**Online Appendix**

[**Appendix A.1: Question wording in survey** 2](#_Toc122172626)

[**Appendix A.2: Illustrative example of a candidate VAA recommendation** 4](#_Toc122172627)

[**Appendix A.3: Summary statistics** 5](#_Toc122172628)

[**Appendix A.4: VAA advice and reported vote choice in post-election survey** 6](#_Toc122172629)

[**Appendix A.5: Survey weights** 9](#_Toc122172630)

[**Appendix A.6: VAA administration timing** 10](#_Toc122172631)

[**Appendix A.7: The demographic balance of the independent variables** 12](#_Toc122172632)

[**Appendix A.8: Extended regression equations** 17](#_Toc122172633)

[**Appendix A.9: Changes in vote choice certainty** 18](#_Toc122172634)

[**Appendix A.10: Regression coefficients** 20](#_Toc122172635)

[**Appendix A.11: VAA effects on the 2019 Danish electorate.** 22](#_Toc122172636)

[**Appendix A.12: Omitting respondents receiving party-congruent advice** 23](#_Toc122172637)

[**Appendix A.13: Are VAA effects conditional on party spread?** 24](#_Toc122172638)

[**Appendix A.14: Specific choices among candidate switchers** 25](#_Toc122172639)

[**Appendix A.15: Incongruent advice as comparison baseline** 26](#_Toc122172640)

# **Appendix A.1: Question wording in survey**

The questions we used from the survey are translated below in the order they appeared (Other questions that we did not use also appeared in the survey).

*Political interest:*

1. Would you say that you are very interested in politics, somewhat interested, just a little interested, or not at all interested in politics?

* Very interested
* Somewhat interested
* Just a little interested
* Not at all interested
* Don’t know

*Party identification:*

1. Many people consider themselves supporters of a particular party. Der are also many who do not feel like they support a particular party. Do you for example consider yourself a Social Democrat, a Conservative, a Liberal, a Socialist or something else, or do you not feel like you belong to a particular party?

* Yes, I consider myself a supporter of a particular party
* No, I am not a supporter of a particular party
* Don’t know

1. *[If ”Yes, consider myself a supporter of a particular party” from the previous question]* Which party is that?

* [List of the 13 Danish parties running in the election]
* A different party
* Don’t know

1. Some people are very convinced supporters of their party while others are less convinced. Do you consider yourself a very convinced supporter or less convinced?

* Very convinced
* Less convinved

*Party choice before VAA*

1. Now we would like to ask you some questions about the upcoming general election. Which party do you expect to vote for?

* [List of the 13 Danish parties running in the election]
* An independent candidate
* A different party
* A blank vote
* I do not expect to vote
* Don’t know

*Candidate choice before VAA*

1. *[If party chosen in question 4]* Do you expect to give a personal vote, or do you expect to give a party vote?

* I expect to vote personally for a candidate from [PARTY NAME FROM QUESTION 4]
* I expect to vote for [PARTY NAME FROM QUESTION 4], but I do not expect to vote personally for a candidate from this party.
* Don’t know.

1. *[If ” I expect to vote personally for a candidate from [PARTY NAME FROM QUESTION 4]* What is the name of the candidate you expect to vote for? If you are uncertain you can just write ”don’t know”.

* [Open ended answer]

*Text transfering respondents to Altinget’s VAA*

You will now be transferred to Altinget’s candidate survey by clicking the link below. Here you will be asked 30 questions about your political positions. Based on your answers Altinget will tell you which candidates you agree with the most in your district. After you have taken the candidate survey you will get a password under your candidate recommendations that you will need to write below on this page. This will take you to the last part of our survey where we will ask you some concluding questions.

Click on the following weblink to go to to Altinget’s candidate survey [LINK TO ALTINGET’S VAA]

Write the password from Altinget to answer the concluding questions here: [PASSWORD]

*Text after taking Altinget’s VAA*

Thank you for taking Altinget’s candidate survey. To conclude our survey we would now again like to ask you some questions about your expectations for the upcoming general election.

[REPETITION OF QUESTIONS 3-6]

# **Appendix A.2: Illustrative example of a candidate VAA recommendation**

Figure A.2.1 on the next page illustrates how VAA users of Altinget’s VAA were given advice about which candidates they were most ideologically congruent with. The advice text is translated below on this page.[[1]](#footnote-1)

**Result**

You have been matched with candidates in the District of North Zealand

Remember the result is only meant as a guide, and it only shows how much you agree with the candidates on a number of political issues. Consequently, we recommend that you read more about the candidates and their core issues by clicking their profiles below. Good luck voting.

You agree **the most** with:

**Figure A.2.1: Example of candidate advice in Altinget’s VAA**



# **Appendix A.3: Summary statistics**

**Table A.3.1: Summary statistics for party choice analyses (Figure 1 and 2)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | N/n | Mean | Std. Dev | Min | Max |
| Post-VAA party choice | 19,488/1,496 | 0.07 | 0.25 | 0 | 1 |
|  |  |  |  |  |  |
| Pre-VAA party choice | 19,488/1,496 | 0.06 | 0.25 | 0 | 1 |
| Undecided | 19,488/1,496 | 0.11 | 0.31 | 0 | 1 |
| Non-party vote | 19,488/1,496 | 0.03 | 0.16 | 0 | 1 |
| Abstain | 19,488/1,496 | 0.03 | 0.17 | 0 | 1 |
| Party identification | 19,488/1,496 | 0.05 | 0.28 | 0 | 2 |
| Political interest | 19,396/1,492 | 1.72 | 0.87 | 0 | 3 |
| No advice | 19,488/1,496 | 0.78 | 0.42 | 0 | 1 |
| Weak advice | 19,488/1,496 | 0.15 | 0.35 | 0 | 1 |
| Strong advice | 19,488/1,496 | 0.07 | 0.26 | 0 | 1 |
| Post-VAA party choice | 19,488/1,496 | 0.07 | 0.25 | 0 | 1 |

Note: N = respondent-party observations, n = number of respondents 169 respondents had different pre- and post-VAA party choices (135 switched to a new party, 23 to undecided, 5 to a non-party vote, 6 to abstain). Among the 169 party vote intention switchers, 92 had a pre-VAA party, 55 were undecided, 13 expected to give a non-party vote, and 9 expected to abstain. In the full sample, 409/445/398 respondents received *incongruent advice, partially congruent* and *highly congruent* advise, respectively (1252 respondents chose a pre-VAA party). 161/41/42 respondents were coded as 1 on the *undecided*, *non-party vote*, and *abstain* variables, respectively.

**Table A.3.2: Summary statistics for candidate choice analysis (Figure 3)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | n | Mean | Std. Dev | Min | Max |
| Candidate choice stability | 252 | 0.90 | 030 | 0 | 1 |
| Candidate-incongruent | 252 | 0.69 | 0.46 | 0 | 1 |
| Partially candidate-congruent | 252 | 0.18 | 0.38 | 0 | 1 |
| Highly candidate-congruent | 252 | 0.13 | 0.33 | 0 | 1 |
| Party identification | 252 | 0.65 | 0.48 | 0 | 2 |
|  |  |  |  |  |  |
| Political interest | 252 | 2.12 | 0.75 | 0 | 3 |

# **Appendix A.4: VAA advice and reported vote choice in post-election survey**

This appendix reports replicates the results from the main paper using self-reported vote choice as the dependent variable instead of vote intention. The measure comes from a post-election survey we distributed to the pre-election survey respondents immediately after the election. In this survey, we asked the respondents who they voted for in the election. Not all initial respondents decided to take the post-election survey. The number of respondents for each analysis is included under each figure. For this analysis we also include two additional control variables (each is interacted with the VAA advice variables):

*Days to election.*We control for the timing of the survey response. The days to election variable measures the number of days until the election at the time the respondent took the survey. We use this control variable because VAA advice effects could depend on the timing of the VAA advice.

*Party polling.* We also control for each party’s campaign momentum at the time the respondent took the survey. We do this by measuring the party’s opinion poll score on the respondent’s survey day.[[2]](#footnote-2)

We control for these variables because of the challenges that are associated with having a significant time gap between taking the VAA and the election. The problem is that the same underlying issue preferences that lead a respondent to receive a particular type of VAA advice may also lead them to receive recommendations for the same party or candidate after taking the VAA (e.g. when talking to friends, colleagues, etc.). Consequently, it is difficult to know whether the estimated VAA effects on self-reported vote choices in the post-election survey are due to respondents receiving VAA advice or confounding events. By controlling for the timing of the survey and the party’s campaign momentum we hope to be able to control for at least some of the possible confounding events.

**Figure A.4.1: Replication of Figure 1 with reported vote choice**



Note: The dependent variable measures the post-election party choice. N/n = 12,974/998.

**Figure A.4.2: Replication of Figure 2 with reported vote choice**

****

Note: The dependent variable measures the post-election party choice. N/n = 12,974/998.

**Figure A.4.3: Replication of Figure 3 with reported vote choice**



Note: The dependent variable measures change in the pre-VAA vote intention and post-election candidate choice. n = 170.

# **Appendix A.5: Survey weights**

This appendix details how we generated the survey weights. They are generated in two stages.

In the first stage, we generate a pre-weight variable, which is meant to account for non-response bias caused by Dynata panelists dropping out of the survey after initiating it. This pre-weight is generated by estimating a logit model where the dependent variable measures whether an initial respondent completed the survey (1 if yes, 0 if not) as a function of demographic (and other) variables from the early (pre-VAA) part of the survey. The pre-weight variable value for each respondent is the inverse of the probability of receiving a 1 on the dependent variable (i.e. the inverse of the probability of completing the survey). The independent variables used to calculate this pre-weight probability are: *Education* (measured on a six-point ordinal scale where a higher value means a higher level of education), *ideology* (measured as four dummy variables indicating whether the respondent was leftist, centrist, rightist, or did not know), and *political knowledge* (measured as three dummy variables indicating whether the respondent gave the correct answer to questions testing their general knowledge of Danish politics).

In the second stage we post-stratify the pre-weight variable from above using census data. This is done to address the fact that the initial panel is not a random sample of the Danish voting age population as well as possible non-response patterns not accounted for in the pre-weight variable. We post-stratify the pre-weight on age and gender using “raking”, which iteratively adjusts the weight for each case until the sample distribution aligns with the population for the demographic variables (we do not do this or education because the Danish census does not contain education data for the full voting age population). The two demographic variables are crossed to make up 12 categories (see Table A.5.1 below).

We note that the unconditional sample distributions for the demographic variables are not too far off the population averages before weighting, but the conditional distributions do not match as well (Table A.5.1). Hence, the final poststratified weights help account for non-representativeness in these conditional distributions.

**Table A.5.1: Comparing sample and population statistics prior to weighting.**

|  |  |  |
| --- | --- | --- |
| **Demographic variable** | **Sample** | **Voting age population mean** |
| *Age (unconditional)* | *52.31\** | *49.22945* |
| *Female (unconditional)* | *0.51* | *0.51* |
| Group 1: Male, age 18-29 | 0.03\* | 0.10 |
| Group 2: Male, age 30-39 | 0.05\* | 0.07 |
| Group 3: Male, age 40-49 | 0.05\* | 0.08 |
| Group 4: Male, age 50-59 | 0.08 | 0.09 |
| Group 5: Male, age 60-69 | 0.17\* | 0.07 |
| Group 6: Male, age > 69 | 0.11\* | 0.08 |
| Group 7: Female, age 18-29 | 0.10 | 0.10 |
| Group 8: Female, age 30-39 | 0.08 | 0.07 |
| Group 9: Female, age 40-49 | 0.09 | 0.08 |
| Group 10: Female, age 50-59 | 0.12\* | 0.09 |
| Group 11: Female, age 60-69 | 0.09\* | 0.07 |
| Group 12: Female, age > 69 | 0.04\* | 0.10 |

\* Significant difference between sample and voting age population at p<.05 using a two-tailed t-test.

# **Appendix A.6: VAA administration timing**

This appendix reports how long it took the respondents to complete all three parts of the survey (the pre-VAA survey, the VAA, and the post-VAA survey) in minutes. Table A.6.1 shows that the vast majority of respondents completed the survey fairly quickly. 50 percent of the respondents in the final sample had completed the post-VAA survey within 13 minutes of starting the pre-VAA survey. A few respondents, however, took a very long time to complete the survey. In order to show that the results do not depend on these respondents we replicate the main results below using only respondents who completed the survey within 30 minutes of beginning the first part (88 percent of the respondents). The results do not change.

**Table A.6.1: Time to complete survey in minutes**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Time spent to complete all parts of the survey in minutes** | | | | | | | | |
| **5** | **7** | **8** | **10** | **13** | **19** | **35** | **199** | **16151** |
| Percent respondents completed | 0% | 5% | 10% | 25% | 50% | 75% | 90% | 95% | 100% |

**Figure A.6.1. Replication of Figure 1 with respondents spending 30 minutes or less on the survey**



Note: The sample only includes respondents who completed all parts of the survey within 30 minutes. N/n = 17,134/1,318.

**Figure A.6.2: Replication of Figure 2 with respondents spending 30 minutes or less on the survey**

****

Note: The sample only includes respondents who completed all parts of the survey within 30 minutes. N/n = 17,134/1,318.

**Figure A.6.3: Replication of Figure 3 with respondents spending 30 minutes or less on the survey**

****

Note: The sample only includes respondents who completed all parts of the survey within 30 minutes. n = 225.

# **Appendix A.7: The demographic balance of the independent variables**

This appendix first reports whether there is demographic balance between the advice categories on a set of covariates that are derived from the survey and currently used to generate the survey weights (in addition to the party identification and political interest variables as well as a variable measuring the log of the time in seconds spent on the survey). This is done by regressing dummy variables that indicate whether the respondent received incongruent, partially congruent, or highly congruent advice separately on each covariate. There are signs of imbalance for many variables, which makes sense considering that the types of citizens who receive different types of advice are likely going to be different from each other on average.

Next, we replicate the results from the main paper controlling for the variables that show sign of imbalance (i.e. each covariate with a statistically significant coefficient in at least one of the three regression models) instead of using them to generate the weights. Each control variable is interacted with each advice category in the same way that the existing control variables are in equation 1 and 2 in the main paper. We also control for the timing of the survey (measured in number of days to the election at the time the respondent took the survey), and how popular the party was according to pollsters on the day the respondent took the survey. Each of these variables is also interacted with the VAA advice variables. This allows us to account for the possibility that the effects of receiving VAA advice are conditional on the closeness of the election or the party’s popularity at the time of the survey. The results are robust to this as illustrated below.

We note that *Education* is measured on a six-point ordinal scale where a higher value means a higher level of education, *ideology* is measured as four dummy variables indicating whether the respondent was leftist, centrist, rightist, or did not know, and *political knowledge* is measured as three dummy variables indicating whether the respondent gave the correct answer to a question testing their general knowledge of Danish politics.

**Table A.7.1: Balance test for party-choice analysis**

|  |  |  |  |
| --- | --- | --- | --- |
| **Independent variable** | **Party-incongruent** | **Partially party-congruent** | **Highly party-congruent** |
| Female | 0.05\*  (0.03) | -0.03  (0.02) | -0.03  (0.02) |
| Age | -0.004\*\*\*  (0.001) | 0.002\*  (0.001) | 0.002\*\*  (0.001) |
| Education | -0.02\*  (0.01) | 0.01  (0.01) | 0.01  (0.01) |
| Ln(survey duration) | 0.003  (0.01) | -0.0005  (0.009) | -0.002  (0.009) |
| Ideology1 (left) | -0.09\*\*\*  (0.03) | 0.04†  (0.02) | 0.05\*  (0.02) |
| Ideology2 (center) | -0.05\*  (0.03) | 0.05\*  (0.02) | 0.01  (0.02) |
| Ideology3 (right) | 0.05  (0.04) | -0.08\*  (0.03) | 0.04  (0.03) |
| Ideology4 (don’t know) | 0.35\*\*\*  (0.04) | -0.14\*\*\*  (0.04) | -0.21\*\*\*  (0.04) |
| Knowledge1 | -0.17\*\*\*  (0.03) | 0.04†  (0.01) | 0.12\*\*\*  (0.023) |
| Knowledge2 | -0.21\*\*\*  (0.04) | 0.08\*  (0.04) | 0.13\*\*  (0.04) |
| Knowledge3 | -0.09\*\*  (0.03) | 0.05†  (0.03) | 0.04  (0.03) |
| Political interest | -0.10\*\*\*  (0.01) | 0.02  (0.01) | 0.08\*\*\*  (0.01) |
| Party ID | -0.16\*\*\*  (0.16) | 0.05\*\*\*  (0.01) | 0.11\*\*\*  (0.01) |

\*\*\*p<.001, \*\*p<0.01, \*p<0.05, †p<.1, two-tailed test with an OLS estimator. Std. errors are in parentheses.

**Table A.7.2: Balance test for candidate-choice analysis**

|  |  |  |  |
| --- | --- | --- | --- |
| **Independent variable** | **Candidate-incongruent** | **Partially candidate-congruent** | **Highly candidate-congruent** |
| Female | 0.01  (0.06) | -0.01  (0.05) | 0.004  (0.04) |
| Age | 0.0001  (0.002) | 0.001  (0.002) | -0.001  (0.001) |
| Education | -0.01  (0.02) | 0.001  (0.02) | 0.01  (0.01) |
| Ln(survey duration) | -0.05†  (0.03) | 0.04\*  (0.02) | 0.005  (0.02) |
| Ideology1 (left) | -0.004  (0.06) | 0.07  (0.05) | -0.07  (0.04) |
| Ideology2 (center) | 0.05  (0.06) | -0.07  (0.05) | 0.02  (0.04) |
| Ideology3 (right) | -0.12  (0.08) | 0.03  (0.07) | 0.09  (0.06) |
| Ideology4 (don’t know) | 0.14  (0.19) | -0.18  (0.16) | 0.04  (0.14) |
| Knowledge1 | 0.01  (0.06) | 0.02  (0.05) | -0.03  (0.05) |
| Knowledge2 | -0.19  (0.17) | 0.18  (0.14) | 0.002  (0.12) |
| Knowledge3 | 0.06  (0.06) | -0.02  (0.05) | -0.04  (0.05) |
| Party ID | 0.02  (0.03) | 0.003  (0.03) | -0.02  (0.03) |
| Political interest | -0.01  (0.04) | 0.02  (0.03) | -0.01  (0.03) |

\*\*\*p<.001, \*\*p<0.01, \*p<0.05, †p<.1, two-tailed test with an OLS estimator. Std. errors are in parentheses.

**Figure A.7.1: Replication of Figure 1 controlling for imbalanced variables.**



Note: Variables showing signs of imbalance are used as control variables. N/n = 19,448/1,496.

**Figure A.7.2: Replication of Figure 2 controlling for imbalanced variables.**



Note: Variables showing signs of imbalance are used as control variables. N/n = 19,448/1,496.

**Figure A.7.3: Replication of Figure 3 controlling for imbalanced variables.**



Note: Variables showing signs of imbalance are used as control variables. n = 252.

# **Appendix A.8: Extended regression equations**

Extended regression model 1 with party identification and political interest

= + + +

+ + + + +

+ +

+ +

+ +

+ +

+ +

+ +

+

+

+

+

+

+

Extended regression model 2 with party identification and political interest

= + +

]+

+

+

+

+

# **Appendix A.9: Changes in vote choice certainty**

This appendix shows the average change in vote choice certainty among respondents who chose the same party again after receiving highly congruent advice. It does so using the answers from two survey questions asking the respondents how certain they were in their party choice before and after taking the VAA. The response scale ranged from 0 “not at all certain” to 4 “completely certain”, and the dependent variable simply subtracts the level of certainty each respondent had in the party choice before using the VAA from the level of certainty the respondent reported after using the VAA. This means that higher value on the dependent variable indicates a higher degree of certainty in party vote choice after receiving the highly congruent VAA advice. We regress this variable on the control variables from the party choice analyses and on political interest and party identification (in the extended models). The data are subset to include only respondents who chose the same party again after receiving highly party-congruent advice (Figure A.9.1) or highly candidate-congruent advice (Figure A.9.2). The results indicate that VAA users who receive highly congruent advice become more certain in their expected vote choice.

**Figure A.9.1: Change in party choice certainty after receiving highly party-congruent advice**



Note: Changes in party choice certainty among VAA users receiving highly party-congruent advice. Horizontal lines represent 90% and 95% confidence intervals. Point predictions are the estimates of change in party certainty when the control variables are held at their mean values. A higher value indicates more certainty in the post-VAA survey than in the pre-VAA survey. n = 394.

**Figure A.9.2: Changes in candidate choice certainty when receiving highly candidate-congruent advice**

****

Note: Changes in party choice certainty among VAA users receiving highly candidate-congruent advice. Horizontal lines represent 90% and 95% confidence intervals. Point predictions are the estimates of change in candidate certainty when the control variable is held at its mean value. A higher value indicates more certainty in the post-VAA survey than in the pre-VAA survey. n = 73

# **Appendix A.10: Regression coefficients**

**Table A.10.1: Parameter estimates for Figure 1 and Figure 2.**

|  |  |  |
| --- | --- | --- |
| **Independent variable** | **A.10.1.1**  **(Basic model)** | **A.10.1.2 (Extended model)** |
| Pre-VAA party choice | 0.95\*\*\*  (0.01) | 0.95\*\*\*  (0.02) |
| Weak advice | -0.03\*\*  (0.01) | -0.03  (0.03) |
| No advice | -0.04\*\*\*  (0.01) | -0.05\*  (0.02) |
| Undecided | 0.09\*  (0.04) | 0.09\*  (0.04) |
| Non-party | 0.13†  (0.08) | 0.12†  (0.07) |
| Abstain | -0.01  (0.04) | -0.02  (0.04) |
| Political interest | - | -0.01  (0.01) |
| Party id | - | 0.19  (0.12) |
| Pre-VAA party choice\*weak advice | -0.05\*  (0.02) | -0.16\*\*  (0.05) |
| Pre-VAA party choice\*no advice | -0.12\*\*\*  (0.02) | -0.37\*\*\*  (0.06) |
| Undecided\*weak advice | -0.06  (0.04) | -0.06  (0.04) |
| Undecided\*no advice | -0.08\*  (0.04) | -0.09  (0.04) |
| Non-party\*weak advice | -0.12  (0.08) | -0.12  (0.07) |
| Non-party\*no advice | -0.13†  (0.08) | -0.12†  (0.07) |
| Abstain\*weak advice | 0.02  (0.04) | 0.03  (0.05) |
| Abstain\*no advice | 0.01  (0.04) | 0.02  (0.04) |
| Political interest\*weak advice | - | 0.005  (0.01) |
| Political interest\*no advice | - | 0.01  (0.01) |
| Party ID\*weak advice | - | 0.01  (0.17) |
| Party ID\*no advice | - | 0.09  (0.14) |
| Political interest\*Pre-VAA party choice | - | -0.001  (0.01) |
| Political interest\*Pre-VAA party choice\*Weak advice | - | 0.04†  (0.02) |
| Political interest\*Pre-VAA party choice\*No advice | - | 0.11  (0.03) |
| Party ID\*Pre-VAA party choice | - | -0.19  (0.12) |
| Table A.10.1 continued | | |
| Party ID\*Pre-VAA party choice\*Weak advice | - | 0.05  (0.17) |
| Party ID\*Pre-VAA party choice\*No advice | - | 0.01  (0.15) |
| Constant | 0.04\*\*\*  (0.01) | 0.05\*  (0.02) |
| R2 | 0.78 | 0.79 |
| Observations | 19,448 | 19,396 |

\*\*\*p<.001, \*\*p<0.01, \*p<0.05, †p<.1, two-tailed test with an OLS estimator. Std. errors are in parentheses. Party fixed effects included but not shown.

**Table A.10.2: Parameter estimates for Figure 3**

|  |  |  |
| --- | --- | --- |
| **Independent variable** | **Model A.10.2.1**  **(Basic model)** | **Model A.10.2.2**  **(Extended model)** |
| Partially candidate-congruent | -0.03  (0.05) | -0.28†  (0.17) |
| Candidate-incongruent | -0.13\*\*  (0.05) | -0.59\*\*\*  (0.16) |
| Political interest | - | -0.04  (0.04) |
| Party ID | - | -0.03  (0.03) |
| Political interest\*Partially candidate-congruent | - | 0.09  (0.07) |
| Political interest\*Candidate-incongruent | - | 0.19\*\*  (0.07) |
| Party ID\*Partially candidate-congruent | - | 0.07  (0.06) |
| Party ID\*Candidate-incongruent | - | 0.08  (0.05) |
| Constant | 0.97\*\*\*  (0.03) | 1.09  (0.09) |
| R2 | 0.02 | 0.15 |
| Observations | 252 | 252 |

\*\*\*p<.001, \*\*p<0.01, \*p<0.05, †p<.1, two-tailed test with an OLS estimator. Std. errors are in parentheses.

# **Appendix A.11: VAA effects on the 2019 Danish electorate.**

This appendix illustrates the effects of VAAs for the electorate as whole – which we summarize in the main paper – and reports how we calculated them. They are calculated by multiplying the effect estimates from Figure 1 with the probability that a citizen (1) uses a VAA, and (2) receives the type of advice that produced the effect estimate.

(1) The probability that a citizens uses a VAA is calculated using data from the 2019 Danish election survey (Hansen and Stubager 2019). This survey asked a representative sample of Danish citizens whether they employed a VAA during the 2019 election campaign. They also used the same political interest question as us (with the same response categories), so we can calculate this probability for each political interest group.

(2) The probability that a user receives a particular type of advice is calculated using the survey data from the main paper. For example, the probability that a user with a “little” interest in politics receives incongruent advice is .29, so the estimate for this group in figure 1 is multiplied with .29 (in addition to being multiplied with the probability that this type of citizen uses a VAA).

We further note that it is not possible to replicate Figure 2 because the Danish Election Survey is a post-election survey, so we do not know the propensity to take a VAA for undecided voters.

**Figure A.11.1: VAAs and the 2019 Danish electorate.**



Note: the 90% and 95% confidence intervals are generated using Monte Carlo simulations, which are multiplied with the probability a type of citizens uses a VAA and receives a particular type of advice. N/n = 19,448/1,496.

**Reference**

Hansen, Kasper Møller, and Rune Stubager. 2019. “Den Danske Valgundersøgelse 2019” https://www.sa.dk/da/forskning-rigsarkivet/benyt-surveydata/valgundersoegelsen/.

# **Appendix A.12: Omitting respondents receiving party-congruent advice**

This figure replicates the results from Figure 2 in the main paper after having dropped all respondents who received partially party-congruent or highly party-congruent advice (and thus had an incentive to maintain their previous party choice). This means that the Hypothesis 5 comparison now is for users who received party-incongruent advice versus users who were undecided prior to taking the VAA. The results still indicate that undecided users are more likely to switch to a party they received strong advice for, and the relative differences are statistically significant at the .05 level (despite the overlapping confidence intervals).

**Figure A.12.1: Figure 2 with respondents receiving party-congruent advice omitted.**



Note: Respondents who received partially party-congruent or highly party-congruent advice are omitted from the analysis. N/n = 8,489/653.

# **Appendix A.13: Are VAA effects conditional on party spread?**

This appendix analyzes whether the effects of VAA advice are conditional on the spread of the candidates within parties. We do this in two stages. First, we calculate a party’s spread as the average candidate distance to the party’s position across all VAA issues. The party’s position on an issue is measured as the party’s modal candidate response to that issue. Second, we include the spread variable in the regression models from the main paper and interact it with the VAA advice variables. For this analysis we use random effects (random intercepts) for parties instead of fixed effects because the spread variable does not vary within parties. The table below reports the spread variable coefficients we obtain when we use this spread variable in the basic models (the random effects extended model would not converge) and interact it with the VAA advice variables. These results show no evidence that the effects of VAA advice depend on party spread (as indicated by the statistically insignificant interaction terms).

**Table A.13.1: The effect of VAA advice conditional on party spread**

|  |  |  |
| --- | --- | --- |
| **Independent variable** | **Model 14.1.1**  **(Basic party choice model)** | **Model 14.1.1**  **(Basic candidate choice model)** |
| Party spread | -0.07  (0.07) | 0.06  (0.16) |
| Party spread\*Weak advice | 0.03  (0.05) |  |
| Party spread\*No advice | 0.05  (0.07) |  |
| Party spread\*Partially candidate-congruent | - | -1.17  (0.76) |
| Party spread\*Candidate-incongruent | - | -0.26  (0.36) |

Note: the other independent variables from the two basic models are included as well, but not shown in order to preserve space.

# **Appendix A.14: Specific choices among candidate switchers**

This figure illustrates the specific post-VAA candidate choices the VAA users who received party-congruent/candidate-incongruent advice made after maintaining their pre-VAA party choice (among the subset of users who changed their candidate choice). Figure A.14.1 shows that most of these users said that they would still vote personally, but they were now unsure who they would vote personally for. The second most common switch was for users to say that they no longer expected to give a personal vote, but just expected to vote for the party’s list as a whole. The third most common switch was to a candidate who was recommended in the VAA. The fourth most common switch was to become undecided about whether to vote personally or for the party list as a whole. The least common switch was to a candidate the user was not recommended. Only one user in the entire sample made this type of switch.

**Figure A.14.1: The specific choices among candidate switchers**



Note: The analysis only includes respondents who received party congruent/candidate incongruent advice and maintained the party choice, but switched the candidate choice. The estimates are obtained with five separate constant-only linear regression models where each option is included as a dependent dummy variable. Horizontal lines represent 95% and 90% confidence intervals. n = 23.

# **Appendix A.15: Incongruent advice as comparison baseline**

**Figure A.15.1: Replication of Figure 1 using incongruent advice as baseline**

****

Note: This figure uses party-incongruent advice as the baseline for the estimated effect sizes.

N/n = 19,448/1,496

**Figure A.15.2: Replication of Figure 3 using incongruent advice as baseline**



Note: This figure uses candidate-incongruent advice as the baseline for the estimated effect sizes. n = 252.

1. Users were also informed which candidate they were least congruent with in the district (now shown). It is very rare that the least congruent candidate was from the party the user expected to vote for (7 total events), so we cannot test whether this type of negative advice causes vote switching in a meaningful way. That being said, 3 of the 7 respondents who received negative advice changed their party choice. [↑](#footnote-ref-1)
2. We use data from the polling firm Voxmeter because they had daily data for the full time period. [↑](#footnote-ref-2)