neutral position due to a lack of knowledge, indifference, dilemmas, or open questions, rather than because they truly hold a neutral position towards an issue.

In addition to these valuable insights into how users utilise VAAs and how VAAs affect them, the online tools also offer many possibilities to efficiently and reliably (Ferreira da Silva et al. 2023) study party ideologies and positions. Despite that, the main focus of scholars has been on user-centric analyses, resulting in little research being performed from a more party-centric perspective. Nevertheless, VAAs do not just offer a lot of detailed data about users and their positions, but also about parties. Hence, they collect both a party's position towards a statement, usually measured on a 3- or 5-point Likert scale (strong agreement - agreement – neutral - disagreement - strong disagreement), and the party's justification of their choice of position (short free text) (Garzia and Marschall 2016). Utilising these valuable party entries, scholars have performed longitudinal data analyses to measure

parties' positions and their stability (Dalton 2016; Cicchi et al. 2023) as well as to compare parties to their electorate (Wheatley 2012). Findings like these show how valuable VAA party data can be to ongoing research. Nevertheless, there is a gap in the VAA literature when it comes to investigating how parties behave strategically within VAAs.

Generally, there are two customary ways of inputting party positions and justifications into a Voting Advice Application[2](Garzia and Marschall 2019). First, experts can position the parties on the different statements using their knowledge and external sources such as party manifestos or Social Media. The other, often used version is that VAA developers reach out to the parties and ask them to do the positioning and justification themselves. Some exemplary VAAs that use this method are the 'Wahl-O-Mat', 'Stemwitzer', or 'VoteMatch', while VAAs such as 'EUProfiler' and 'EUANDI' utilise the first expert-based method. Both methods vary in the number of parties, topics, and dimensions they can cover. An additional difference between the approaches is that VAAs, which rely on party cooperation, can be biased by the parties. As such Skop (2010) demonstrates in a case study that on average 37% of party positions do not match with the parties' actual voting position in parliament, thereby misrepresenting the party's true position. These first indications could also mean that VAAs with answers from parties are open to the risk of strategic manipulation by the parties.

Since one can interpret the parties' VAA position as 'promises' of what they will do in the future (Fivaz, Louwerse, and Schwarz 2014), parties 'have strong incentives to appear more centrist than they actually are' (Garzia and Marschall 2019, 12), as this will help them achieve better matches with potential voters. As a result, parties could strategically choose the neutral answer option in a VAA to avoid having to show agreement or disagreement. At the same time, users tend to mostly use the neutral option to convey a lack of knowledge, indifference, or dilemmas (Baka, Figgou, and Triga 2012). We call the strategic use of the neutral answer option by the party when it is actually not neutral 'hedging'. Using hedging, parties can manipulate the final voting advice generated by the VAA and present a distorted picture of their positions. Detecting hedging on a large scale can help improve voting advice and remove biases from VAAs caused by party manipulation[3]. This paper is the first to address this specific method with which parties could manipulate VAAs. Therefore, we aim to closely investigate hedging by analysing whether a party's justification for a neutral position reflects neutrality or disguises a clear policy position. To do so, we first look at how often parties use hedging, i.e. vote neutrally even though their justifications show they agree or disagree, and test whether there are certain partisan or topic-related differences. In the next step, we take a closer look at the linguistic aspects of hedging and how one can detect hedging from how parties frame their justifications.

Textual Communication of Parties

Official textual data of political parties takes many forms: manifestos, press releases, social media posts, etc. Their use for analysis has a long tradition in the (computational) social sciences (Budge 1987; Janda et al. 1995; Laver and Garry 2000; Lehmann et al. 2024). From using election manifestos to determine the ideological positions or issue stances of parties (Rooduijn, de Lange, and van der Brug 2014; Lehmann et al. 2024), to analysing strategic communication in parliamentary speeches (Bossetta 2017), much insight can be gained from the official texts of parties or their members. The fundamental assumption of such research is that the communication of political parties is strategic, with words chosen wisely to transfer the underlying and potentially latent message (Holbert and Geidner 2009; Riley and Hollihan 2012). This assumption can also be applied to the analysis of parties' answers to issue-related statements in Voting Advice Applications. Research on political communication in VAAs is limited. However, as Fivaz, Louwerse, and Schwarz (2014) have shown, statements made in VAAs are often understood to be promises to their electorate.

The current literature on election manifestos gives us insight into how political parties communicate their policy positions. A study by Crabtree et al. (2020) analysed the strategic use of emotional language in over 400 European election manifestos to test the usage of positive sentiment depending on the party's incumbency status, ideological position, and the state of the economy. They find that parties communicate more positively when in government, when ideologically moderate, and when the economy is good. The idea behind this research has been expanded by Dietrich, Milner, and Slapin (2020) and Siefken (2024) by dividing the manifestos into specific policy areas. They find that, in election manifestos, the communication style differs depending on which issue is being discussed and how the party relates to it. Given that manifestos and VAA responses both serve as communication tools to inform the public of parties' positions during campaigns, insights into language use in manifestos may plausibly apply to VAAs as well. If parties adjust their communication depending on issues, we can expect to also observe that in the case of VAAs, specifically in regards to issues where the party tries to avoid a clear stance but still hints at a position in their justification. Potentially, they will use different words or phrases that make a position extractable only by reading between the lines, compared to issues where the party signals a clear and strong stance. Thus, the current literature on political communication and Voting Advice Applications leads us to expect that parties will sometimes strategically claim neutrality e.g. to avoid signalling a position on the issue to their constituents, when trying to appear moderate, or when feeling unsure about making policy promises regarding the issue, while clearly explicating a position within their

justification in the VAA. They have incentives to include a policy position within their VAA justification to signal policy congruence to their core voters. If a core voter notices a low matching score with their favoured party, the party's justification for their answer, which then contains a clear policy position, could be a tool to satisfy said core voters. On the other hand, they will catch new voters by taking moderate stances when categorically positioning themselves regarding the VAA statements. Thus, this way of answering the VAAs has the potential to lead to the highest appeal for the respective party, as well as result in skewed voting advice. Furthermore, it can be easier to disguise a party position using fixed scales compared to party-written justifications.

This expectation is also closely tied to the literature on party rhetoric ambiguity, which argues that parties will purposely mask or hide unpopular positions, making them open for interpretation to potential voters (Bräuninger and Giger 2018; Milita et al. 2017; Lefevere 2024; Praprotnik and Ensser-Jedenastik 2024). Studies have found that ambiguity can be used strategically by parties when trying to attract two divergent groups of voters. Parties will make a positional statement but use specific words to mask it or make it vague in an effort to make it interpretable in line with differing policy positions for potential voters. This becomes increasingly more likely for issues dividing a party's potential voter base (Bräuninger and Giger 2018). Ambiguity is different from simple vagueness as ambiguous statements will still contain a policy position, but being interpretable from different angles, while vagueness will not allow for much interpretation, signalling no position to the audience (Praprotnik and Ensser-Jedenastik 2024). These findings further substantiate our expectation that a signalled neutrality does not ultimately mean that the party is truly neutral in regards to the issue at hand. Moreover, they can claim neutrality for issues that divide their voter base in an attempt to satisfy different groups of voters through ambiguity, but ultimately express a position in their justification. This position will be discussed differently than issues with clear stances, potentially with ambiguity, as the two discussed strands of literature lead us to expect. This leads us to our first hypothesis:

> **H1:** When parties claim neutrality on the VAA issue, they often take a clear (non-neutral) stance in their justification (hedging).

To draw expectations on which factors might serve as predictors for hedging, we will rely on studies of linguistics and their strategic use to transfer an underlying message through means different from direct communication[4]. This literature and the authors' understanding of the German language lead us to theorise three linguistic features that could predict when a party decides to claim a neutral position but, in its justification, explicates a clear stance. It is important to note that, in this paper, we are only attempting

to determine potential predictors of hedging and not factors that will make a party more likely to use hedging. While we shed some light on causal or at least correlating factors, the focus of this paper lies in analysing the prevalence of hedging in VAAs and the linguistic features that come with it and can help detect it. The first and most intuitive factor is the use of words with a neutral sentiment. Neutral words can be described as words that express no classic sentiment, such as positivity or negativity. Measuring neutrality through neutral words is a widely established measure for neutral sentiment in political science (Cochrane et al. 2022; Wouter van Atteveldt, van der Velden, and Boukes 2021; Young and Soroka 2012). Words like 'fascist' will have a strong negative connotation when describing another politician, while a word like 'diplomat' yields no clear implication for how the person at hand is being evaluated. As such, a higher percentage of neutral words (and thus a lower percentage of sentiment-loaded words) is more likely to imply a truly neutral position. The fact that this factor may appear obvious and intuitive makes it a good potential predictor of hedging. Thus, we expect:

> **H2:** The more words with a neutral sentiment are used in a party's neutral VAA justification, the less likely it is to contain a clear position on the issue.

We theorise the subjunctive II (*Konjunktiv II*) to make for a good predictor of hedging, due to the way it is commonly made use of in the German language. Subjunctive II, in the German language, is a grammatical construct used to express hypothetical situations, wishes, or possibilities. Comparable to English terms such as 'would', 'could', or 'might', they can be used by parties to make statements about hypothetical or anticipated policy claims. For example, instead of saying 'Germany will benefit from a general speed limit', parties can use the subjunctive II to make vague statements, implying a position: 'Germany would greatly benefit from a general speed limit, but we do not see it as feasible right now'. Busch (2014, 113) argues that the subjunctive in German is used 'in standing phrases and exclamations to express wishes, hopes and desires, which also include requests, warnings, exhortations, curses, etc.'. We argue that when parties face situations in which they generally agree/disagree with a statement and see the policy implementation as desirable but are in the belief that the implied goals cannot be reached within their prospective legislative period or would like to avoid making it a promise they would have to fulfil, they are likely to classify themselves as neutral. The subjunctive II and the way it is made use of in German becomes their way to do this. While claiming neutrality, they can use subjunctive II in their justification to frame a policy goal as desirable while avoiding an explicit promise, ultimately leading them to convey a clear position in favour of or against the VAA statement. In this, the subjunctive II also becomes a means to express ambiguity, by masking a position behind 'would'-promises to satisfy voters. This leads to the third hypothesis:

H3: When parties use subjunctive II in their neutral VAA justification, it is more likely to include a clear position on the issue.

The last predictor is the use of temporal adverbs. The underlying assumption is similar to that regarding the use of subjunctive II. We expect parties to make use of temporal adverbs in cases where they take a clear position but are unsure if they would manage to fulfil a specific electoral promise or when they disagree with the VAA statement, claiming that said policy goal has already been implemented to a sufficient degree. This, again, ties to the expectation that parties use VAAs to make policy promises. Garrido (1992) argues that, in the German language, temporal adverbs like '*bald*' (soon) imply a projection of a future, creating the expectation of something that is to come, while adverbs like '*bereits*' (already) generate the expectation of no change to come in the projected future. Similar to the use of subjunctive II, we expect parties to either use temporal adverbs to show that they generally agree/disagree with the statement and wish for its implementation in the projected future but do not feel comfortable about making a promise regarding the coming legislative period or use temporal adverbs to claim that a policy goal has already ('*schon*') been sufficiently implemented, while still being in favour of said policy.

H4: When parties use temporal adverbs in their neutral VAA justification, it is more likely to include a clear position on the issue.

Our expectations have implications for measuring policy positions using VAA answers, as neutrality does not explicitly mean actual moderation. It could also indicate that the respective party or politician agrees/disagrees with the position but claims that achieving said goal is beyond their abilities or has already been implemented to a sufficient degree. If that were the case, researchers who try to measure party positions using VAA answers as well as citizens trying to assess their compatibility with the available parties, will need to consider the neutral answer category in their evaluation carefully to avoid biased voting advice. A neutral classification might not mean a neutral position on the issue. It is important to note that we expect these factors to be predictors of clear positioning. The causality is most likely reversed as, for example, a party has a non-neutral opinion but positions itself neutrally in the VAA first and then uses subjunctive II in its justification, not the other way around.

Data and Methods

German VAA data

In order to test our formulated hypotheses, we require a suitable VAA dataset. As the party positions of just one VAA offer too few observations

and generalisability, we warrant a database that includes party positions from multiple VAAs. For this reason, we decided to utilise the novel VAA database by Stecker et al. (2025). In their dataset, the authors collected both user and party positions for 20 German municipal election VAAs in 2024. This extensive collection of positions from many different parties is ideal for testing our hypotheses while avoiding biases caused by different timing or elections. Nevertheless, it is important to keep in mind that this paper conducts a German case study, limiting the results to the German language. As such, we recommend further investigation of our theoretical mechanism for different sociocultural settings. In the project, the authors used a 5-point Likert scale as an answer option for all VAAs. Overall, 14.38% (1020) of the 7091 party positions were neutral. Since this study uses both a party's position and their justification, we removed all entries where parties omitted their justification (N = 169), resulting in a final size of 851 neutral party positions from 50 distinct parties and 20 municipal VAAs.

Hedging Methodology

To build our main dependent variable and to investigate how often parties utilise hedging, we relied on manual coding. Three coders (the two authors and a trained research assistant) were tasked to independently evaluate whether or not a party's justification depicted an agreeing/disagreeing opinion or was neutral. While manual coding can introduce various coding biases, it is the most accurate method for such a first classification of hedging. All three coders followed clear coding instructions. As such, only the statement and the justification were used to classify hedging using a predefined coding scheme (0;1). Party information was blinded to avoid coding biases. Additionally, coders were instructed to classify solely based on the position taken in the justification with no knowledge of any additional text, election, or party features. Hence, coders did not classify based on certain text features, which would have biased the results.

The variable was labelled dichotomous with a value of 0 for neutral justification and 1 for hedging. The data was then tested for inter-coder reliability, indicating an agreement of 79.65% between the three coders. The remaining observations with no consensus were then re-examined in a joint session by the coders to establish a coherent coding upon which all coders could agree. This 2-stage labelling method was chosen to guarantee labelling without any coder biases and reliable values for all observations. Table 1 shows, as an example, three of the statements where parties answered neutral and their justification with the final labelled category by the coders.

Using this methodology resulted in 79.79% of party positions being labelled as hedging while only 20.21% of the party justifications fit the neutral position, confirming our first hypothesis (H1). The fact that more

Table 1. Exemplary party justification and their coded positions.

Statement	Justification	Category
In [Ort] sollten mehr Entscheidungen direkt durch die Bürger getroffen werden. *(de)* In [city], more decisions should be made directly by the citizens. *(en)*	Der Bürger hat gute Möglichkeiten und kann entsprechende Anträge **bereits (temp)** jetzt einbringen. […] *(de)* The citizen has good opportunities and can **already (temp)** submit relevant proposals. […] *(en)*	Hedging (Disagreement)
Der Erhalt der Linden in der Magistrale sollte bei einem Um-bau der Magistrale Priorität genießen. *(de)* The preservation of the linden trees along the main road should be given priority in any redevelopment of the main road. *(en)*	Wir **möchten (sub II)** eine instandgesetzte Magistrale mit größerer Aufenthaltsqualität, die die nächsten 20 bis 30 Jahre hält. Wenn wir das mit den alten Linden erreichen kann, **wäre (sub II)** das gut. Sofern das aber nur erreicht werden kann, in dem ein Teil der Linden oder gar sämtliche Bäume ersetzt werden müssen, **würden (sub II)** wir das unterstützen. *(de)* We want a renovated main road with greater quality for staying, which will last for the next 20–30 years. If we can achieve this with the old linden trees, that **would (sub II)** be good. However, if this can only be achieved by replacing some of the linden trees or even all of the trees, we **would (sub II)** support that. *(en)*	Hedging (Disagreement)
Wichtige Plätze und Straßen in [Ort] sollten videoüberwacht sein. *(de)* Important squares and streets in [city] should be monitored by video surveillance. *(en)*	An dieser Stelle ist eine Bürgerbefragung sinnvoll. *(de)* A citizen survey is useful at this point. *(en)*	Neutral (non-hedging)

Note that the original German party justifications were not corrected in any grammatical way.

than 3 out of 4 neutral party positions in a VAA seem to be using hedging demonstrates not only the degree to which parties strategically manipulate VAA positions (potentially to appear more centrist) but also the importance of investigating these strategies closely to safeguard VAAs. Answering neutrally skews political research results and can significantly bias a user's final voting advice.

Variables and Statistical Model

The proposed theoretical mechanisms imply three main independent variables to help predict when parties use hedging in their VAA answers. To measure the number of neutral words in a justification, we deployed the German sentiment model called Textblob (Konrad 2015). Textblob is an originally English-based natural language processing library that has also been adapted to work in the German language. For the sentiment analysis, Textblob relies on a large German word corpus and a pretrained Naive Bayes machine learning model. The number of words evaluated as neutral

Table 2. Descriptive statistics of key variables.

Variable	Min	Max	Mean	SD
Hedging (DV)	0	1	0.80	0.40
Neutral Words (IV, in %)	75	100	95.72	4.30
Subjunctive II (IV)	0	1	0.29	0.45
Temporal Adverbs (IV)	0	1	0.18	0.38
Number of Words (CV)	1	77	32.17	18.70

Notes: DV = dependent variable; IV = independent variable; CV = control variable

was then divided by the overall number of words to create a variable depicting the percentage of neutral words per answer. For creating the variables on the usage of subjunctive II and temporal adverbs, we developed two custom dictionaries covering the common German words in subjunctive II (e.g. *hätte, müsste, sollte*) and temporal adverbs (e.g. *bereits, schon, bald*). Both variables were then coded dichotomously, with a value of 0 indicating that the party made no use of subjective II/temporal adverbs and a value of 1 when they did. We also included the number of words in a justification as a control variable, since the more words a text has, the higher the probability of either sentimentalised words, subjunctive II, or temporal adverbs appearing.

The distributions of all variables can be seen in Table 2. As previously mentioned, the majority of 'neutral' party positions were not neutral despite the parties' selfplacement. The parties' justifications mainly contain neutral words with an average amount of 95.72% and a standard deviation of 4.30%. Overall, the distribution of the subjunctive II usage indicates that 29.02% of the party justifications used grammatical versions, while 17.86% used one or more temporal adverbs. The parties' justifications included, on average, 32 words with a standard deviation of roughly 18 words.

As the dependent variable is measured dichotomously, we employ a binary logistic regression. In the upcoming analysis, we compute multiple logistic regression models in addition to simulating fitting quantities of interest.

Results

In this Section, we present and discuss the results of our analyses. After a preliminary descriptive analysis of possible precursors of hedging, we will continue with the statistical analysis, investigating our formulated hypotheses.

Precursors for Hedging

As a first descriptive step, we conducted extensive analyses as to whether certain parties or issues favour the usage of hedging. The results of these analyses are depicted in Figure 1. From a party-specific point of view, Figure 1a)
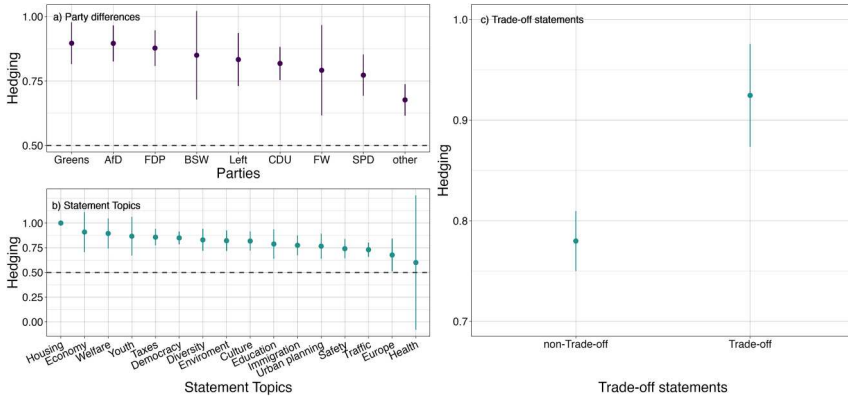
Figure 1. Precursors for hedging. a) Average usage of hedging grouped by major parties in Germany. Others included all other minor and local parties. b) Average extent of hedging grouped by statement topics. c) Average distribution of hedging for trade-off and non-trade-off statements. For all Figures, the 95% confidence intervals are included as a measure of uncertainty.

demonstrates that there are no significant differences between parties and the amount of hedging they use. Nevertheless, a notable finding is that the major parties in Germany do have a higher tendency to use hedging than locally based parties. Furthermore, there appears to be little to no ideological driver for hedging. While right-leaning parties appear to use hedging more often and centrist parties like the SPD or CDU hedge less often, they do not significantly differentiate from each other or left-leaning parties. In addition to party effects, we also investigated whether there are specific issues that encourage the use of hedging. As visualised in Figure 1b) this does not seem to be the case. While there are topics that have higher levels of hedging, such as Housing, Welfare, or Economy, the mostly overlapping confidence intervals indicate that there are likely no significant differences. This means that neither a specific party, ideology, or policy issue appears to serve as a clear causal or at least correlating factor for the use of hedging. Hence, we believe future research should further investigate which contextual factors lead parties to use hedging with such high frequency.

Trade-off Statements

During the process of coding the party justifications, the coders, independently from each other, noticed that there was a specific type of statement for which hedging appeared increasingly often. While the topics of these statements were diverse, they all had one thing in common: they included a way of framing we came to call a 'trade-off' statement. As such, these statements always asked parties to choose one policy implementation over another. An example of this is the following statement: '*Climate protection*

should carry greater importance than economic considerations in local political decisions.' Here, parties are asked if they agree to prioritise climate considerations over economic considerations. This discovery in the coding process led to a closer exploratory analysis of these 'trade-off' statements, going beyond our formulated hypotheses. Figure 1c) demonstrates that parties indeed used hedging significantly more often for such trade-off statements compared to non-trade-off statements. While the exact cause for this should be further investigated, a possible explanation for this effect of trade-off statements could again be that parties want to avoid taking a specific side to which they would have to adhere to in the coming legislative period, thereby limiting their maneuverability. In comparison Baka, Figgou, and Triga (2012) show that users tend to answer such statements with a neutral position but not to strategically avoid taking a position. Rather, they do so because of decision dilemmas and trade-off uncertainty.

This finding, while not being covered by our theoretical expectations, is important as the statement framing is dependent on the VAA developers. As such we believe that this relationship between trade-off statements and parties falsely claiming neutrality should be cause to update the existing VAA statement formulation rules (van Camp, Lefevere, and Walgrave 2014; Holleman et al. 2016) so that developers might avoid such statements in order to lower the amount of hedging deployed by parties, reducing the loss of information for voters.

Linguistics of Hedging

Following the insightful findings from the descriptive analyses, Table 3 showcases the results from the binary logistic regressions testing our

Table 3. Linguistics of hedging (logistic regression).

	Model1	Model2	Model3	Model4	AME
(Intercept)	9.107***	0.611***	0.666***	9.070***	
	(2.158)	(0.167)	(0.165)	(2.189)	0.003***
Number of Words	0.022***	0.020***	0.021***	0.019***	
	(0.005)	(0.005)	(0.005)	(0.005)	(0.001)
Neutral Words (%)	−0.087***	−0.089***			−0.013***
	(0.022)	(0.023)			(0.003)
Subjunctive II	0.655**		0.684**		0.103**
	(0.218)		(0.220)		(0.033)
Temporal Adverbs			0.562*	0.624*	0.094*
			(0.265)	(0.268)	(0.040)
Num.Obs.	851	851	851	851	851
AIC	824.3	832.0	836.9	812.6	812.6
BIC	838.5	846.2	851.1	836.3	836.3
Log.Lik.	−409.154	−412.997	−415.454	−401.290	
F	17.999	13.821	11.633	12.130	

Notes: Models were fitted using maximum likelihood estimation. $+p < 0.1$, $*p < 0.05$, $**p < 0.01$, $***p < 0.001$.

hypotheses. The first three models included only one of the independent variables and the control variable, while Model 4 combines them all into one full model. In addition to the coefficients, which are harder to interpret in non-linear regressions, we included the average marginal effects (AME) to ease interpretations of the explanatory variables for Model 4. Based on the model statistics of Model 4, one can see that it can explain some of the variability in the dependent variable while suggesting there may be more variability not captured by the Model.

Looking first at the percentage of neutral words used, the coefficients in both Model 1 and Model 4 indicate a negative relationship, as hypothesised in H2. Using the AME indicates that a 1% increase in the usage of neural words results in a 1.3% decrease in the likelihood of hedging. Hence, using more neutral words in the party justification indicates a higher likelihood of the party actually having a neutral standpoint on the VAA statement. This effect is statistically significant with a p-value below 0.001. The coefficient and AME of the subjunctive II variable are also highly significant, with a p-value below 0.01 and a positive relationship. As such, the result from Model 4 demonstrates that using subjunctive II in the justification increases the probability of not being neutral despite answering so (i.e. hedging) by 10%. Therefore, using subjunctive II appears to be a valid indicator of parties using hedging in their VAA answers. Similarly, the effect of using temporal adverbs is also statistically significant (p-value < 0.05) and positive, indicating that using temporal adverbs increases the probability of hedging by 9.4%. This is also in congruence with our hypothesis.

To get a better perspective of how our independent variables indicate the likelihood of hedging, we calculated predicted probabilities as additional quantities of interest, which are depicted in Figure 2. As demonstrated by the coefficients and AME in Table 3, using subjunctive II and/or temporal adverbs is considered more likely when hedging a statement. Figure 2a) demonstrates this effect again. Furthermore, the First Differences for both variables do not entail zero, indicating the statistical significance of the two variables. Figure 2b) grants further insights into the relationship between the percentage of neutral words in a party's justification and the usage of hedging. From the Figure, one can gather that, while an increased usage of neutral words has a lower likelihood of hedging, this effect is not uniform. As such, one can see that for the area between 90% and 100% neutral words used, the predicted probabilities drop significantly faster than for the other interval. Overall, this shows that the more neutral words are used, the less likely parties are to use hedging. Given these results, we fail to reject our four hypotheses. First, we generally find a high use for potentially strategic hedging in the VAA justifications (H1). Second, we find that party justifications with higher levels of neutral words appear to have a lower likelihood of hedging (H2), while justifications
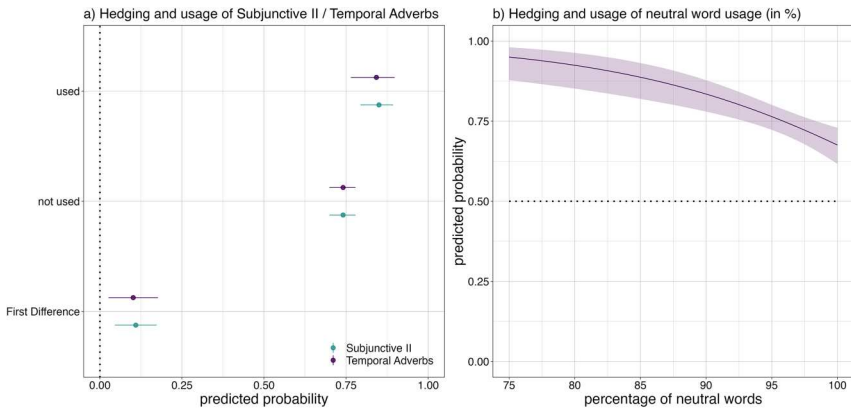
Figure 2. Simulated predicted probabilities. Both Figures are based on Model 4. a) Simulated predicted probabilities for usage and non-usage of subjunctive II/temporal adverbs. Additionally, the First Difference is included as a measure of difference and significance. b) Simulated predicted probabilities for different percentages of neutral words used in party justifications. For all Simulations, the control variables were held constant at their median.

using subjunctive II (H3) and/or temporal adverbs (H4) have a higher likelihood of hedging and thereby show evidence of parties strategically answering VAA statements.

Conclusion

Voting Advice Applications are a useful information shortcut for voters when trying to get an overview of the available parties and their positions, and ultimately making a vote choice. However, the way parties position themselves regarding the statements posed by some VAAs, which work via self-positioning, can be very strategic. The goal of this paper was to show and help detect that parties often claim a neutral position in such VAAs, while taking a clear position for or against it in their detailed answers, leading to a loss of information for voters but also for scholars trying to draw policy positions from these devices. Using data from local-level VAAs from 20 German municipal elections in 2024, narrowing the data to only include answers in which parties claimed a neutral position. We expected three major factors to indicate what we called 'hedging' and could therefore help detect it: the number of neutral words, the use of temporal adverbs, and the use of the subjunctive II within a statement. Analysing the data, we can provide evidence that all three factors increase the likelihood of hedging being present within a party's 'neutral' statement, meaning that they take a clear policy position. While a higher number of neutral words decreases the likelihood of a clear policy position, the prevalence of temporal

adverbs and the subjunctive II increases the likelihood of such. Additionally, we can demonstrate that parties used hedging, thereby taking positions despite answering 'neutral' in 80% of the cases, and that there seems to be an effect when the VAA statement includes a trade-off. Parties tend to claim false neutrality more often when the statement is written in a way that one policy goal has to be chosen over another.

The findings in this paper have major implications for voters and scholars of political science. We can show that, in VAAs, parties rarely actually take a neutral position on an issue. Even if they claim to do so, there is a high chance they will still take a position within their justification for their positioning, but strategically try to avoid making policy promises by claiming neutrality on the issue. For voters searching for a quick information shortcut, important information gets lost through this party strategy, while the final voting advice becomes skewed. There are potential scenarios where a voter and a party agree on an issue that has high salience to the voter, but the party receives a lower match because it falsely claims neutrality. The same situation can occur with an issue where voters and parties disagree, which should lead to a decreased match, but because of the party's false neutrality, the match increases. Parties may potentially use hedging strategically to avoid policy promises or taking a controversial position that might dissatisfy their electorate. However, how strategic this behaviour truly is, needs to be tested in future research. Hence, we do not want to neglect the possibility that the complexity of certain VAA questions has naturally (instead of strategically) led parties (or the representative filling out the survey) to be insecure about taking a clear stance.

All this results in a loss of information for voters trying to make a more informed vote choice. This loss of information also affects researchers of party policy positions, when they attempt to assess a party's ideology by analysing VAA data. Researchers interested in doing so should not neglect neutral answers or take them at face value. We recommend gathering these statements and employing either hand-coding or automated text-analysis methods such as Wordscores (Laver, Benoit, and Garry 2003) specifically, on those statements answering a trade-off question and those that include subjunctive II, temporal adverbs, or a lower number of neutral words. Additionally, advanced Natural Language Processing approaches as well as intent classification models utilising machine learning could be trained and then used to detect hedging in future applications. For developers of VAAs, we recommend avoiding framing issues as a trade-off, as this will significantly increase the use of hedging and thereby aid the loss of information. Additionally, the findings call into question the 'neutral' answer category for parties, as in most cases parties are not truly neutral. Considering the fact that user-centric studies also show that users choose the neutral option for different reasons, such as lack of knowledge (Baka, Figgou, and

Triga 2012), scholars should rethink VAA position scales to minimise wrong advice due to a misuse of positions or narrow scales. Furthermore, the findings raise the question of whether VAA developers should proofread party positions or whether the VAA generation approach without actual party positions is a safer, less biased way of developing VAAs.

Lastly, the analysis has three limitations that should be kept in mind. For one, when parties generate their responses to the VAA statements, developers can not control the method by which they do so. As such, it might be that some positions were answered by single individuals while others were generated in larger party delegations. This difference might therefore also bias the results and is a general limitation of partybased VAAs, as individuals might answer differently than larger party delegations. Most importantly, we only analyse data from German municipal elections for one year. Different properties of these elections can potentially lead to bias. First, commonly, these elections do not centre around parties in general but single politicians delegated by their party or independent politicians. This could generate incentives to strategically deviate from the party line to satisfy a local electorate. While we see no argument as to why this factor should also affect the way parties employ hedging, future research should attempt to replicate these findings with data from other VAAs from different federal levels and countries. Furthermore, we do not attempt to determine factors that will cause hedging but focus on predictors of such instead. Hence, while we shortly delve into the effect that a trade-off framing can have, future research should further explore what contextual factors can lead a party to falsely claim neutrality in VAAs, via in-depth party surveys. Therefore, despite our elaboration that this behaviour could be strategic, scholars should try to determine what these strategies are and test them with data.

Notes

1. Note that not all VAAs use direct party positions. Other methods include letting experts position the parties. Using this expert-based approach, such VAAs cannot be strategically misused by parties. As such, this study focuses on VAAs that let parties position themselves, which is an often-used approach.
2. Note that these categories do not include so-called Roll-Call VAA versions (Skop 2010) that are based on topics that have been addressed in parliament votes and thereby include parties' actual vote choice on the topics.
3. While we argue that hedging in VAAs can be used strategically to hide a party's true position, potentially misleading voters, it should also be considered that VAAs can be used as a way to communicate policy goals to voters in the given political context. Depending on the way users utilise VAAs, hedging could therefore be less harmful, considering cases where users are mainly interested in parties' policy goals for the coming legislative period.
4. Some of our hypotheses are non-standard in form. We do not derive them from established theories in political science or communication science.

Instead, our expectations about how parties discuss neutral issues and how ambiguity is used and manifests itself are based primarily on intuition and our understanding of the German language, supported by insights from linguistic literature.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

About the Author(s)

Thilo I. Dieing holds a Master's degree in Data Science from the University of Mannheim and is pursuing a PhD at the Institute of Political Science at TU Darmstadt on the functions and effects of Voting Advice Applications and potential AI applications. In addition, he regularly organises VAAs and works as a research associate at the Chair of Artificial Intelligence at the University of Mannheim.

Leon Siefken has been a doctoral researcher at the MZES since September 2024. He is currently working on the DFG funded research project 'Causes and Consequences of Prime Ministerial Replacements'. In the course of his academic career, he has specialised in the quantitative analysis of populist parties and party competition in parliamentary democracies.

ORCID

Thilo I. Dieing http://orcid.org/0009-0000-2256-0795
Leon Siefken http://orcid.org/0009-0005-9367-6994

References

Albertsen, Andreas. 2022. "How Do the Characteristics of Voting Advice Application Users Change over Time? Evidence from the German Election Studies." *German Politics* 31 (3): 399–419.

Baka, Aphrodite, Lia Figgou, and Vasiliki Triga. 2012. "'Neither Agree, nor Disagree': A Critical Analysis of the Middle Answer Category in Voting Advice Applications." *International Journal of Electronic Governance* 5 (3-4): 244–263.

Benesch, Christine, Rino Heim, Mark Schelker, and Lukas Schmid. 2023. "Do Voting Advice Applications Change Political Behavior?" *The Journal of Politics* 85 (2): 684–700.

Bossetta, Michael. 2017. "Fighting Fire with Fire: Mainstream Adoption of the Populist Political Style in the 2014 Europe Debates between Nick Clegg and Nigel Farage." *The British Journal of Politics and International Relations* 19 (4): 715–734.

Bräuninger, Thomas, and Nathalie Giger. 2018. "Strategic Ambiguity of Party Positions in Multi-party Competition." *Political Science Research and Methods* 6 (3): 527548.

Budge, Ian. 1987. *The Internal Analysis of Election Programmes*. Cambridge University Press.

Busch, Hans Jörg. 2014. "The Subjunctive, a Marker of Subordinance? A Comparison between German and Spanish." *Borealis an International Journal of Hispanic Linguistics* 3 (1): 103123. https://septentrio.uit.No/index.php/borealis/article/view/2809.

Cicchi, Lorenzo, Andres Reiljan, Diego Garzia, Federico Ferreira da Silva, and Alexan-der H Trechsel. 2023. "Party Placement in the Void: The European Political Space in 10 Years of Cross-National Voting Advice Applications." *Robert Schuman Centre for Advanced Studies Research Paper (2023_200)* 33.

Cochrane, Christopher, Ludovic Rheault, Jean-François Godbout, Tanya Whyte, Michael W.-C. Wong, and Sophie Borwein. 2022. "The Automatic Analysis of Emotion in Political Speech Based on Transcripts." *Political Communication* 39 (1): 98–121.

Crabtree, Charles, Matt Golder, Thomas Gschwend, and Indriđi H. Indriđason. 2020. "It Is Not Only What You Say, It Is Also How You Say It: The Strategic Use of Campaign Sentiment." *The Journal of Politics* 82 (3): 1044–1060.

Dalton, Russell J. 2016. "Stability and Change in Party Issue Positions: The 2009 and 2014 European Elections." *Electoral Studies: An International Journal* (44): 525–534.

De Graaf, J. 2010. "The Irresistible Rise of the StemWijzer." In *Voting Advice Applications in Europe: The State of the Art*, edited by Lorella Cedroni, and Diego Garzia, 35–46. Napoli: Scriptaweb.

Dietrich, Simone, Helen V Milner, and Jonathan B Slapin. 2020. "From Text to Political Positions on Foreign Aid: Analysis of Aid Mentions in Party Manifestos from 1960 to 2015." *International Studies Quarterly* 64 (4): 980–990.

Enyedi, Zsolt. 2015. "The Influence of Voting Advice Applications on Preferences, Loyalties and Turnout: An Experimental Study." *Political Studies* 64 (4): 1000–1015.

Ferreira da Silva, Frederico, Andres Reiljan, Lorenzo Cicchi, Alexander H Trechsel, and Diego Garzia. 2023. "Three Sides of the Same Coin? Comparing Party Positions in VAAs, Expert Surveys and Manifesto Data." *Journal of European Public Policy* 30 (1): 150–173.

Fivaz, Jan, Tom Louwerse, and Daniel Schwarz. 2014. "Keeping Promises: VAAs and Political Representation." In *Matching Voters with Parties and Candidates*, edited by D. Garzia and S. Marschall, 197–216. Colchester: ECPR Press.

Fivaz, Jan, and Giorgio Nadig. 2010. "Impact of Voting Advice Applications (VAAs) on Voter Turnout and Their Potential use for Civic Education." *Policy & Internet* 2 (4): 167–200.

Garrido, Joaquin. 1992. "Expectations in Spanish and German Adverbs of Chance." *Folia Linguistica* 26 (3-4): 357–402. https://doi.org/10.1515/flin.1992.26.3-4.357.

Garzia, Diego, and Stefan Marschall. 2016. "Research on Voting Advice Applications: State of the Art and Future Directions." *Policy & Internet* 8 (4): 376–390.

Garzia, Diego, and Stefan Marschall. 2019. "Voting Advice Applications." In *Oxford Research Encyclopedia of Politics*, edited by William R. Thompson. New York, NY: Oxford University Press.

Gemenis, Kostas. 2013. "Estimating Parties Policy Positions through Voting Advice Applications: Some Methodological Considerations." *Acta Politica* 48:268–295.

Gemenis, Kostas. 2018. "The Impact of Voting Advice Applications on Electoral Turnout: Evidence from Greece." *Statistics, Politics and Policy* 9 (2): 161–179.

Gemenis, Kostas, and Martin Rosema. 2014. "Voting Advice Applications and Electoral Turnout." *Electoral Studies* 36:281–289.

Heinsohn, Till, Matthias Fatke, Jonas Israel, Stefan Marschall, and Martin Schultze. 2019. "Effects of Voting Advice Applications during Election Campaigns.

Evidence from a Panel Study at the 2014 European Elections." *Journal of Information Technology & Politics* 16 (3): 250–264.

Holbert, R. Lance, and Nick Geidner. 2009. "The 2008 Election: Highlighting the Need to Explore Additional Communication Subfields to Advance Political Communication." *Communication Studies* 60 (4): 344–358.

Holleman, Bregje, Naomi Kamoen, André Krouwel, Jasper van de Pol, and Claes de Vreese. 2016. "Positive vs. Negative: The Impact of Question Polarity in Voting Advice Applications." *PLoS One* 11 (10): e0164184.

Israel, Jonas, Stefan Marschall, and Martin Schultze. 2017. "Cognitive Dissonance and the Effects of Voting Advice Applications on Voting Behaviour: Evidence from the European Elections 2014." *Journal of Elections, Public Opinion and Parties* 27 (1): 56–74.

Janda, Kenneth, Robert Harmel, Christine Edens, and Patricia Goff. 1995. "Changes in Party Identity: Evidence from Party Manifestos." *Party Politics* 1 (2): 171–196.

Kamoen, Naomi, Bregje Holleman, André Krouwel, Jasper van de Pol, and Claes de Vreese. 2015. "The Effect of Voting Advice Applications on Political Knowledge and Vote Choice." *Irish Political Studies* 30 (4): 595–618.

Kleinnijenhuis, J., J. van de Pol, A. M. van Hoof, and A. P. Krouwel. 2019. "Genuine Effects of Vote Advice Applications on Party Choice: Filtering out Factors That Affect Both the Advice Obtained and the Vote." *Party Politics* 25 (3): 291–302.

Konrad, Markus. 2015. "textblob-de: German Language Extension for TextBlob.". Version 0.4.3, Accessed: 2024-10-24. **URL:**https://github.com/markuskiller/textblob-de.

Laver, Michael, Kenneth Benoit, and John Garry. 2003. "Extracting Policy Positions from Political Texts Using Words as Data." *American Political Science Review* 97:311–331. https://api.semanticscholar.org/CorpusID:10274824.

Laver, Michael, and John Garry. 2000. "Estimating Policy Positions from Political Texts." *American Journal of Political Science* 44 (3): 619–634. http://www.jstor.org/stable/2669268.

Lefevere, Jonas. 2024. "Is There Clarity in Ambiguity? A Literature Review of Party Positional Ambiguity." *Party Politics* 30 (2): 334–344.

Lehmann, Pola, Simon Franzmann, Denise Al-Gaddooa, Tobias Burst, Christoph Ivanusch, Sven Regel, Felicia Riethmüller, Andrea Volkens, Bernhard WeÃels, and Lisa Zehnter. 2024. "The Manifesto Data Collection. Manifesto Project (MRG/CMP/MARPOR). Version 2024a.". [Online, accessed 02-02-2024]. https://doi.org/10.25522/manifesto.mpds.2024a.

Lin, Nick, and Moritz Osnabrügge. 2018. "Making Comprehensible Speeches When Your Constituents Need It." *Research & Politics* 5 (3): 2053168018795598.

Marschall. 2014. "Profiling Users." In *Matching Voters with Parties and Candidates: Voting Advice Applications in Comparative Perspective*, edited by Garzia Diego, and Marschall Stefan, 93–104. Colchester: ECPR Press.

Martin, Lanny W., and Georg Vanberg. 2008. "Coalition Government and Political Communication." *Political Research Quarterly* 61 (3): 502–516.

Milita, Kerri, Elizabeth N. Simas, John Barry Ryan, and Yanna Krupnikov. 2017. "The Effects of Ambiguous Rhetoric in Congressional Elections." *Electoral Studies* 46:48–63. https://www.sciencedirect.com/science/article/pii/S0261379416301615.

Munzert, Simon, Pablo BarberÁ, Andrew Guess, and JungHwan Yang. 2020. "Do Online Voter Guides Empower Citizens? Evidence from a Field Experiment with Digital Trace Data." *Public Opinion Quarterly* 84 (3): 675–698.

Munzert, Simon, and Sebastian Ramirez-Ruiz. 2021. "Meta-analysis of the Effects of Voting Advice Applications." *Political Communication* 38 (6): 691–706.

Praprotnik, Katrin, and Laurenz Ennser-Jedenastik. 2024. "Ambiguity and Vagueness in Party Competition." *Party Politics* 30 (6): 1152–1160.

Riley, Patricia, and Thomas A. Hollihan. 2012. "Chapter 4. Strategic Communication: How Governments Frame Arguments in the Media." https://api.semanticscholar.org/CorpusID:156308133.

Rooduijn, Matthijs, Sarah L de Lange, and Wouter van der Brug. 2014. "A Populist Zeitgeist? Programmatic Contagion by Populist Parties in Western Europe." *Party Politics* 20 (4): 563–575.

Schultze, Martin. 2013. "Effekte des Wahl-O-Mat auf politisches Wissen über Parteipositionen." *ZPol Zeitschrift für Politikwissenschaft* 22 (3): 367–391.

Siefken, Leon. 2024. "When Are Populist Parties Populist? A Study of Populist Sentiment in Election Manifestos of Germanys AfD and Die Linke." *German Politics* 0 (0): 1–24.

Skop, Michal. 2010. "Are the Voting Advice Applications (VAAs) Telling the Truth? Measuring VAAs Quality: Case Study from the Czech Republic." In *Voting Advice Applications in Europe. The State of the Art, ScriptaWeb, Napoli*, 199–230.

Stecker, Christian, Thilo Ignaz Dieing, Julius Oblong, Simon Strobel, Daniela Braun, Elisa Deiss-Helbig, Theresa Gessler, et al. 2025. "Voting Advice Applications for Local Elections.". https://doi.org/10.7910/DVN/PAH9O1.

Tromborg, Mathias Wessel, and Andreas Albertsen. 2023. "Candidates, Voters, and Voting Advice Applications." *European Political Science Review* 15 (4): 582–599.

van Camp, Kirsten, Jonas Lefevere, and Stefaan Walgrave. 2014. "The Content and Formulation of Statements in Voting Advice Applications: A Comparative Analysis of 26 VAAs." In *Matching Voters with Parties and Candidates: Voting Advice Applications in Comparative Perspective*, edited by Garzia Diego, and Marschall Stefan, 11–31. Colchester: ECPR Press.

van de Pol, Jasper, Bregje Holleman, Naomi Kamoen, André Krouwel, and Claes de Vreese. 2014. "Beyond Young, Highly Educated Males: A Typology of VAA Users." *Journal of Information Technology & Politics* 11 (4): 397–411.

van de Pol, Jasper, Naomi Kamoen, André Krouwel, Claes de Vreese, and Bregje Holleman. 2019. "Same but Different: A Typology of Voting Advice Application Users in First- and Second-Order Elections." *Acta Politica* 54 (2): 225–244.

Westle, Bettina, Christian Begemann, and Astrid Rütter. 2014. "The "Wahl-O-Mat" in the Course of the German Federal Election 2013 – Effects of a German VAA on Users' Election-Relevant Political Knowledge." *Zeitschrift für Politikwissenschaft* 24 (4): 389–426.

Wheatley, Jonathan. 2012. "Using VAAs to Explore the Dimensionality of the Policy Space: Experiments from Brazil, Peru, Scotland and Cyprus." *International Journal of Electronic Governance* 5 (3-4): 318–348.

Wouter van Atteveldt, Mariken, A. C. G. van der Velden, and Mark Boukes. 2021. "The Validity of Sentiment Analysis: Comparing Manual Annotation, Crowd-Coding, Dictionary Approaches, and Machine Learning Algorithms." *Communication Methods and Measures* 15 (2): 121–140.

Young, Lori, and Stuart Soroka. 2012. "Affective News: The Automated Coding of Sentiment in Political Texts." *Political Communication* 29 (2): 205–231.