"We Don't Know" Means "They're Not Sure"

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Abstract

The most familiar approach to handling respondent uncertainty about survey questions, the "don't know" (DK) response, has an inconvenient feature: it records no direct information about respondents' confidence in their answers. This article shows that DK responses contain more information than meets the eye. Using 161 survey questions from eleven surveys conducted between 1993 and 2019, the analysis demonstrates that the percentage of respondents saying DK can explain about half the variation in average confidence among respondents who provided an answer (i.e., those who did *not* say DK). This "we don't know" means "they're not sure" heuristic is especially reliable for relative comparisons between similar questions. For example, in a battery of favorability questions featuring two recent presidents and ten contenders for the 2020 Democratic presidential nomination, the percentage DK explains more than 90 percent of the variation in average confidence among those who offered an opinion. To provide a deeper intuition, the article draws upon a threshold model of DK responding, which is consistent with a range of existing research on the properties of DK responses.

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Survey researchers know that not all survey responses are equally meaningful. Though responses sometimes reflect an attitude or belief that the respondent had formed prior to the survey, many responses are constructed on the spot (Zaller 1992; Tourangeau et al. 2000). Tools exist for measuring where responses fall along the attitude/non-attitude or belief/guess spectrum, but limited budgets usually prevent researchers from collecting the data needed to assess response stability (Converse 1964) or confidence (Kuklinski et al. 2000; Pasek, Sood and Krosnick 2015). Inconveniently, the most common approach to measuring respondent uncertainty—recording "don't know" (DK), "no opinion," or "not sure" responses—does not provide direct information as to the confidence of respondents who offered an opinion.

This article introduces a tool for making the most of the data we have: the "we don't know" means "they're not sure" heuristic. Even when people who offer an opinion are not given the opportunity to express uncertainty about their responses, the percentage of respondents who say DK offers a clue as to what they would have said. A high rate of DK responses indicates low confidence not just among those who said DK, but also among those who express an opinion.

The results demonstrate this relationship in two sets of survey evidence: 73 questions with confidence follow-ups asked in nine surveys from the 1993-2000 American National Election Studies (ANES) and 88 questions in two original surveys conducted in 2019. Across a wide range of questions, the percentage of respondents saying DK can predict about 50 percent of the variation in average confidence among those who answered the question. The two studies used different survey modes (in-person and telephone versus online) and covered a wide range of political topics.

An approximation that explains 50 percent of the variance of interest is good enough to be useful but leaves room for improvement. A key source of inaccuracy in the heuristic is question-to-question differences in the shape of the confidence distribution. Some types of questions tend to produce "know it or don't" distributions that are fairly bimodal, while others produce flatter distributions that are indicative of a higher incidence of guessing.

When properly channelled, this liability becomes an asset. Because similar questions tend to produce similarly shaped confidence distributions, the percentage DK is a substantially better predictor of differences in average confidence between questions of the same type. For example, in a 12-question battery on favorability toward former President Barack Obama, President Donald Trump, and ten contenders for the 2020 Democratic presidential nomination, the percentage of DK responses predicts more than 90 percent of the variation in average confidence among respondents who expressed an opinion.

In showing that respondents' average confidence in their answers varies widely across survey questions, even when a DK response option has been provided, this article joins a great deal of other research showing that providing a DK option is not sufficient to identify the sort of fully crystallized attitude or belief that Converse (1964) idealized. Yet given limited survey space, the cost of panel data, and the impossibility of adding confidence measures to surveys conducted in the past, most surveys do not provide any direct information as to which responses are closer to pre-existing beliefs and which are more akin to top-of-the-head guesses. By introducing the "we don't know" means "they're not sure" heuristic, this article unlocks a widely-available source of information for researchers and journalists who wish not to mislead their audiences as to the nature of survey respondents' measured opinions.

Intuition

This section explains why a high rate of DK responses would predict lower confidence among those who answered the question. The explanation rests on two pillars: a hypothesized individual-level mechanism, that the decision to say DK can be thought of as a function of the respondent's confidence level, and a basic feature of mass media societies, that people who live in them hear about many of the same events, issues, and people.

The first pillar is the notion that some *threshold* level of confidence determines whether respondents say DK or offer a substantive response (i.e., state or select an answer rather than say DK). Think of respondents as engaging in an inferential process in which they

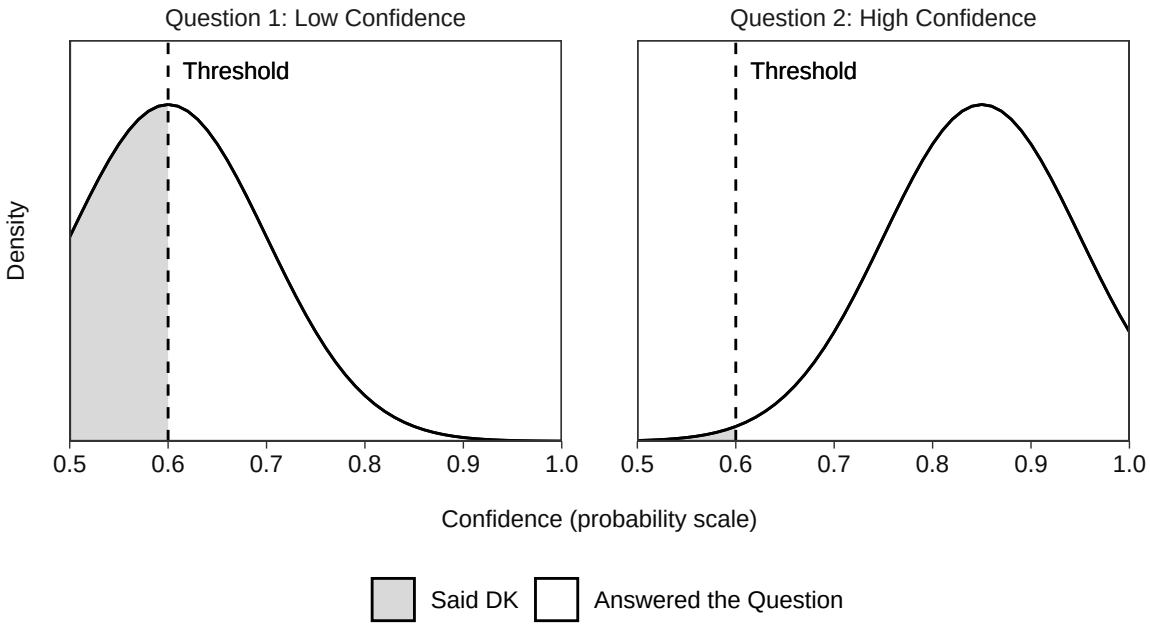
call to mind relevant information and attempt to determine which response option comes closest to their views (Zaller 1992; Tourangeau et al. 2000). If the respondent can choose a response with sufficient confidence, they do so; if not, they say DK. In this sense, the subject's response *and* the decision to say DK can be viewed as functions of a latent belief the respondent forms after reading the question. If the respondent is sufficiently confident in one answer—for example, if he or she assigns at least a 60 percent probability to one of two response options—then the respondent states that answer. But if the respondent's confidence level is below that threshold, he or she says DK. Formally, the model posits that some personal confidence threshold, τ_i, determines whether a respondent will answer a question. Respondent i answers question j if their confidence level, c_{ij}, exceeds τ_i; otherwise, i says DK.

The second pillar is that mass media allow people to hear about about a similar set of public figures, events, and issues. The average American has heard more about Trump than about former Alaska Senator and fringe presidential candidate Mike Gravel; more about abortion than regulations on derivatives trading; and more about trends in the value of the stock market than the percentage of Americans who are immigrants.[1] When asked their opinion of the president, most who respond will be fairly sure of where they stand, but because political engagement varies subsantially, a few won't know. By contrast, when asked the same about Gravel, many will say DK and most who offer an opinion will be working from just a couple of details.

These two notions—that people living in the same society hear about a lot of the same things, and that a latent confidence threshold is a reasonable model of the decision to say DK—jointly provide an intuition as to why DK responses signal that other people are guessing. When average confidence is very high, almost everyone will answer the question. Few peoples' confidence will fall below the threshold for saying DK, but given well-known (and more commonly emphasized) differences in media consumption (Prior 2005), we should

[1]Study 2 includes questions on each topic in this paragraph.

Figure 1: Illustration of why "we don't know" means "they're not sure."



not be surprised by scattered DKs about even those things that "everyone" knows. On the flip side, when average confidence is very low, many more peoples' confidence will fall below the threshold, resulting in more DK responses.

To make this more concrete, imagine two questions, each with two response options. For ease of illustration,[2] suppose that everyone has a threshold of 60 percent, answering if at least 60 percent confident and saying DK otherwise. In Figure 1, the left panel plots the confidence distribution for a question on a little-known topic. It elicits a lot of DK responses, represented by the large shaded area to the left of the threshold. Despite the low level of public knowledge, plenty of people remain willing to answer, and a few know a lot about the topic. The right panel represents a question that a lot of people know things about. Despite the high level of public knowledge, a few people do not know enough to form an opinion.

If this stylization approximates the real world, we should expect the percentage of DK responses to be a predictor of average confidence among people who do answer. More precisely, we should expect the probability mass to the left of the DK threshold to be

[2]In the Supplementary Materials, Section A.7 shows that the expectation of a "we don't know" means "they're not sure" relationship does not depend on the assumption of a homogenous threshold.

predictive of the conditional mean to the right of the threshold.

Relationship to Existing Research

The threshold model is consistent with existing conceptions of DK responses. Supporters of encouraging DK responses want to make it clear to respondents that they should not answer unless they really know what they think about the question (Converse 1974; Delli Carpini and Keeter 1993). In other words, they want to raise the threshold high enough, maybe to 80 or 90 percent confidence, that all responses can reasonably be interpreted as true attitudes. On the other side, critics of allowing or encouraging DK responses note that some people guess more readily than others, distorting the observed distribution of knowledge and opinion (Mondak 2000; Mondak and Anderson 2004; Laurison 2015). Schuman and Presser (1981) suggest that a threshold model may explain their findings as to how DK propensity changes in response to an opinion filter, positing that the decision to say DK may be based "in part on the respondent's position on the DK-propensity spectrum and in part on the height of the barrier created by question form" (145-46).

This article's use of confidence to measure the "DK-propensity spectrum" follows treatments of the survey response by Zaller (1992), Tourangeau et al. (2000), and others: respondents call to mind relevant information and attempt to choose the response that most closely matches what they know or believe. In this spirit, define the respondent's confidence in their choice as their degree of certainty that relative to the other option(s), their chosen response is more likely to be true or preferable. On a knowledge question, one is confident to the extent one's existing knowledge supports the choice. One who knows the specific fact might be completely confident in their answer, while who is conflicted or knows nothing about the question might be completely uncertain. On an attitude question, one is confident to the extent that one statement clearly aligns with one's views. Ambivalence or ignorance could result in a lack of confidence.

In existing research, the strongest support for the prediction of a "we don't know"

means "they're not sure" relationship comes from Dodd and Svalastoga (1952), who found a correlation of -0.91 between the percentage of DK responses and response stability among seven similarly-worded items. Smith (1985) also includes the percentage DK in a list of predictors of low response stability.[3] In light of the sometimes-strong association between item-level confidence measures and response stability (Graham 2021), one might also expect the rate of DK responses to also predict lower confidence.

A subtler link emerges from Luskin and Bullock's (2011) finding that encouraging DK responses hides partial knowledge, but discouraging them does not. Discouraging DK, akin to lowering the threshold, should only induce a very low-confidence group of respondents to answer. Encouraging DK, akin to raising the threshold, should induce respondents with relatively higher (if still modest) levels of confidence to say DK. In light of the strong relationship between confidence and accuracy on political knowledge questions (Graham 2020), this is precisely what the threshold model predicts. The appendix elaborates on this connection.

Empirical Strategy

The analysis combines data visualization and summary statistics. Throughout, the independent variable and x-axis is the percentage of DK responses, while the dependent variable and y-axis are average confidence among respondents who offered a substantive response.[4] Though these terms have causal undertones, the relationship is descriptive. At stake is the percentage DK's ability to *predict* question-to-question variation in average confidence among those who do not say DK.

The analysis makes use of three summary statistics. The first two are the slope and intercept from the bivariate regression $\overline{C_q} = \alpha + \beta\overline{DK}_q + \epsilon_q$, where q indexes questions, $\overline{C}_q$ is average confidence among those who answered the question, and $\overline{DK}_q$ is the percentage

[3]Smith attributes this to Philip Converse, Herbert Asher, and David Dreyer, but the finding is not mentioned in any of the cited work by these authors. I suspect that this was a rule of thumb passed between colleagues.

[4]More specifically, if C is confidence and DK is an indicator variable for saying DK, the x axis is $E[DK]$ and the y-axis is $E[C|DK = 0]$.

saying DK. The sign of β is a test of whether a relationship exists at all: if the estimate can be statistically distinguished from zero, it is reasonable to believe a higher percentage DK predicts lower confidence among respondents who answer. The magnitude of β measures the steepness of the relationship. It is scaled to be equal to the predicted difference in confidence between a question with 0 percent DK and 100 percent DK. α estimates average confidence on a question with 0 percent DK. The third statistic is R^2 from the same OLS regression. R^2 quantifies how much of the variation in average confidence can be explained by the percentage of DK responses. The more variation is explained, the more trustworthy the heuristic.

Because these statistics use more than one observation per survey respondent, statistical uncertainty is estimated using the block bootstrap (for other applications, see Bertrand et al. 2004; Hainmueller et al. 2015). The appendix discusses this procedure in more detail. A key point is that uncertainty is estimated based the sampling procedure, not from the selection of questions. The 95 percent confidence intervals mean that in 95 percent of samples, the confidence interval should contain the true value for the fixed set of questions.

The intuition above — that the "we don't know" means "they're not sure" relationship emerges as a function of variation in individuals' confidence around their personal thresholds, as opposed to person-level tendencies to be confident or say DK — has two observable implications that will be tested below. First, the relationship should exist within subgroups of respondents that might be expected to differ along these lines (e.g., education, interest in politics). Second, the relationship should be robust to using only within-person variation in confidence, which fully accounts for any association between confidence, personal characteristics, and DK responding.

Study 1: 1993-2000 ANES

The first test of whether "we don't know" means "they're not sure" uses data from nine ANES surveys conducted between 1993 and 2000. Across these surveys, 73 questions featured

a follow-up question about the respondent's confidence level. Most asked respondents to place themselves or politicians on ideological or policy scales. The certainty scales were some version of "How certain are you of where you stand on this?" or "How certain are you of Bill Clinton's position on this?" The three response options, very certain, pretty certain, and not very certain, are respectively scored as 1, 0.5, and 0. A total of 6,593 respondents answered at least one of these questions in person or over the phone. During the years in question, ANES response rates ranged from 59.8 to 72.1 percent.[5]

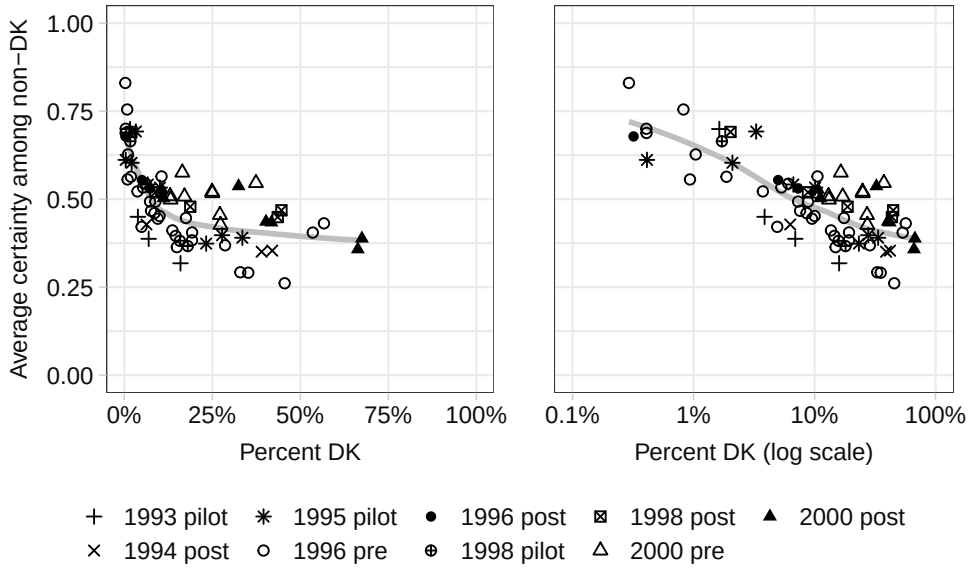
To examine the relationship graphically, Figure 2 plots the percentage of respondents who said DK (x-axis) against average confidence among those who chose a substantive response (y-axis). The left panel's x-axis is in natural units, while the right panel's x-axis is a logged scale. On the Y-axis, a value of 1 would indicate that everyone chose the highest confidence level; 0, that everyone chose the lowest confidence level; and 0.5, that the average person chose the middle level.

The plot shows that the percentage of respondents choosing DK is a predictor of the confidence levels of other respondents. The relationship is steep at very low levels of DK, then becomes increasingly gradual. At very low levels of DK—around 1 percent—the average respondent chooses either the highest confidence level or the middle confidence level. Above 10 percent DK or so, the average person chooses the middle level or below. This suggests that in interviewer-administered surveys, the first several percentage points worth of DK responses predict a lot of variation in confidence among those who offered an opinion.

The right panel's logged x-axis, which stretches out the small values and condenses the large values, suggests that the relationship closer to linear in the logged percentage of DK responses. To test this more rigorously, Supplemental Table A.1 uses OLS to estimate the extent to which average confidence is predicted by the percentage of DK responses and the logged percentage of DK responses. Using both functional forms, there exists a negative, statistically significant relationship between the percentage DK and average confidence. The

[5]Source: ANES, "Data Quality," accessed October 1, 2019.

Figure 2: Percent DK versus average certainty among other respondents, 1993-2000 ANES.



Note: For each ANES question, this figure plots the percentage of respondents who said DK (X-axis) against the average confidence level among people who answered the question (Y-axis). The left panel uses the raw percentage DK while the right panel uses a log scale; the data in the two panels are identical. The appendix lists each question.

percentage DK explains 38 percent of the variation in average confidence, and the logged percentage explains about 65 percent (difference: 27; 95% CI: 24, 31).

To check the threshold model's implication that the relationship is driven by within-respondent variation in confidence, the appendix examines both observable implications noted above: that the relationship should be similar within groups that might be expected to vary in their political engagement, and that it should obtain even when only within-person variation in confidence is used. The subgroup analysis finds similar relationships within different levels of political interest and frequency of news consumption. The within-person analysis produces Figure 2 and the accompanying regression using only within-respondent variation in confidence. The results are quite similar: R^2 increases by 4 percentage points and the slope is hardly perturbed.

The subgroup analysis also supports the other key pillar of the intuition above: widely-shared points of reference in mass media societies. Though confidence is higher and DK rates lower among more-politically interested respondents, these same variables are highly

correlated across groups at the question level. For the percentage of respondents saying DK, the correlation is 0.97 between the not much interested and the somewhat interested, 0.98 between the somewhat interested and very much interested, and 0.92 between the not much interested and very much interested. For average certainty among respondents who offered an opinion, these correlations are 0.92, 0.95, and 0.82. Stronger relationships emerge across categories of news consumpion. Cross-person differences in political engagement are compatible with the existence of widely shared points of reference.

Study 2: Original Surveys

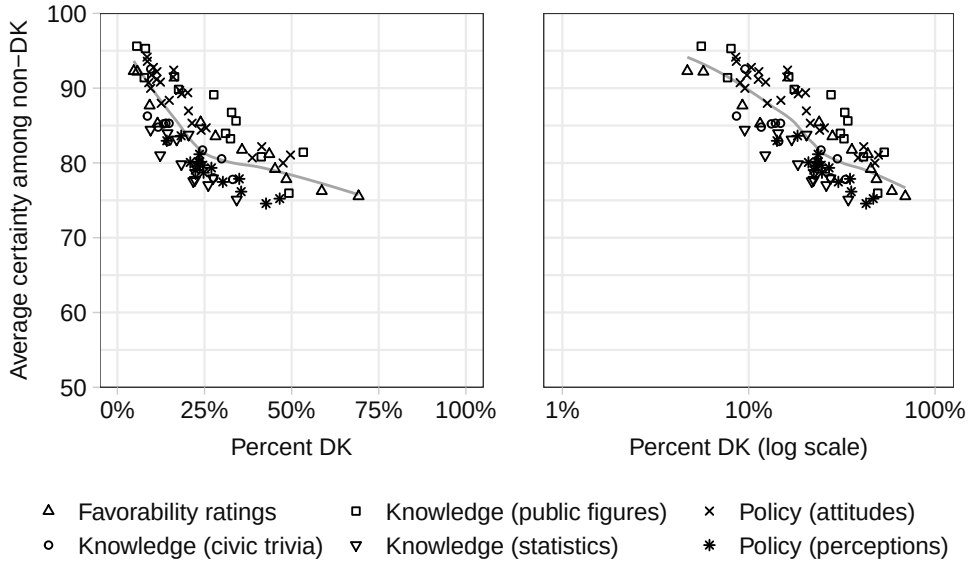
To examine how the "we don't know" means "they're not sure" relationship would generalize, Study 2 paired a DK option and a confidence scale for a total of 88 total questions. Respondents were recruited online by Lucid, which quota samples to Census demographic margins. The first survey, conducted in July 18-August 12, 2019, included 3,662 respondents and had a cooperation rate of 97.5 percent. Respondents were randomly assigned to one of two batteries about politically-relevant facts (36 total questions), or to a third battery that was identical to one of the other two, but without a DK option.[6] The second survey, conducted August 8-October 26, 2019, included 6,670 respondents and had a cooperation rate of 97.4 percent. Respondents were assigned to one of four possible batteries of questions (52 total questions). Respondents to the first survey were excluded from recruitment for the second.

All questions in Study 2 had two response options and an explicit "don't know" option. After each question, respondents who chose an answer were asked, "how sure are you about that?" and presented with a 6-point scale corresponding to a 50, 60, 70, 80, 90, and 100 percent confidence.[7] Respondents who said DK were asked, "what is your best guess?" and

[6]The survey also included two additional arms that were designed to investigate separate research questions.

[7]This consistent with accounts that conceptualize true attitudes and beliefs as latent probability distributions over the response options (Converse 1964; Achen 1975; Erikson 1979; Ansolabehere et al. 2008; Bullock et al. 2015; Bullock and Lenz 2019; for further discussion, see Graham 2021, chapter 2).

Figure 3: Percent DK versus average certainty among other respondents, Study 2.



Note: For each question in Study 2, this figure plots the percentage of respondents who said DK (X-axis) against the average confidence level among people who answered the question (Y-axis). To summarize the relationship, each figure features a loess line with block bootstrapped 95 percent confidence intervals; see the online appendix for details.

presented again with the two substantive response options, with no option to say DK and no confidence follow-up. The question topics were:

- *Favorability ratings* of President Obama, President Trump, and ten candidates for the 2020 Democratic presidential nomination (12 questions).
- *Knowledge* questions covering public figures (13 questions), civic trivia (11 questions), and statistics about social and economic conditions (12 questions).
- *Policy attitude* questions consisting of the abortion and immigration scales from the Cooperative Congressional Election Survey, along with some original questions in the same format designed to vary in the percentage of DK responses (24 questions).
- *Policy perception* questions on the content of two widely-discussed policy proposals, Medicare for All and Green New Deal proposals. These were modelled after contemporaneous polling by the Kaiser Family Foundation (16 questions).

Though these questions were not a random sample from some larger population of questions, the variety of topics provides some assurance that the findings are broadly applicable.

Figure 3 plots the relationship pooling across all questions. Relative to Study 1, the relationship appears tighter and closer to linear in the percentage DK. An OLS regression

suggests that a question with no DK responses would correspond to an average confidence level of 91.0, whereas a question with only DK responses would correspond to an average confidence level of 61.9 (slope: 29.1; 95% CI: 27.7, 30.6; see Figure 6 below). The percentage DK explains 50.0 percent of the variation in average confidence, while the logged percentage explains 59.2 percent (difference: 9.2; 95% CI: 7.5, 10.8). The appendix shows that these relationships are quite similar across age groups, education levels, gender, income, partisanship, race, and ethnicity, as well as when only within-respondent variation in confidence is used.

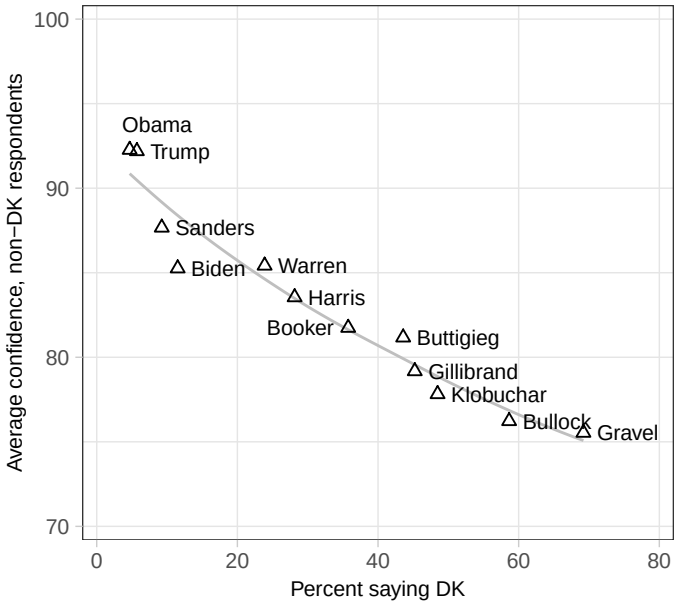
Looking within question categories makes the implications more concrete. A particularly clear relationship emerged on the favorability questions, which concerned the two most recent presidents (Obama and Trump) and ten contenders to be the Democratic nominee for president in 2020. Almost everyone offers an opinion about the president, and most who do are fairly sure of their opinion (Figure 4, top left). Moving down the smoothed line, one encounters candidates in rough proportion to the public attention they had received by summer 2019. The next-lowest on DK, and next-highest on confidence, is Sen. Bernie Sanders, who gained wide public attention as the runner-up for the 2016 Democratic nomination. Obscure candidates like Montana Governor Steve Bullock and the already-mentioned Gravel bring up the rear.

Relative to the full results in Figure 3, the relationship on the favorability questions in Figure 4 is strikingly tight. In fact, the percentage of respondents saying DK explains more than 90 percent of the variation in average confidence among those who said "favorable" or "unfavorable" (Supplemental Table A.2). This reflects the "we don't know" means "they're not sure" heuristic's greater accuracy in comparisons between similar questions.

Strengthening the Heuristic

For a closer look at the stronger relationship among similar questions, Figure 5 separately plots the subcategories of knowledge and policy questions. In the left panel, the

Figure 4: Favorability questions, Study 2.

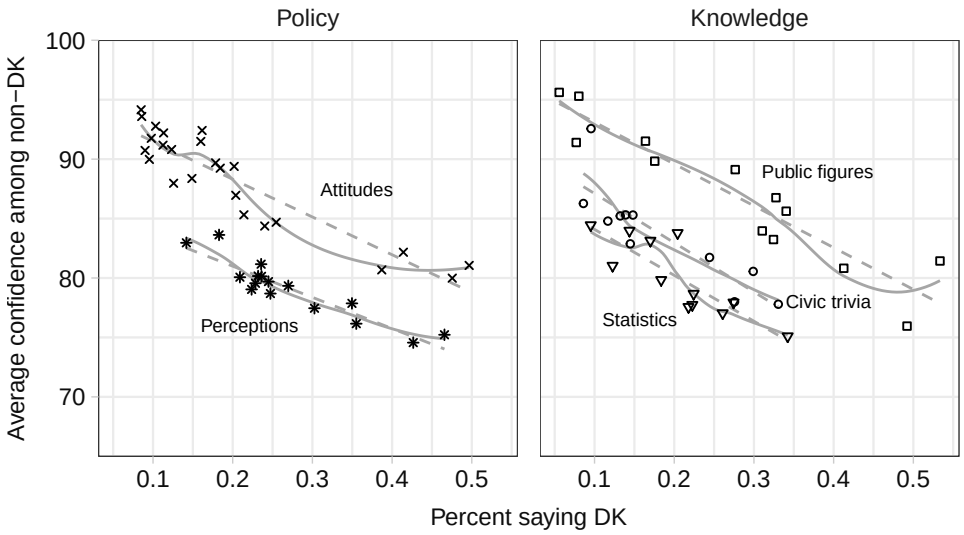


Note: For each favorability rating question in Study 2, this figure presents the same information as Figure 3, but with a narrower axis range and labelled data points.

top set of questions asks respondents about their policy attitudes (e.g., "Do you support or oppose repealing the Affordable Care Act of 2010?"), while the bottom set asks about the content and consequences of policy proposals (e.g., "Do you think this would happen under a national health care plan, sometimes called Medicare For All? Doctors and hospitals would be paid less."). A fairly tight relationship emerges within both categories. The percentage DK explains about 83 percent of variation in average confidence between the attitude questions and 82 percent between the perception questions (Supplemental Table A.2).

Mechanically speaking, the relationship is stronger within each group of questions because of the confidence gap between them. Across the board, respondents are consistently 5 to 10 scale points more confident in their answers to attitude questions. This is equal to 10 to 20 percent of the 50-100 scale, or roughly one-third of the variation in average confidence that can be explained by DK responses. When comparing two questions about policy attitudes, one can use the rate of DK to make a fairly precise guess about which question elicited the more confident responses. Yet barring a substantial difference in the

Figure 5: Policy and knowledge questions, Study 2.



Note: For each policy and knowledge question in Study 2, this figure presents the same information as Figure 3, but with a narrower axis range and separate trend lines for each subcategory of question.

DK rate, one should assume that people are more confident in their policy attitudes than in their policy perceptions.

The right panel of Figure 5 shows that a similar pattern emerges when the knowledge questions are broken into the three categories listed above: facts about public figures (e.g., the job or political office held by John Roberts), civic trivia (e.g., the length of a Senate term), and statistics about social and economic conditions (e.g., whether unemployment has been increasing or decreasing). Between any two questions within one of these categories, one can use the DK rate to make a reasonably accurate inference as to the confidence level of respondents who answered the question. Yet across categories, people tend to be more confident in their answers about public figures than about economic indicators.

To summarize the accuracy gains when examining questions of the same type, Figure 6 compares three linear models of the "we don't know" means "they're not sure" heuristic. In the first column, the relationship is assumed to be the same for all types of questions, reproducing the results discussed alongside Figure 3. In the second, questions of different types are assumed to differ in their average confidence, but not the slope of the relationship.

In the third, average confidence and slope are allowed to vary across question categories.

The results suggest that differences in average confidence between questions of different types are responsible for almost all of the "we don't know" means "they're not sure" heuristic's greater accuracy within sets of similar questions. In the first column of Figure 6, R^2 is the same as reported above, 0.500. In the second column, allowing average confidence to vary across question types boosts R^2 to 0.891, an increase of 0.391. In the third column, allowing the slope to vary across categories boosts the explanatory power a bit more, to 0.905, an increase of 0.405. The marginal gain in explanatory power, 0.014, is less than 5 percent of the gain from allowing the intercept to vary.

Though allowing for differences in slopes does not add much explanatory power, it does demonstrate a pattern that is too subtle to be visible in the figures: the slope of the relationship between DK responses and others' confidence is slightly steeper for knowledge questions than for policy and favorability questions. Roughly speaking, the interaction terms in the third column suggest that for every 10 percent of DK responses, respondents are 1 to 2 percentage points less confident in their answers to knowledge questions than they are in their answers to favorability and policy questions. Though this difference is likely too small to worry about in practical applications, it may contain lessons for future work on estimating unmeasured confidence.

Why Confidence Distributions Differ

Cognizance that different types of questions vary in their average confidence level allows one to apply the "we don't know" means "they're not sure" heuristic with greater accuracy. But if a DK option is offered, why would some questions have greater average confidence than others? Shouldn't respondents who are unsure say DK?

A fundamental flaw in this premise — that one either has an attitude or belief, or does not — is that different questions ask respondents to make different types of inferences. When deciding whether John Roberts is more likely to be the Chief Justice of the Supreme

Figure 6: Regression Test for Differences in Intercepts and Slopes, Study 2

	Model		
Term	Bivariate	Variable Intercepts	Variable Intercepts & Slopes
(Intercept)	0.910 (0.906, 0.914)	0.928 (0.922, 0.935)	0.912 (0.906, 0.918)
DK	-0.291 (-0.306, -0.277)	-0.302 (-0.313, -0.291)	-0.250 (-0.269, -0.231)
Knowledge (civic trivia)		-0.036 (-0.045, -0.029)	0.000 (-0.012, 0.011)
Knowledge (public figures)		0.024 (0.016, 0.033)	0.054 (0.044, 0.065)
Knowledge (statistics)		-0.066 (-0.074, -0.058)	-0.034 (-0.047, -0.020)
Policy (attitudes)		0.015 (0.008, 0.022)	0.035 (0.028, 0.042)
Policy (perceptions)		-0.055 (-0.064, -0.046)	-0.050 (-0.063, -0.037)
DK × Knowledge (civic trivia)			-0.161 (-0.220, -0.106)
DK × Knowledge (public figures)			-0.101 (-0.139, -0.065)
DK × Knowledge (statistics)			-0.129 (-0.191, -0.071)
DK × Policy (attitudes)			-0.067 (-0.098, -0.038)
DK × Policy (perceptions)			-0.009 (-0.049, 0.031)
R^2	0.500 (0.463, 0.538)	0.891 (0.874, 0.907)	0.905 (0.889, 0.920)

Note: This table tests for differences between the question categories displayed in Figure 3. The first column tests across all question categories, the second column allows for mean differences between categories, and the third column allows the slope to vary between categories (see text).

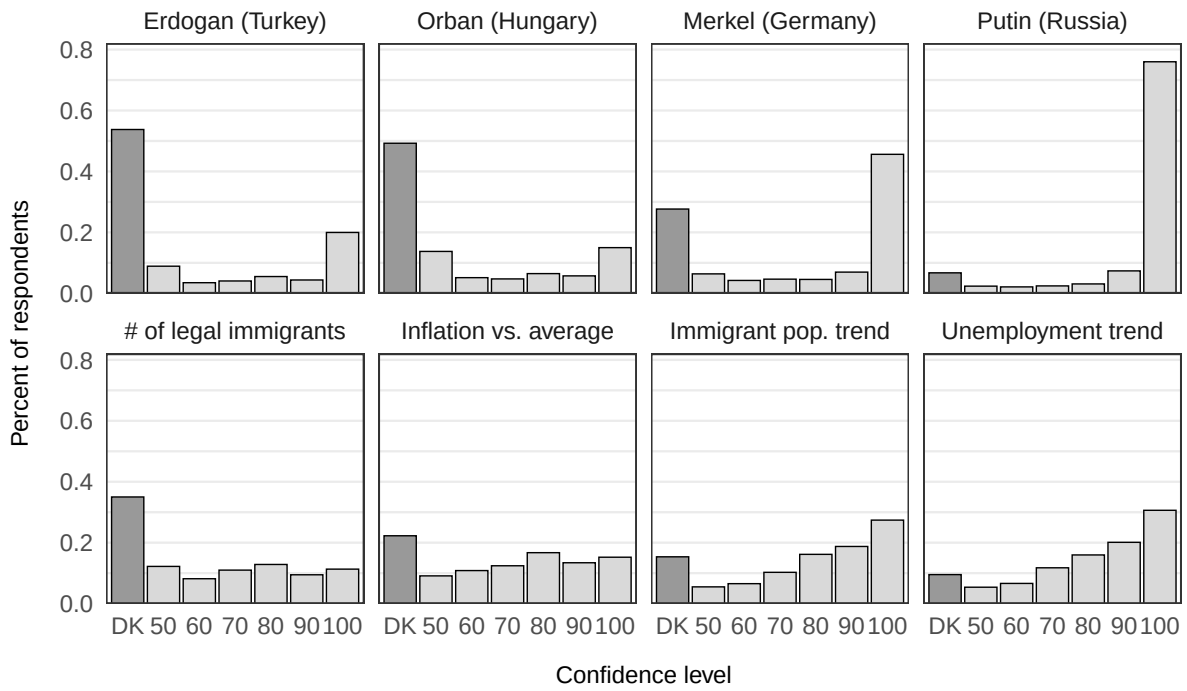
Court or the Secretary of Defense, most people either know or have no idea. This produces a not-quite-bimodal, "know it or don't" confidence distribution. By contrast, when deciding whether unemployment is more likely to have gone up or down over the past year, one who does not know the exact figures may still have a strong basis to guess.[8] This produces a more spread out distribution, with lower confidence in the average answer.

To make this more concrete, Figure 7 plots the distribution for eight questions: four about the country led by a foreign leader and four about social and economic statistics. The foreign leader questions have fairly bipolar, "know-it-or-don't" confidence distributions. The social statistics have more mass in the middle, representing the greater prevalence of medium-certainty guesses on these questions. Within both categories, the percentage DK (dark grey bar) predicts of average confidence among respondents who answered (light grey bars). For example, a question about the number of immigrants who obtain legal permanent residence each year in the U.S. produces a higher percentage DK than, and lower average confidence than, a question about whether the percentage of Americans who are immigrants has been increasing or decreasing. Yet the questions about foreign leaders have higher average confidence at all levels of DK responding. For example, although the question about which country Angela Merkel leads produces a higher rate of DK responses than a question about the rate of inflation, answers to the Merkel question were chosen with greater confidence than answers to the inflation question.

The variation in confidence levels that exists within and across questions is too rich to be eliminated by a blunt instrument like DK responses, which divides respondents into only two confidence levels, "don't know enough to make a guess" and "know enough to make a guess." To provide a clearer sense of this, one of the two factual batteries featured a split ballot experiment in which a randomly-selected set of respondents answered identical questions, but without a DK option. Figure 8 visualizes the differences between the two randomly-selected groups of respondents. The hollow bars with black outlines represent the

[8]For further analysis of informed guessing's role in responses to such questions, see Graham (2020).

Figure 7: Example of question type differences in confidence distributions.

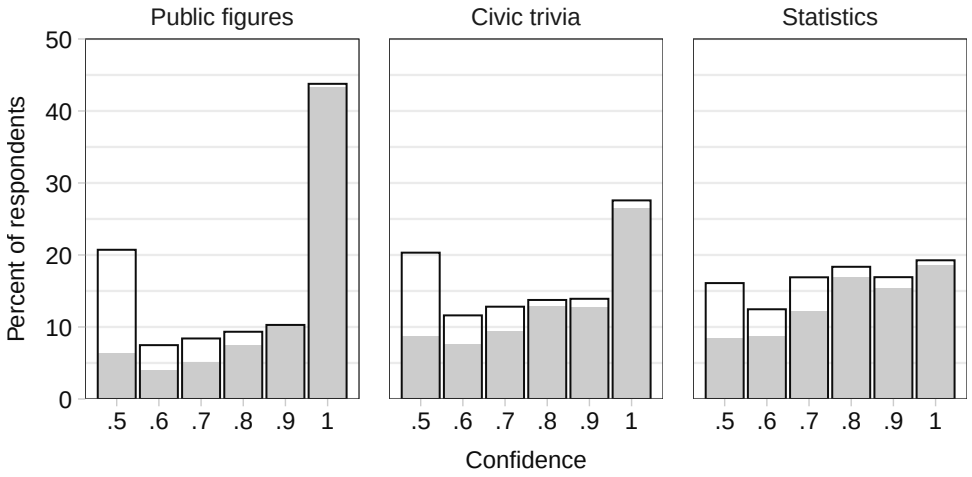


Note: For eight selected knowledge questions in Study 2, this figure plots the distribution of respondent content. The top row's questions all come from the public figures category, and the bottom row's all come from the social conditions category. Darker grey bars are the percentage of respondents saying DK, while the lighter grey bars are the confidence distribution for those who answered the question. The key pattern is that the confidence distributions look similar within each row, but that the two rows look systematically different from one another.

certainty distribution when DK responses are not offered, while the grey bars represent the certainty distribution when DK is allowed. At low certainy levels, the grey bars "fill up" the hollow bars halfway or less, indicating that most — but not all — respondents who are completely uncertain choose DK when that option is made available. Moving across the x-axis to higher certainty levels, the grey bars increasingly fill up the hollow bars. The more certain the respondent, the less likely the respondent is to say DK when a DK option is offered.

Though DK responses work roughly as they are supposed to, removing some low-confidence respondents does not remove the substantial differences that exist across questions. On the questions about public figures, more than 40 percent of respondents report being completely certain of their answer, regardless of whether a DK option is offered. On

Figure 8: Confidence distribution with and without a DK response option.



Note: For all of the knowledge questions included in form 1 of study 2, this figure plots the distribution of respondent confidence. The hollow, black-outlined bars represent the distribution when a DK responses option is not offered. The solid, grey bars represent the confidence distribution when DK is offered. The difference in height between the two sets of bars represents the confidence levels of the responses that convert to DKs when a DK option is offered.

the questions about statistics, less than 20 percent report the same.

The split ballot experiment can be used to compute a more specific estimate of how confident DK respondents would have been if they had answered the question. Let $\mathbb{E}[C \mid \cdot]$ denote the conditional average certainty level among some group of respondents. Although $\mathbb{E}[C \mid \text{said DK}]$ is not observable in the data, it can be estimated. The appendix shows that the average DK respondent's confidence level can be expressed as

$$\frac{\mathbb{E}[C \mid \text{DK not allowed}] - \big(\mathbb{E}[C \mid \text{DK allowed}] \times (1 - \Pr[\text{said DK} \mid \text{DK allowed}])\big)}{\Pr[\text{said DK} \mid \text{DK allowed}]}, \quad (1)$$

all components of which are observable. Pooling across all questions, this estimator suggests that the average respondent who says DK would have stated a certainty level of 59.9 if the DK option had not been provided (95% CI: 55.9, 63.6).

Together, this estimate and Figure 8 provide a clearer sense of why the relationship between DK and average confidence has a tendency to "bottom out" at 70 to 75 percent confidence (Figures 3, 4, and 5). DK response options absorb most of what would otherwise

have been the lowest-confidence responses, along with as a smattering of responses that would have been stated with low confidence but not a complete lack of it. Consequently, while DK response options cut down the rate of totally-uncertain "coin flips" by half or two-thirds, they do less to eliminate guesses that are offered with even slightly higher levels of confidence.

Summary

Three takeaways emerge from Study 2. First, providing a DK option does not even out the substantial variation in confidence that exists from question to question. Second, though respondents are not usually asked about their confidence in their answers, one can use the percentage to DK make informed comparisons between questions. Third, when one looks within the same family of questions, the percentage DK goes from being a helpful approximation to a remarkably accurate predictor.

Implications for Future Research

For all survey researchers, this article's findings contain a lesson for question design. Researchers who encounter high rates of DK responses can be quick to blame the respondent for inattention. Though inattentive respondents are indeed more likely to say DK (Alvarez et al. 2019), the "we don't know" means "they're not sure" heuristic suggests that researchers who obtain high rates of DK responses should also look inward. A high rate of DK may signal that the question has a confusing or complex element that was not obvious to its designer.

Three limitations of the analysis are worth closer examination. First, the results speak only indirectly to the relationship between refusals and average confidence among non-refusers. When refusals act as an outlet for would-be DK respondents, it seems likely that the same relationship would hold between refusal rates and average confidence. Unfortunately, most of the data analyzed here do not provide a direct test. In Study 2, the

provision of an explicit DK option leaves no need to use refusals as an outlet for uncertainty. In Study 1, the "refused" and "not asked" categories are pooled in the ANES data.

Second, there is more to learn about differences across survey modes. Although both Study 1 and Study 2 found a clear "we don't know" means "they're not sure" relationship, two differences emerge: the relationship in Study 1 is very steep at low levels of DK, and "bottoms out" at a lower point on the confidence scale (compare Figures 2 and 3). Based on data collected for another purpose, the appendix uses simulation to show that that this is precisely what one should expect if relative to online surveys, interviewer-administered surveys set a lower confidence threshold. When respondents who are very uncertain are more likely to provide an answer, each respondent who is nevertheless uncertain enough to say DK should predict a larger drop-off in average confidence among those who offer an opinion.

The threshold model can link these findings to other work that documents variation in DK rates across survey modes. In a comparison between questions asked online and over the phone, Atkeson and Adams (2018) found few differences between DK rates on most questions, with the exception of one battery that produced especially high DK rates in the telephone sample. In this high-DK battery, the rate of DK responses shot up an additional 18 percent with the move online. They suspect that these "are likely questions for which respondent uncertainty was very high" (18). A similar finding can be gleaned from the opinion filter experiment conducted by Bishop et al. (1980): the higher the DK rate without an opinion filter, the more substantive responses are "converted" by the presence of an opinion filter. The threshold model suggests that these findings may have arisen for the same reason that "we don't know" means "they're not sure": a higher percentage DK indicates that the people who answered were less sure as well, and hence more likely to switch to DK in response to an increase in the threshold. To visualize this, imagine that an opinion filter drags the threshold across Figure 1. Questions that produce low rates of DK without a filter are likely to be high-confidence, meaning that raising the threshold may

not "convert" many substantive responses to DKs (right panel). But questions that produce high rates of DK without an opinion filter are likely to be low-confidence, meaning that a threshold-raising filter "converts" a larger share of the substantive responses to DKs (left panel). The appendix supports this intuition using both a simulation study and data from Atkeson and Adams (2018) and Bishop et al. (1980).

Third, although this article considered a broad range of questions, it may nevertheless be worth exercising caution when applying the heuristic to questions that are very different from those considered in this article. For example, one could imagine autobiographical questions, e.g. about one's income or daily routine, to be low on uncertainty but high on other reasons to say DK, such as embarrassment or social desirability. Though the "we don't know" means "they're not sure" heuristic is clearly widely applicable, it would be premature to proclaim it universal.

Implications for Reading Public Opinion

Public opinion data are ubiquitous in journalistic, practicioner-produced, and academic analyses of politics, yet a notion of whether the responses are better interpreted as true attitudes or top-of-the-head guesses rarely makes it into interpretations of the data. Instead, as Bullock and Lenz (2019) observe, "a simple interpretation of survey results [prevails] among journalists and pollsters: People have decided beliefs, and surveys elicit those beliefs" (326). This state of affairs is regrettable in light of what scholars know about survey responses, but it is not always clear what a generic reference to Converse (1964) or Zaller (1992) implies for any particular question.

The "we don't know" means "they're not sure" heuristic offers a partial solution, turning a commonly-available piece of information into a reliable signal as to which questions are more and less reflective of peoples' true attitudes and beliefs. The mere existence of such a relationship demonstrates that such hetergoneity is worth worrying about: the fact that a DK response option was available does not mean that those who answered the question can

be considered "knowers" with crystallized beliefs and attitudes.

Rising concern over misinformation raises the stakes of understanding how strongly respondents believe their answers to individual questions. The notion that answers to questions about rumors and conspiracies reflect pre-existing beliefs has long been problematized by respondents' willingness to endorse conspiracies that are made up by the researcher (Flynn, Nyhan and Reifler 2017). Given that that these made-up questions tend to produce extremely high rates of DK, respondents who express an opinion might express a great deal of uncertainty if asked. This was not lost on Schuman and Presser (1981), whose studies of responses about obscure legislative proposals helped lay a foundation for work on completely made-up items:

> [I]n some of these cases interviewers recorded comments indicating considerable respondent uncertainty (e.g.,"Favor—though I really don't know what it is," "You caught me on that. I don't know, but from the sound of it I favor it"). Moreover, we can tell from other cases where marginal comments are available that some respondents initially confessed ignorance ... Respondents make an educated (though often wrong) guess as to what the obscure acts represent, then answer reasonably in their own terms about the constructed object.

In the age of online surveys, this sort of evidence is rarely available, possibly propping up an illusion that respondents who do not choose DK all believe their answer to roughly the same degree. The "we don't know" means "they're not sure" heuristic provides a substitute. Given that mere familarity with a rumor enhances belief in it (Berinsky 2017), researchers who find apparently-crazy "beliefs" coupled with high rates of DK should carefully consider their social impact as they describe the data.

For measures of attitudes toward candidates and public policies, the chief implication is that apparently-comparable responses across questions are not completely comparable. Analysts frequently throw out DK responses in the process of constructing summary statistics like net favorability, net approval, or the margin of victory in hypothetical candidate matchups. Yet when the percentage DK is high, people who offer an opinion are not as confident in their judgment. For less-known candidates and issues, net approval ratings may

not reflect what those who offer an opinion would think once that candidate or issue becomes better-known.

The "we don't know" means "they're not sure" heuristic also invites new inferences about the evolution of public opinion over time. Often, temporal shifts in opinion are accompanied by a decline in the percentage DK, suggesting a crystallization of judgment among those who offer an opinion. The appendix notes several examples in which DK rates have declined over time, covering support for war, views on climate change, vote choice, and support for autocratic forms of government.

Conclusion

In public opinion data, the percentage of DK responses is generally the only information available about respondent confidence. This provides no direct information about respondents' confidence *in their answers*—the only way to express uncertainty, at least as far as the codebook is concerned, is to opt not to answer the question. This article showed that despite this lack of direct information, the percentage DK can be used to make inferences about confidence among respondents who offered an opinion. This heuristic is especially trustworthy for relative comparisons between similar questions.

Approximating confidence levels is a second-best solution, but we live in a second-best world. Researchers who would like to know about respondent confidence may find measuring it to be impractical due to time and cost constraints. For surveys that were conducted in the past, adding confidence measures is impossible. Given these realities, arriving at the most accurate possible interpretation of public opinion surveys requires researchers to get the most they can out of the data they have. By partially transcending the typical survey's lack of direct information about respondents' confidence in their answers, the "we don't know" means "they're not sure" heuristic makes a wealth of information available to researchers who wish not to mislead audiences on the extent to which survey responses reflect firmly held attitudes and beliefs.

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Supplementary Materials

"We Don't Know" Means "They're Not Sure"

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A Supplemental Results

A.1 Estimating uncertainty for question-level relationships

The empirical pattern of interest in this article is the question-to-question relationship between the rate of DK responses and average confidence among everyone else. To estimate uncertainty about these statistics, it would not be appropriate to assume that the questions are a random sample of some larger population of questions. Instead, what is needed is a procedure that can estimate the statistical error that comes from randomly selecting a sample of respondents to answer the set of questions. Given the selected set of questions, what is the estimated sampling distribution of the each statistic for our population of Lucid respondents?

To obtain uncertainty estimates that answer this question, I use the block bootstrap. This procedure is commonly used to compute the standard errors of estimators when each unit of analysis contributes more than one observation (e.g., in panel data (Bertrand et al. 2004) and conjoint experiments (Hainmueller et al. 2015)). To estimate the sampling distribution of each statistic, I (1) resampled respondents with replacement 10,000 times and (2) calculated the statistic in each resample, and (3) recorded each result in a vector. Standard errors are the standard deviation of this vector; 95 percent confidence intervals, the 2.5th and 97.5th percentiles.

A.2 Regression tables

For Study 1, Table A.1 displays summary statistics for the question-to-question relationship between the percent saying DK and the average confidence of those who did answer. The intercept and slope columns are α and β from the OLS regression

$$(\text{Average confidence})_q = \alpha + \beta(\%\ \text{DK})_q + \epsilon_q,$$

where q indexes questions. The R^2 columns are R^2 from this same regression. Block bootstrapped 95 percent confidence intervals in parentheses (see above).

Table A.1: Regression Test, Study 1

	Model 1: % DK	Model 2: ln(% DK)	Difference
(Intercept)	0.563 (0.555, 0.572)	0.306 (0.294, 0.320)	
DK	-0.467 (-0.506, -0.431)	-0.076 (-0.081, -0.070)	
R^2	0.382 (0.333, 0.433)	0.655 (0.601, 0.701)	-0.272 (-0.308, -0.235)

For Study 2, Table A.2 displays summary statistics for the question-to-question relationship between the percent saying DK and the average confidence of those who did answer. The first row displays the overall relationship for Study 2 and the subsequent rows display the relationship within question category. The intercept and slope columns are α and β from the OLS regression

$$(\text{Average confidence})_q = \alpha + \beta(\%\ \text{DK})_q + \epsilon_q,$$

where q indexes questions. The R^2 columns are R^2 from this same regression. Block bootstrapped 95 percent confidence intervals in parentheses (see above).

Table A.2: Regression Summary, Study 2

	Model 1: % DK		Model 2: ln(% DK)		Comparison of R^2		
	Intercept	Slope	Intercept	Slope	Model 1	Model 2	Difference
Study 2	0.910 (0.906, 0.914)	-0.291 (-0.306, -0.277)	0.725 (0.719, 0.731)	-0.072 (-0.076, -0.069)	0.500 (0.463, 0.538)	0.592 (0.556, 0.627)	-0.092 (-0.108, -0.075)
Favorability ratings	0.912 (0.906, 0.918)	-0.250 (-0.269, -0.231)	0.747 (0.736, 0.757)	-0.058 (-0.064, -0.054)	0.913 (0.883, 0.939)	0.928 (0.897, 0.954)	-0.015 (-0.050, 0.021)
Knowledge (civic trivia)	0.912 (0.902, 0.921)	-0.411 (-0.465, -0.358)	0.698 (0.678, 0.719)	-0.077 (-0.088, -0.065)	0.727 (0.642, 0.802)	0.747 (0.643, 0.832)	-0.020 (-0.062, 0.025)
Knowledge (public figures)	0.966 (0.958, 0.974)	-0.350 (-0.380, -0.323)	0.763 (0.750, 0.775)	-0.071 (-0.078, -0.064)	0.863 (0.800, 0.917)	0.804 (0.751, 0.855)	0.060 (0.019, 0.102)
Knowledge (statistics)	0.878 (0.866, 0.891)	-0.378 (-0.439, -0.324)	0.685 (0.665, 0.703)	-0.071 (-0.083, -0.059)	0.670 (0.552, 0.784)	0.638 (0.520, 0.751)	0.032 (-0.009, 0.070)
Policy (attitudes)	0.946 (0.942, 0.951)	-0.317 (-0.340, -0.294)	0.757 (0.747, 0.766)	-0.072 (-0.077, -0.066)	0.835 (0.795, 0.870)	0.840 (0.794, 0.883)	-0.005 (-0.032, 0.021)
Policy (perceptions)	0.862 (0.850, 0.873)	-0.259 (-0.293, -0.223)	0.691 (0.676, 0.706)	-0.075 (-0.085, -0.065)	0.820 (0.739, 0.889)	0.843 (0.764, 0.909)	-0.023 (-0.056, 0.013)

Table A.3: Comparison of Model Fit for Table 6.

Model	R^2
Bivariate	0.50685 (0.46258, 0.53840)
Intercept	0.52850 (0.48527, 0.55809)
Slope	0.91089 (0.51239, 0.58491)
Bivariate vs. Intercept	0.02166 (0.01087, 0.03655)
Bivariate vs. Slope	0.40404 (0.03263, 0.06633)
Intercept vs. Slope	0.38238 (0.01695, 0.03642)

Note: This table tests the difference in R^2 for the three columns of Table 6.

Table A.4 displays the same information as the "Study 2" row of Table A.2, split by demographic group. The same basic result holds for all groups. Further assurance that the results are not driven by between-person differences in confidence, see the within-person analysis below.

Table A.4: Regression Test by Demographic Characteristics, Study 2

		Model 1: % DK		Model 2: ln(% DK)		Comparison of R^2		
Trait	Category	Intercept	Slope	Intercept	Slope	Model 1	Model 2	Difference
Age	18-29	0.888 (0.880, 0.897)	-0.300 (-0.332, -0.270)	0.692 (0.681, 0.704)	-0.079 (-0.086, -0.072)	0.458 (0.390, 0.525)	0.565 (0.495, 0.637)	-0.108 (-0.135, -0.079)
	30-39	0.904 (0.896, 0.913)	-0.301 (-0.336, -0.267)	0.716 (0.703, 0.730)	-0.073 (-0.081, -0.065)	0.486 (0.408, 0.567)	0.572 (0.496, 0.650)	-0.087 (-0.120, -0.050)
	40-49	0.912 (0.902, 0.921)	-0.284 (-0.321, -0.245)	0.743 (0.728, 0.758)	-0.062 (-0.071, -0.054)	0.462 (0.372, 0.548)	0.504 (0.416, 0.590)	-0.042 (-0.087, 0.016)
	50-64	0.915 (0.909, 0.922)	-0.259 (-0.285, -0.235)	0.754 (0.744, 0.765)	-0.060 (-0.066, -0.054)	0.455 (0.389, 0.522)	0.522 (0.460, 0.581)	-0.066 (-0.100, -0.032)
	65+	0.924 (0.917, 0.932)	-0.273 (-0.305, -0.239)	0.773 (0.758, 0.787)	-0.050 (-0.057, -0.043)	0.459 (0.373, 0.533)	0.448 (0.375, 0.517)	0.011 (-0.044, 0.075)
Education	Associate's, degree	0.902 (0.888, 0.915)	-0.257 (-0.304, -0.208)	0.752 (0.733, 0.770)	-0.054 (-0.065, -0.044)	0.378 (0.261, 0.490)	0.401 (0.300, 0.496)	-0.023 (-0.077, 0.038)
	Bachelor's degree	0.910 (0.904, 0.918)	-0.299 (-0.324, -0.274)	0.724 (0.713, 0.735)	-0.072 (-0.078, -0.066)	0.510 (0.446, 0.571)	0.587 (0.526, 0.646)	-0.077 (-0.107, -0.045)
	Did not finish high school	0.896 (0.876, 0.914)	-0.206 (-0.282, -0.132)	0.769 (0.731, 0.806)	-0.046 (-0.066, -0.027)	0.299 (0.133, 0.464)	0.245 (0.101, 0.410)	0.054 (-0.033, 0.133)
	Graduate or professional	0.904 (0.894, 0.915)	-0.249 (-0.290, -0.212)	0.753 (0.736, 0.769)	-0.057 (-0.067, -0.048)	0.370 (0.279, 0.471)	0.413 (0.325, 0.507)	-0.044 (-0.085, 0.001)
	High school graduate	0.908 (0.900, 0.915)	-0.290 (-0.318, -0.261)	0.727 (0.714, 0.738)	-0.070 (-0.076, -0.064)	0.446 (0.376, 0.506)	0.533 (0.464, 0.596)	-0.087 (-0.117, -0.052)
	Some college,	0.905	-0.266	0.739	-0.063	0.449	0.512	-0.063

Table A.4: Regression Results by Demographic Characteristics, Study 2 (continued)

		Model 1: % DK		Model 2: ln(% DK)		Comparison of R^2		
Trait	Category	Intercept	Slope	Intercept	Slope	Model 1	Model 2	Difference
	no degree	(0.897, 0.913)	(-0.295, -0.235)	(0.726, 0.752)	(-0.070, -0.056)	(0.379, 0.518)	(0.436, 0.583)	(-0.099, -0.027)
Gender	Female	0.902 (0.897, 0.908)	-0.289 (-0.308, -0.268)	0.716 (0.708, 0.724)	-0.073 (-0.078, -0.069)	0.466 (0.419, 0.514)	0.567 (0.523, 0.611)	-0.101 (-0.121, -0.079)
	Male	0.917 (0.912, 0.922)	-0.291 (-0.311, -0.271)	0.740 (0.731, 0.749)	-0.067 (-0.072, -0.063)	0.521 (0.467, 0.575)	0.584 (0.532, 0.632)	-0.062 (-0.086, -0.034)
Hispanic	No	0.910 (0.906, 0.915)	-0.293 (-0.309, -0.278)	0.725 (0.718, 0.731)	-0.072 (-0.076, -0.069)	0.502 (0.461, 0.540)	0.593 (0.554, 0.631)	-0.091 (-0.109, -0.073)
	Yes	0.900 (0.888, 0.912)	-0.264 (-0.308, -0.222)	0.739 (0.720, 0.756)	-0.061 (-0.072, -0.050)	0.402 (0.301, 0.498)	0.438 (0.340, 0.534)	-0.035 (-0.076, 0.012)
Income	0 to 25	0.909 (0.902, 0.916)	-0.287 (-0.314, -0.260)	0.730 (0.719, 0.742)	-0.069 (-0.075, -0.062)	0.465 (0.399, 0.529)	0.532 (0.465, 0.596)	-0.067 (-0.097, -0.033)
	100 to 200	0.899 (0.888, 0.909)	-0.242 (-0.282, -0.197)	0.761 (0.743, 0.779)	-0.049 (-0.059, -0.040)	0.357 (0.249, 0.451)	0.399 (0.303, 0.486)	-0.042 (-0.089, 0.012)
	200+	0.902 (0.891, 0.911)	-0.251 (-0.291, -0.207)	0.759 (0.742, 0.776)	-0.051 (-0.060, -0.042)	0.380 (0.280, 0.472)	0.414 (0.322, 0.500)	-0.034 (-0.082, 0.017)
	25 to 50	0.905 (0.897, 0.912)	-0.281 (-0.308, -0.253)	0.722 (0.711, 0.734)	-0.072 (-0.078, -0.065)	0.466 (0.399, 0.532)	0.559 (0.489, 0.621)	-0.093 (-0.123, -0.059)
	50 to 75	0.910 (0.902, 0.919)	-0.283 (-0.315, -0.251)	0.736 (0.723, 0.748)	-0.066 (-0.073, -0.059)	0.437 (0.356, 0.512)	0.508 (0.430, 0.578)	-0.071 (-0.105, -0.035)
	75 to 100	0.910 (0.899, 0.921)	-0.272 (-0.314, -0.233)	0.743 (0.724, 0.761)	-0.063 (-0.073, -0.052)	0.457 (0.357, 0.558)	0.514 (0.409, 0.609)	-0.056 (-0.106, 0.001)
	Missing	0.892 (0.875, 0.911)	-0.242 (-0.309, -0.177)	0.753 (0.726, 0.782)	-0.049 (-0.064, -0.034)	0.306 (0.176, 0.440)	0.289 (0.154, 0.434)	0.016 (-0.060, 0.097)
Party	Democrat	0.908	-0.317	0.724	-0.066	0.506	0.598	-0.092

Table A.4: Regression Results by Demographic Characteristics, Study 2 (continued)

		Model 1: % DK		Model 2: ln(% DK)		Comparison of R^2		
Trait	Category	Intercept	Slope	Intercept	Slope	Model 1	Model 2	Difference
		(0.903, 0.914)	(-0.338, -0.298)	(0.714, 0.732)	(-0.071, -0.062)	(0.454, 0.552)	(0.548, 0.645)	(-0.121, -0.061)
	Independent	0.911	-0.290	0.695	-0.101	0.434	0.482	-0.048
		(0.898, 0.927)	(-0.329, -0.252)	(0.678, 0.712)	(-0.114, -0.088)	(0.343, 0.525)	(0.395, 0.575)	(-0.074, -0.021)
	Republican	0.905	-0.245	0.760	-0.052	0.423	0.522	-0.099
		(0.900, 0.910)	(-0.267, -0.224)	(0.751, 0.768)	(-0.056, -0.048)	(0.361, 0.483)	(0.467, 0.574)	(-0.128, -0.068)
Race	Asian or Pacific Is.	0.910	-0.302	0.750	-0.054	0.387	0.368	0.019
		(0.895, 0.926)	(-0.366, -0.241)	(0.725, 0.772)	(-0.068, -0.042)	(0.258, 0.510)	(0.255, 0.479)	(-0.038, 0.081)
	Black	0.903	-0.287	0.724	-0.069	0.451	0.536	-0.084
		(0.893, 0.913)	(-0.334, -0.243)	(0.706, 0.741)	(-0.078, -0.059)	(0.354, 0.542)	(0.448, 0.623)	(-0.128, -0.040)
	Other	0.900	-0.241	0.748	-0.059	0.395	0.468	-0.073
		(0.887, 0.912)	(-0.283, -0.195)	(0.730, 0.767)	(-0.069, -0.049)	(0.281, 0.501)	(0.354, 0.567)	(-0.118, -0.023)
	White	0.909	-0.284	0.729	-0.070	0.479	0.563	-0.085
		(0.904, 0.913)	(-0.301, -0.268)	(0.722, 0.736)	(-0.074, -0.066)	(0.434, 0.519)	(0.521, 0.604)	(-0.102, -0.064)

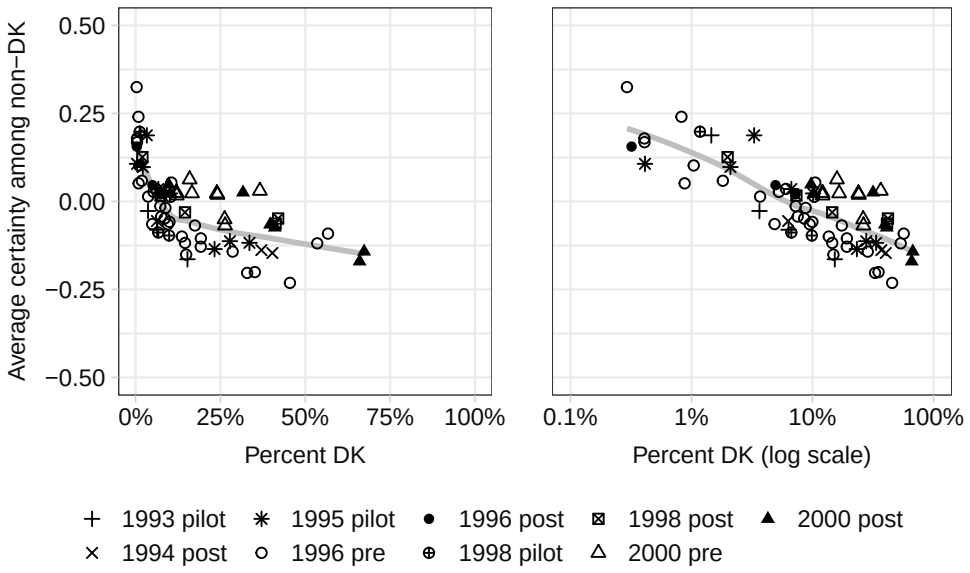
A.3 Within-subject analysis

The main text explains the relationship between the prevalence of DK responses and average confidence among the "knowers" using a combination of an individual-level factor (a latent threshold for answering questions) and population-level factor (a substantial common component to peoples' knowledge and ignorance). A reasonable reader could wonder whether it is truly variation in the respondents' confidence levels that drives the results. If some other factor affects both respondents' overall average confidence and their propensity to say DK, perhaps the key results could arise simply because more and less confident people say DK at different times.

To rule out the possibility that alternative explanations related to respondents' baseline level of confidence can explain the results, this appendix reproduces many of the key results from Study 2 using only within-respondent variation in confidence. To remove between-person variation in confidence, I calculated each respondent's average confidence level on the questions they answered, then subtracted it from the confidence level the respondent chose alongside each answer. Everything else in the within-subject analysis identical to the main calculations.

Study 1: Figure 1 using only within-respondent variation in confidence

Figure A.9: Percent DK versus average certainty among other respondents, 1993-2000 ANES.



Note: This figure is identical to Figure 2, except that it only uses within-respondent variation in confidence.

Study 1: regression using only within-respondent variation in confidence

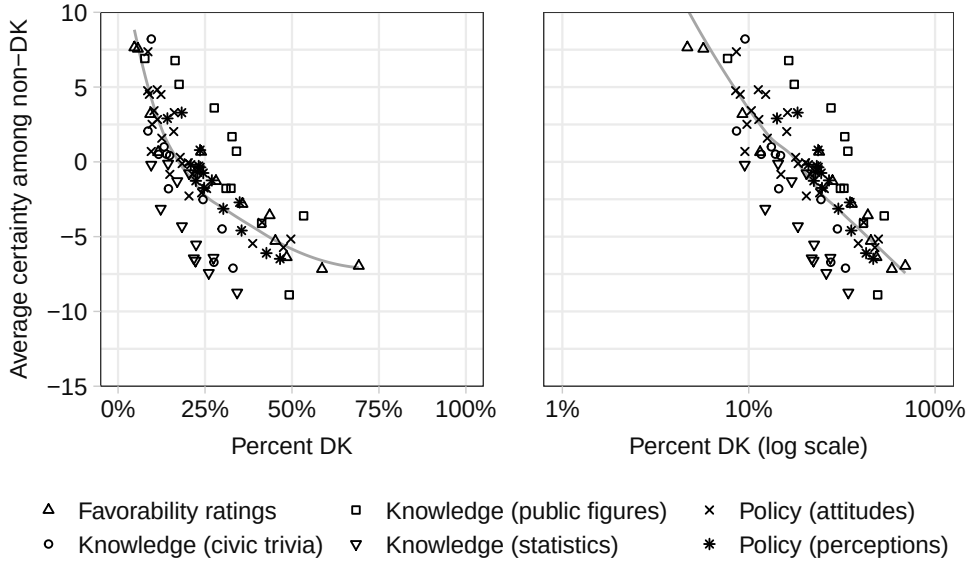
Table A.5: Regression Test, Within-Respondent, Study 1

	Model 1: % DK	Model 2: ln(% DK)	Difference
(Intercept)	0.060 (0.055, 0.066)	-0.194 (-0.204, -0.184)	
DK	-0.477 (-0.510, -0.447)	-0.074 (-0.079, -0.069)	
R^2	0.420 (0.383, 0.459)	0.664 (0.623, 0.700)	-0.244 (-0.278, -0.205)

Note: This table is identical to Table A.1, except that it only uses within-respondent variation in confidence.

Study 2: Figure 3 using only within-respondent variation in confidence

Figure A.10: Percent DK versus within-respondent variation in confidence, study 2.



Note: This figure is identical to Figure 3, except that it only uses within-respondent variation in confidence.

Study 2: all regression tables using only within-respondent variation in confidence

Table A.6: Regression Summary, Within-Respondent, Study 2

	Model 1: % DK		Model 2: ln(% DK)		Comparison of R^2		
	Intercept	Slope	Intercept	Slope	Model 1	Model 2	Difference
Study 2	0.052 (0.049, 0.054)	-0.243 (-0.254, -0.233)	-0.103 (-0.107, -0.099)	-0.060 (-0.063, -0.058)	0.543 (0.513, 0.572)	0.640 (0.610, 0.670)	-0.097 (-0.113, -0.082)
Favorability ratings	0.061 (0.056, 0.066)	-0.227 (-0.243, -0.210)	-0.091 (-0.098, -0.084)	-0.055 (-0.059, -0.051)	0.876 (0.839, 0.911)	0.944 (0.919, 0.966)	-0.068 (-0.102, -0.032)
Knowledge (civic trivia)	0.070 (0.061, 0.079)	-0.432 (-0.484, -0.385)	-0.155 (-0.173, -0.137)	-0.081 (-0.091, -0.070)	0.747 (0.668, 0.816)	0.769 (0.668, 0.850)	-0.021 (-0.062, 0.021)
Knowledge (public figures)	0.120 (0.113, 0.128)	-0.363 (-0.392, -0.338)	-0.091 (-0.102, -0.081)	-0.074 (-0.082, -0.068)	0.874 (0.823, 0.922)	0.831 (0.786, 0.874)	0.043 (0.006, 0.083)
Knowledge (statistics)	0.032 (0.022, 0.044)	-0.365 (-0.421, -0.313)	-0.154 (-0.173, -0.137)	-0.068 (-0.080, -0.057)	0.675 (0.565, 0.778)	0.644 (0.534, 0.756)	0.031 (-0.011, 0.070)
Policy (attitudes)	0.057 (0.053, 0.061)	-0.255 (-0.275, -0.236)	-0.100 (-0.108, -0.093)	-0.060 (-0.064, -0.055)	0.771 (0.726, 0.812)	0.830 (0.780, 0.876)	-0.059 (-0.087, -0.029)
Policy (perceptions)	0.066 (0.057, 0.075)	-0.294 (-0.325, -0.263)	-0.128 (-0.140, -0.115)	-0.084 (-0.094, -0.075)	0.870 (0.810, 0.921)	0.882 (0.816, 0.932)	-0.012 (-0.040, 0.019)

Note: This table is identical to Table A.2, except that it only uses within-respondent variation in confidence.

Table A.7: Regression Test for Differences in Intercepts and Slopes, Within Respondent, Study 2

	Model		
Term	Bivariate	Variable Intercepts	Variable Intercepts & Slopes
(Intercept)	0.052 (0.049, 0.054)	0.080 (0.075, 0.084)	0.061 (0.056, 0.066)
DK	-0.243 (-0.254, -0.233)	-0.284 (-0.294, -0.274)	-0.227 (-0.243, -0.210)
Knowledge (civic trivia)		-0.037 (-0.043, -0.031)	0.009 (-0.002, 0.020)
Knowledge (public figures)		0.019 (0.013, 0.025)	0.059 (0.051, 0.068)
Knowledge (statistics)		-0.064 (-0.070, -0.058)	-0.029 (-0.041, -0.016)
Policy (attitudes)		-0.017 (-0.022, -0.012)	-0.005 (-0.011, 0.002)
Policy (perceptions)		-0.016 (-0.022, -0.010)	0.005 (-0.006, 0.016)
DK × Knowledge (civic trivia)			-0.205 (-0.259, -0.154)
DK × Knowledge (public figures)			-0.137 (-0.171, -0.107)
DK × Knowledge (statistics)			-0.138 (-0.198, -0.086)
DK × Policy (attitudes)			-0.028 (-0.055, -0.005)
DK × Policy (perceptions)			-0.068 (-0.105, -0.030)
R^2	0.543 (0.513, 0.572)	0.818 (0.795, 0.839)	0.853 (0.831, 0.873)

Note: This table is identical to Table 6, except that it only uses within-respondent variation in confidence.

Table A.8: Comparison of Model Fit for Table A.7.

Model	R^2
Bivariate	0.55206 (0.51253, 0.57244)
Intercept	0.57870 (0.54092, 0.59983)
Slope	0.85998 (0.54259, 0.60511)
Bivariate vs. Intercept	0.02664 (0.01593, 0.04080)
Bivariate vs. Slope	0.30792 (0.01818, 0.04705)
Intercept vs. Slope	0.28128 (0.00098, 0.00928)

Note: This table is identical to Table A.3, except that it only uses within-respondent variation in confidence.

Table A.9: Regression Test by Demographic Characteristics, Within Respondent, Study 2

		Model 1: % DK		Model 2: ln(% DK)		Comparison of R^2		
Trait	Category	Intercept	Slope	Intercept	Slope	Model 1	Model 2	Difference
Age	18-29	0.051 (0.044, 0.058)	-0.257 (-0.282, -0.234)	-0.116 (-0.125, -0.107)	-0.067 (-0.073, -0.061)	0.498 (0.436, 0.557)	0.595 (0.534, 0.653)	-0.097 (-0.125, -0.067)
	30-39	0.049 (0.042, 0.055)	-0.239 (-0.266, -0.214)	-0.100 (-0.110, -0.090)	-0.058 (-0.064, -0.052)	0.500 (0.427, 0.573)	0.577 (0.503, 0.647)	-0.078 (-0.109, -0.045)
	40-49	0.051 (0.045, 0.057)	-0.230 (-0.256, -0.205)	-0.087 (-0.097, -0.076)	-0.051 (-0.058, -0.045)	0.503 (0.430, 0.577)	0.561 (0.479, 0.639)	-0.058 (-0.103, -0.010)
	50-64	0.048 (0.044, 0.053)	-0.218 (-0.238, -0.199)	-0.087 (-0.095, -0.079)	-0.050 (-0.055, -0.046)	0.481 (0.423, 0.543)	0.546 (0.486, 0.606)	-0.065 (-0.099, -0.028)
	65+	0.050 (0.044, 0.055)	-0.236 (-0.260, -0.211)	-0.079 (-0.090, -0.068)	-0.042 (-0.048, -0.036)	0.519 (0.445, 0.586)	0.487 (0.408, 0.561)	0.031 (-0.024, 0.097)
Education	Associate's, degree	0.043 (0.034, 0.052)	-0.207 (-0.241, -0.173)	-0.076 (-0.090, -0.062)	-0.042 (-0.051, -0.034)	0.407 (0.308, 0.504)	0.410 (0.315, 0.508)	-0.003 (-0.065, 0.061)
	Bachelor's degree	0.049 (0.044, 0.054)	-0.239 (-0.259, -0.220)	-0.100 (-0.108, -0.093)	-0.057 (-0.062, -0.053)	0.529 (0.471, 0.586)	0.604 (0.549, 0.662)	-0.075 (-0.103, -0.048)
	Did not finish high school	0.035 (0.021, 0.048)	-0.160 (-0.215, -0.113)	-0.064 (-0.089, -0.042)	-0.036 (-0.050, -0.023)	0.276 (0.146, 0.415)	0.236 (0.110, 0.376)	0.040 (-0.027, 0.112)
	Graduate or professional	0.047 (0.039, 0.054)	-0.214 (-0.245, -0.185)	-0.081 (-0.095, -0.069)	-0.048 (-0.056, -0.041)	0.375 (0.299, 0.458)	0.405 (0.323, 0.496)	-0.030 (-0.070, 0.010)
	High school graduate	0.049 (0.044, 0.054)	-0.233 (-0.254, -0.211)	-0.096 (-0.105, -0.088)	-0.056 (-0.061, -0.051)	0.479 (0.412, 0.540)	0.570 (0.507, 0.629)	-0.091 (-0.120, -0.058)
	Some college, no degree	0.050 (0.045, 0.056)	-0.237 (-0.260, -0.213)	-0.097 (-0.107, -0.087)	-0.056 (-0.062, -0.050)	0.515 (0.452, 0.575)	0.580 (0.512, 0.645)	-0.066 (-0.104, -0.029)
Gender	Female	0.050 (0.047, 0.054)	-0.244 (-0.259, -0.228)	-0.106 (-0.112, -0.100)	-0.061 (-0.065, -0.057)	0.537 (0.494, 0.578)	0.631 (0.588, 0.672)	-0.094 (-0.115, -0.073)

Table A.9: Regression Results by Demographic Characteristics, Study 2 (continued)

		Model 1: % DK		Model 2: ln(% DK)		Comparison of R^2		
Trait	Category	Intercept	Slope	Intercept	Slope	Model 1	Model 2	Difference
	Male	0.051 (0.047, 0.055)	-0.235 (-0.251, -0.219)	-0.093 (-0.099, -0.087)	-0.055 (-0.059, -0.051)	0.522 (0.476, 0.567)	0.598 (0.550, 0.642)	-0.076 (-0.100, -0.049)
Hispanic	No	0.051 (0.048, 0.054)	-0.241 (-0.253, -0.229)	-0.101 (-0.106, -0.097)	-0.059 (-0.062, -0.056)	0.538 (0.504, 0.573)	0.632 (0.601, 0.665)	-0.094 (-0.111, -0.078)
	Yes	0.048 (0.040, 0.056)	-0.232 (-0.263, -0.201)	-0.094 (-0.107, -0.082)	-0.054 (-0.062, -0.045)	0.465 (0.379, 0.545)	0.508 (0.422, 0.587)	-0.043 (-0.085, 0.006)
Income	0 to 25	0.050 (0.045, 0.055)	-0.237 (-0.257, -0.218)	-0.099 (-0.107, -0.091)	-0.057 (-0.063, -0.052)	0.501 (0.440, 0.560)	0.589 (0.526, 0.647)	-0.088 (-0.118, -0.058)
	100 to 200	0.039 (0.032, 0.047)	-0.206 (-0.237, -0.173)	-0.077 (-0.091, -0.063)	-0.041 (-0.049, -0.033)	0.390 (0.304, 0.471)	0.420 (0.331, 0.508)	-0.031 (-0.076, 0.020)
	200+	0.041 (0.035, 0.049)	-0.211 (-0.243, -0.181)	-0.079 (-0.092, -0.066)	-0.043 (-0.050, -0.036)	0.405 (0.322, 0.486)	0.436 (0.355, 0.517)	-0.031 (-0.079, 0.017)
	25 to 50	0.050 (0.045, 0.055)	-0.236 (-0.256, -0.214)	-0.101 (-0.109, -0.093)	-0.059 (-0.064, -0.054)	0.520 (0.465, 0.579)	0.598 (0.542, 0.657)	-0.078 (-0.109, -0.048)
	50 to 75	0.048 (0.042, 0.054)	-0.227 (-0.250, -0.202)	-0.090 (-0.100, -0.081)	-0.052 (-0.058, -0.046)	0.460 (0.391, 0.529)	0.521 (0.449, 0.590)	-0.061 (-0.099, -0.024)
	75 to 100	0.050 (0.042, 0.057)	-0.220 (-0.250, -0.189)	-0.085 (-0.097, -0.072)	-0.050 (-0.058, -0.043)	0.435 (0.349, 0.519)	0.480 (0.386, 0.567)	-0.045 (-0.093, 0.008)
	Missing	0.044 (0.033, 0.058)	-0.217 (-0.268, -0.170)	-0.080 (-0.100, -0.059)	-0.043 (-0.055, -0.031)	0.349 (0.242, 0.459)	0.327 (0.193, 0.459)	0.022 (-0.061, 0.108)
Party	Democrat	0.051 (0.047, 0.054)	-0.262 (-0.279, -0.247)	-0.103 (-0.109, -0.096)	-0.055 (-0.059, -0.052)	0.539 (0.494, 0.582)	0.652 (0.607, 0.695)	-0.113 (-0.137, -0.088)
	Independent	0.065 (0.054, 0.075)	-0.236 (-0.265, -0.204)	-0.110 (-0.122, -0.097)	-0.081 (-0.091, -0.070)	0.451 (0.373, 0.534)	0.488 (0.412, 0.566)	-0.037 (-0.062, -0.010)

Table A.9: Regression Results by Demographic Characteristics, Study 2 (continued)

		Model 1: % DK		Model 2: ln(% DK)		Comparison of R^2		
Trait	Category	Intercept	Slope	Intercept	Slope	Model 1	Model 2	Difference
	Republican	0.042 (0.039, 0.046)	-0.211 (-0.227, -0.194)	-0.082 (-0.088, -0.077)	-0.045 (-0.048, -0.042)	0.481 (0.430, 0.531)	0.593 (0.542, 0.642)	-0.112 (-0.141, -0.081)
Race	Asian or Pacific Is.	0.047 (0.035, 0.058)	-0.240 (-0.285, -0.194)	-0.080 (-0.098, -0.063)	-0.043 (-0.053, -0.034)	0.391 (0.288, 0.494)	0.376 (0.272, 0.478)	0.015 (-0.044, 0.080)
	Black	0.047 (0.039, 0.055)	-0.230 (-0.262, -0.199)	-0.097 (-0.109, -0.085)	-0.055 (-0.063, -0.048)	0.450 (0.366, 0.531)	0.542 (0.462, 0.621)	-0.092 (-0.134, -0.047)
	Other	0.044 (0.035, 0.052)	-0.210 (-0.242, -0.180)	-0.088 (-0.101, -0.075)	-0.050 (-0.059, -0.042)	0.440 (0.347, 0.530)	0.506 (0.408, 0.602)	-0.065 (-0.113, -0.015)
	White	0.050 (0.047, 0.053)	-0.234 (-0.248, -0.222)	-0.098 (-0.103, -0.092)	-0.057 (-0.060, -0.054)	0.519 (0.483, 0.555)	0.604 (0.567, 0.641)	-0.085 (-0.105, -0.068)

Note: This table is identical to Table A.4, except that it only uses within-respondent variation in confidence.

A.4 Testing the common knowledge assumption

The threshold model's second key assumption was that despite heterogeneity in political interest and news consumption, there is also a substantial common component to the topics on which the public possesses or lacks a basis to answer survey questions. This section uses data from study 1 to present a two-part validation of this assumption. The first portion of the analysis tests directly for a common component of knowledge, and the second shows that the main results hold within these same patterns.

Measurement

Both portions of the analysis split the results by interest in politics and frequency of news consumption. The political interest question asks, "Some people don't pay much attention to political campaigns. How about you? Would you say that you were very much interested, somewhat interested, or not much interested in following the political campaigns this year?" As the survey questions used in the analysis concerned candidate attributes, candidate policy positions, and respondent policy positions, this wording is apt. Although political interest was not asked in the 1993 and 1995 pilot surveys, most of the respondents also participated in the 1992 and 1994 pre-election surveys, which included the political interest questions. The political interest variables used were V923101 (1993 pilot), V940124 (1994 post and 1995 pilot), V960201 (1996 pre), V961001 (1996 post), V98P101 (1998 pilot), V980201 (1998 post), V000301 (2000 pre), and V001201 (2000 post).

Among the surveys examined, the best coverage on news consumption is a question that asks, "How many days in the past week did you read a daily newspaper?" This question was available usually asked in pre-election surveys, which provides some assurance that campaign effects do not affect the comparability of the measure across years. The newspaper readership questions used are V923203 (1993 pilot), V940125 (1994 post and 1995 pilot), V960246 (1996 pre and post), V98P103 (1998 pilot), V980202 (1998 post), and V000305 (2000 pre and post).

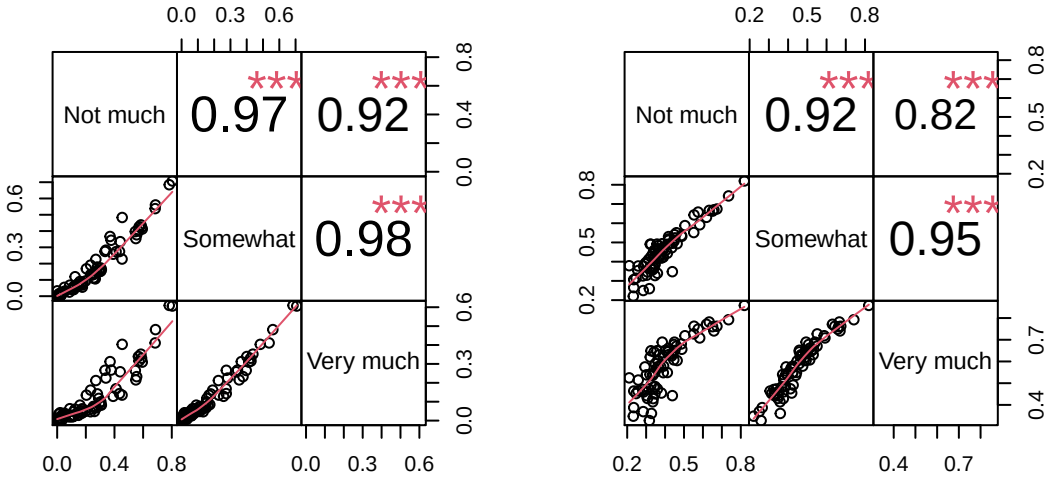
Analysis

First, across levels of both political interest and news consumption, there is a strong common component to respondents' rates of DK responding and average certainty. Figure A.11 presents correlograms using the three-level measure of interest in political campaigns. Figures A.12 and A.13 show that this relationship is even across levels of news consumption.

Figure A.11: Correlograms by interest in political campaigns.

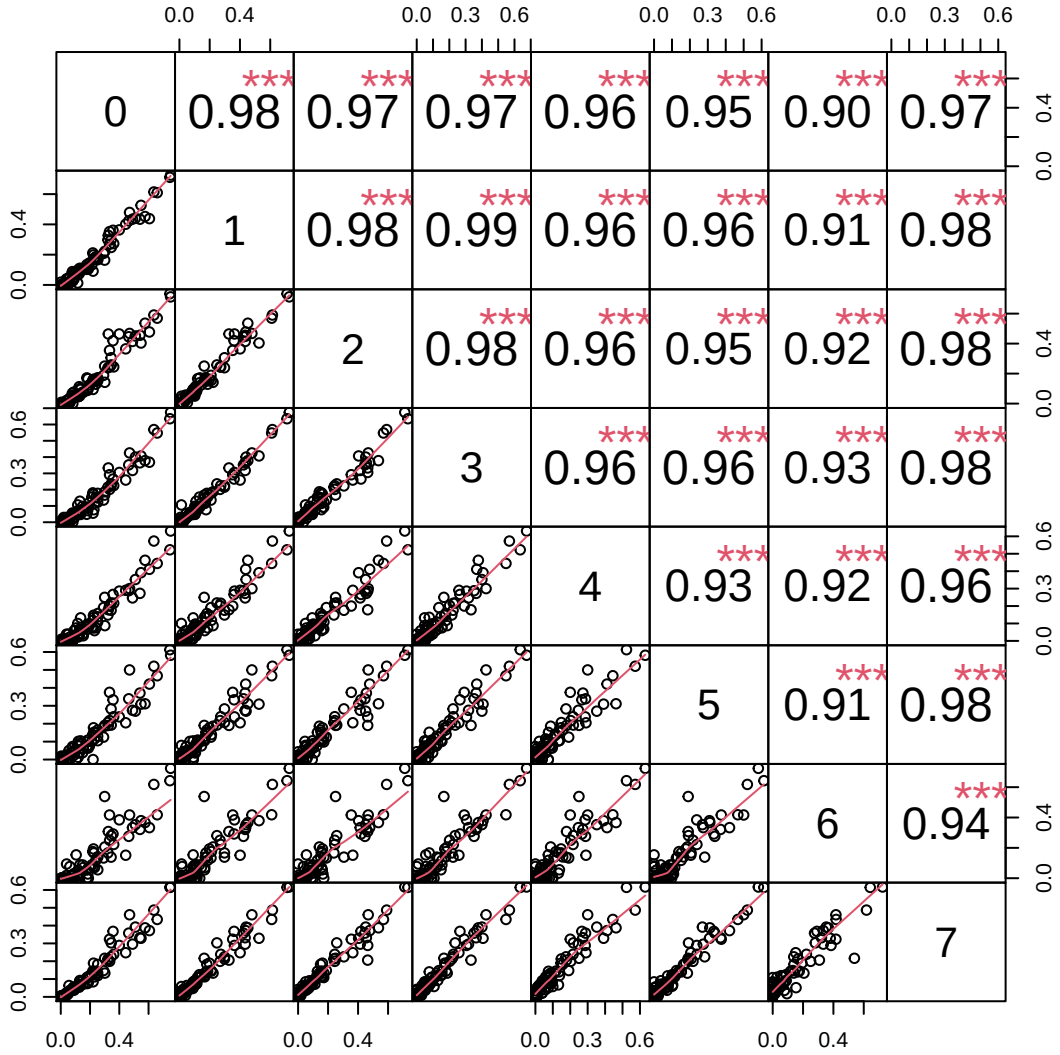
(a) DK rate

(b) Average certainty, non-DK respondents



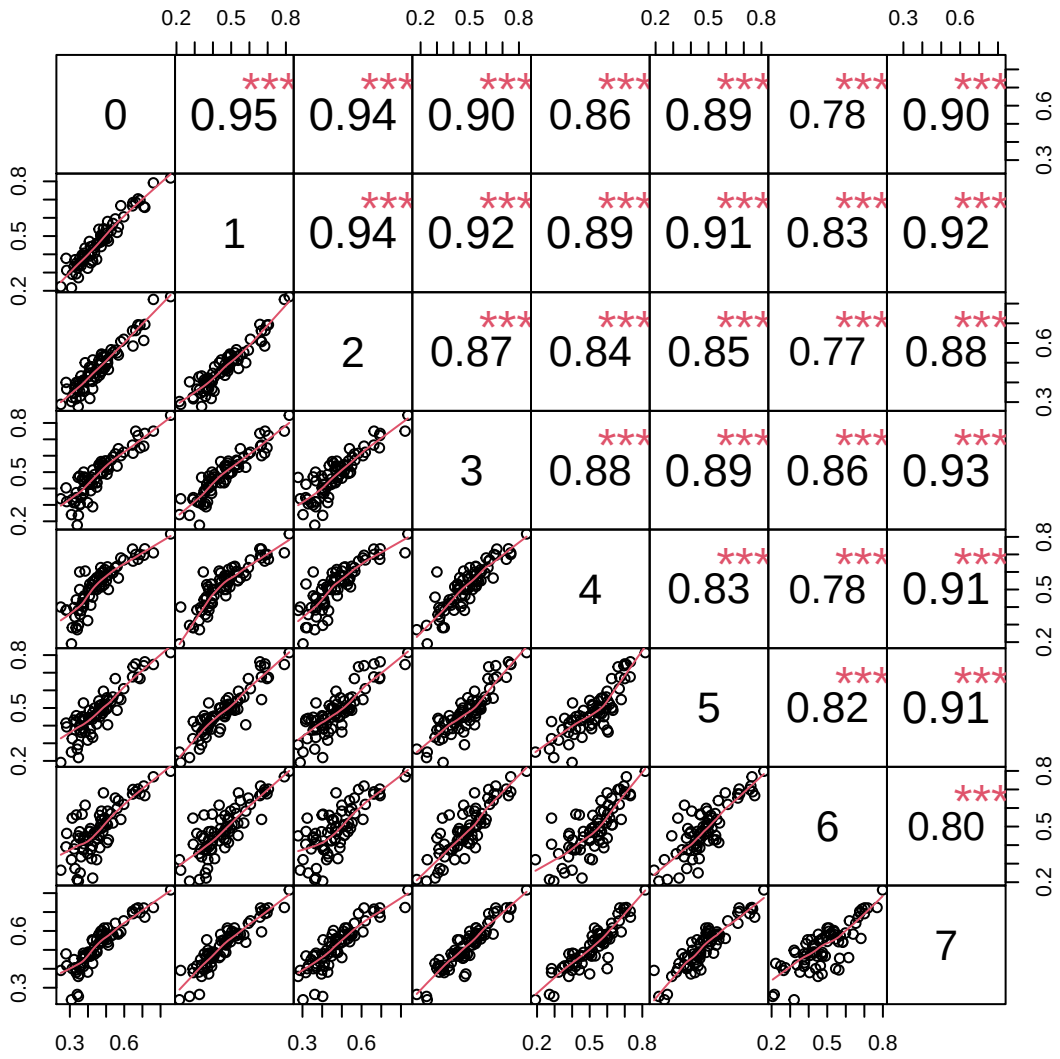
Note: This figure presents pairwise correlations of the rate of DK responding, and of average certainty, across three levels of political interest. Each point represents a survey question. The top-right set of panels prints the correlations and the bottom-left set of panels visualizes them. This figure was created in `R` using `PerformanceAnalysis::chart.Correlation`.

Figure A.12: Correlogram of DK rate by frequency of newspaper readership.



Note: This figure presents pairwise correlations of the rate of DK responding according to the number of days the respondent reported reading a daily newspaper in the past week. Each point represents a survey question. The top-right set of panels prints the correlations and the bottom-left set of panels visualizes them. This figure was created in `R` using `PerformanceAnalysis::chart.Correlation`.

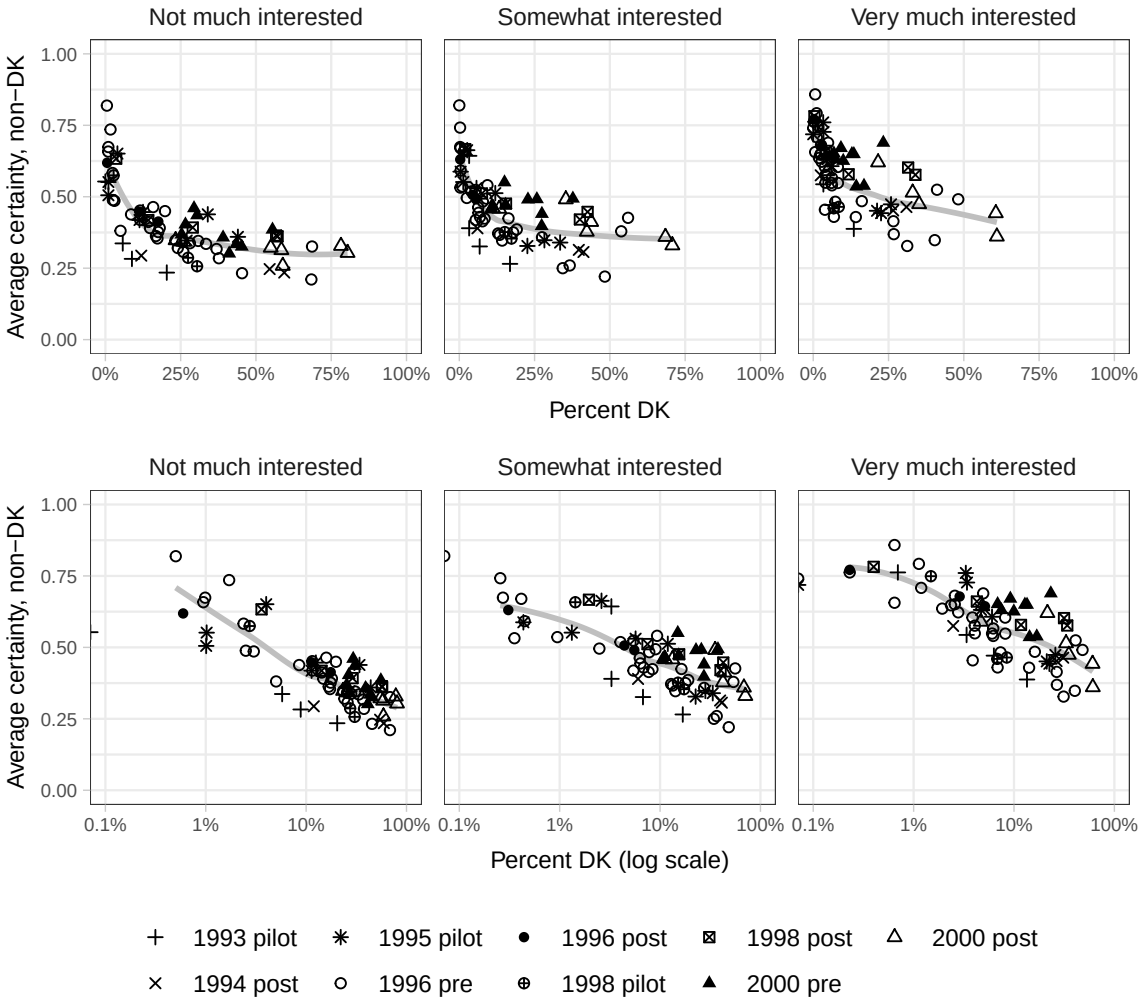
Figure A.13: Correlogram of average certainty by frequency of newspaper readership.



Note: This figure presents pairwise correlations of the rate of average certainty according to the number of days the respondent reported reading a daily newspaper in the past week. Each point represents a survey question. The top-right set of panels prints the correlations and the bottom-left set of panels visualizes them. This figure was created in `R` using `PerformanceAnalysis::chart.Correlation`.

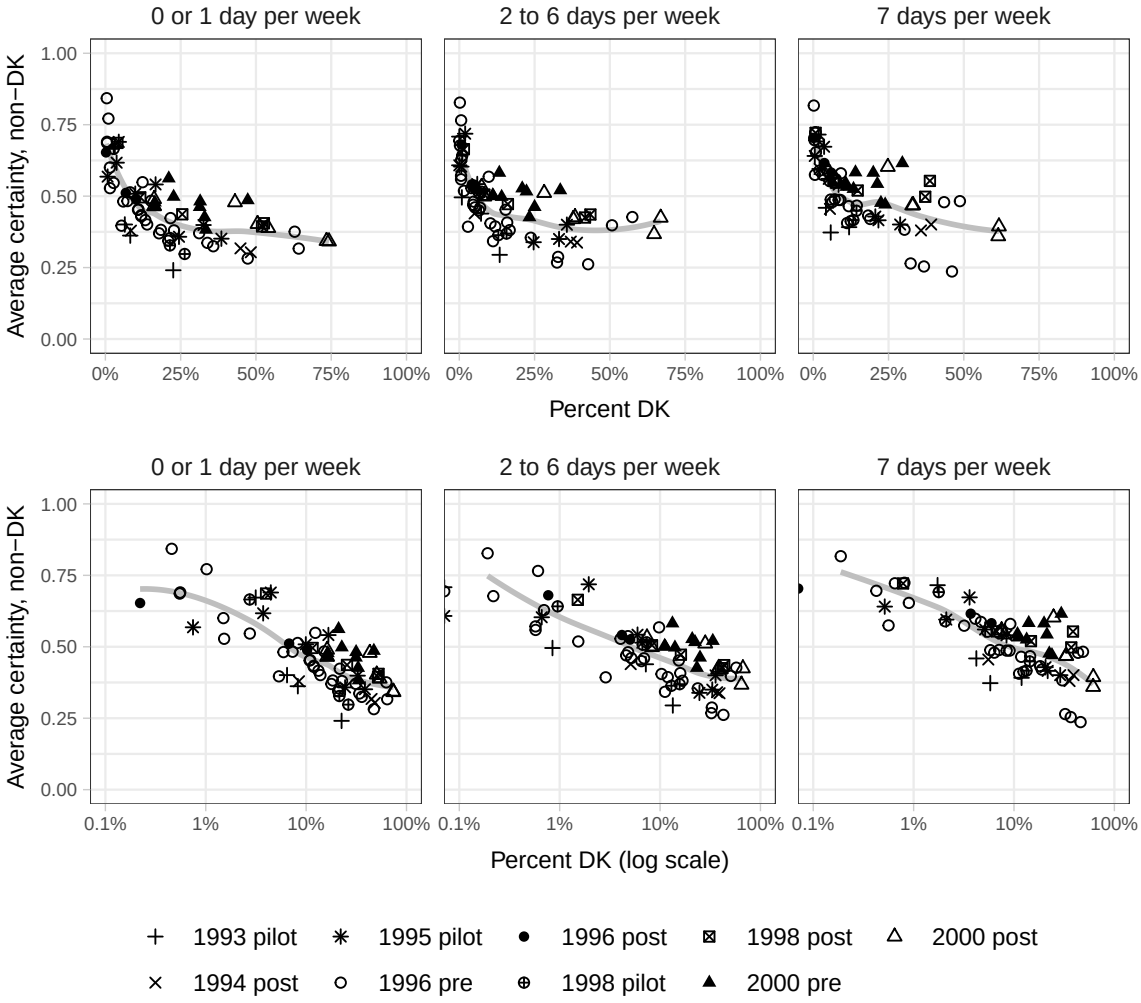
Second, I show that within levels of political interest and news consumption, the paper's main results hold. Figure A.14 plots the relationship separately for the three levels of political interest, while figure A.15 conducts the same analysis using newspaper readership terciles.

Figure A.14: Percent DK versus average certainty among other respondents, by level of political interest, 1993-2000 ANES.



Note: This figure is identical to Figure 2 in the main text, but with the results split by the respondent's level of political interest. The top row corresponds to the left panel, and the bottom row corresponds to the right panel.

Figure A.15: Percent DK versus average certainty among other respondents, by number of days read a daily newspaper in the past week, 1993-2000 ANES.



Note: This figure is identical to Figure 2 in the main text, but with the results split by the number of days the respondent read a daily newspaper in the past week. The top row corresponds to the left panel, and the bottom row corresponds to the right panel.

A.5 Estimating the confidence level of DK respondents

The main text uses an estimator of the confidence levels that DK respondents would have stated if they had answered the question. This section proves this estimator.

Let $E[C|\cdot]$ be average confidence conditional on some other variable. Let $DK \in \{0,1\}$ be an indicator variable for choosing DK. Let $A \in \{0,1\}$ be an indicator of whether a DK response is allowed.

Assume that allowing a DK response option does not affect respondents' confidence in their inference about the question; instead, it only affects how they express their level of confidence. Formally, this assumption is that

$$E[C|A=1] = E[C|A=0] \tag{2}$$

The quantity of interest is $E[C|DK=1, A=1]$: the average confidence level of DK respondents when DK responses are allowed.

Begin by rewriting $E[C|A=1]$, i.e. average confidence when DK is allowed.

$$\begin{aligned} E[C|A=1] = {} & E[C|DK=0, A=1]Pr[DK=0|A=1] + \\ & E[C|DK=1, A=1]Pr[DK=1|A=1] \end{aligned} \tag{3}$$

$$E[C|DK=1, A=1] = \frac{E[C|A=1] - E[C|DK=0, A=1]Pr[DK=0|A=1]}{Pr[DK=1|A=1]} \tag{4}$$

Now use (2) to substitute the first term in the numerator, and note that $Pr[DK=0|A=1] = 1 - Pr[DK=1|A=1]$.

$$E[C|DK=1, A=1] = \frac{E[C|A=0] - E[C|DK=0, A=1](1 - Pr[DK=1|A=1])}{Pr[DK=1|A=1]} \tag{5}$$

This is identical to expression (1) in the main text, which substitutes brief verbal explanations for the variables (e.g., "said DK" instead of $DK=1$, "DK allowed" instead of $A=1$).

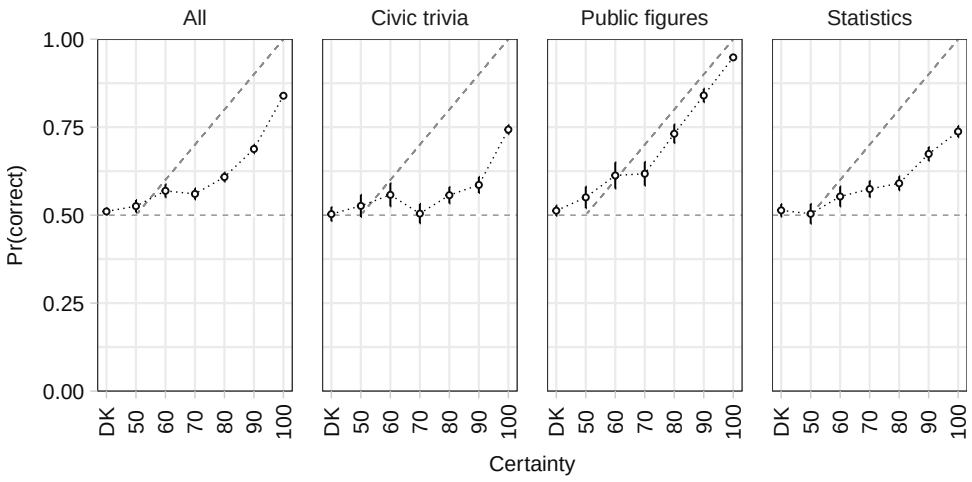
To estimate statistical uncertainty about this estimator, I used the block boostrap, which is described in section A.1.

A.6 Support for discussion of Luskin and Bullock (2011)

The discussion section includes a claim that certainty is a strong predictor of accuracy on the type of general knowledge questions examined by Luskin and Bullock (2011). This section verifies this claim.

Before examining particular questions, it is informative to look at the overall relationship between certainty and accuracy. Figure A.16 plots the percentage of respondents who answered correctly by certainty level. The leftmost panel pools across all questions, while the other four panels examine the four categories considered in the paper. In every category, respondents who are more certain are also more accurate; the sources of variation between the categories can be seen in the question-by-question analysis below. Consistent with Luskin and Bullock's results, the best guesses of respondents who initially said "don't know" are quite close to 50 percent accuracy.

Figure A.16: Relationship between certainty and accuracy by category of knowledge question.

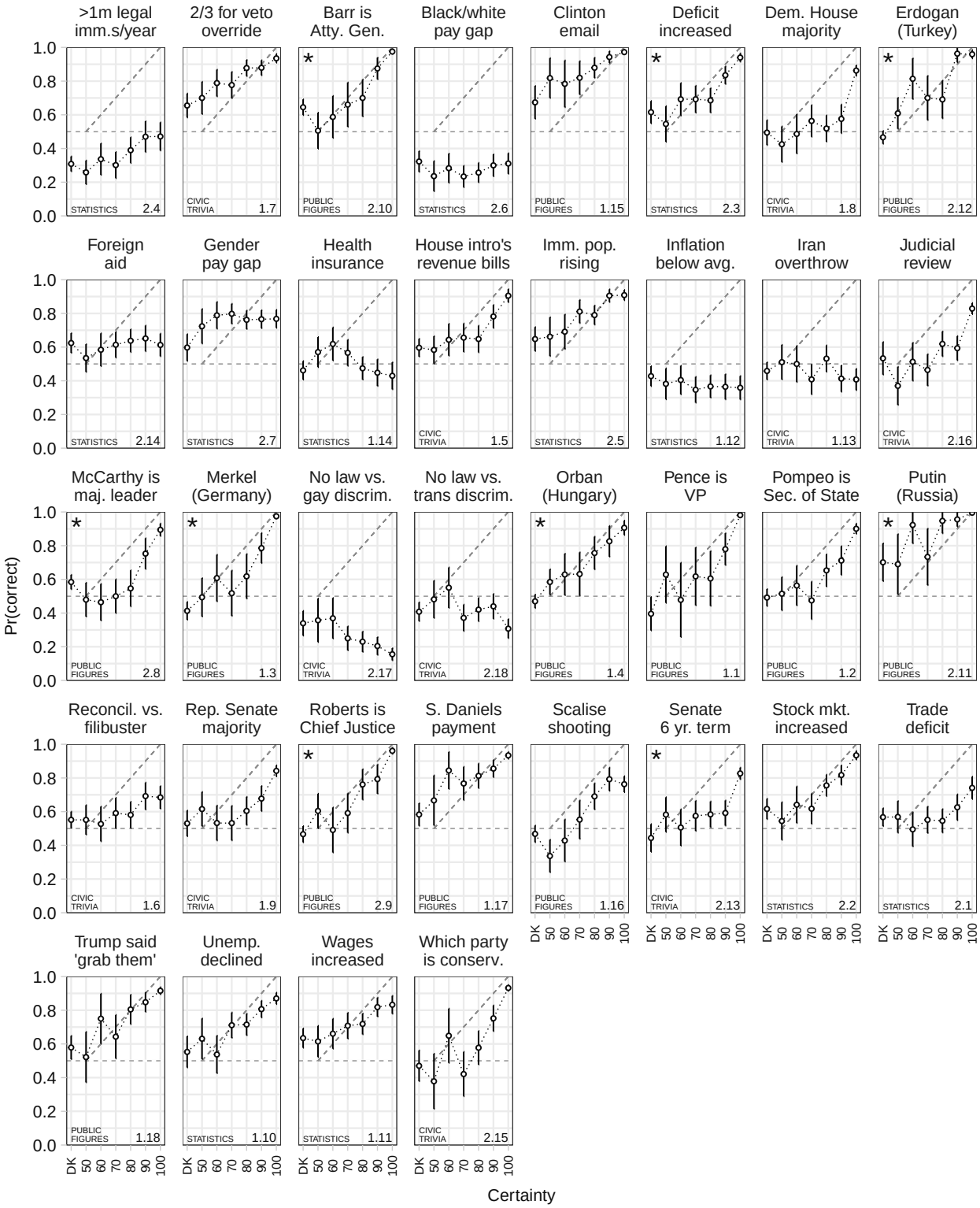


Luskin and Bullock (2011) examine seven questions in their analysis: the length of a Senate term, who nominates federal judges, the trend in the federal budget deficit, and the job or political office of four public figures (then-U.K. prime minister Tony Blair, then-Senate Majority Leader Trent Lott, then-Chief Justice William Rehenquist, and then-Attorney General Janet Reno). In the data examined here, most of these questions have fairly close cousins. A Senate term length and deficit trend questions are included; job or political office questions include current House Majority Leader, Chief Justice, and Attorney General; and several foreign leaders are featured. The only question without a clear match pertains to the nomination of federal judges. Here, the closest comparison is the civic trivia items that ask about governmental procedures.

Figure A.17 plots the same information separately for each question included in the survey. The certainty-accuracy relationship is consistently strong on the questions that are similar to those examined by Luskin and Bullock (2011); these questions are highlighted by a * in the upper-left corner. At the bottom of each panel, the question category is listed, as well as the question number that appears below in the full survey text. The differences between categories are driven

by particular questions with weak or negative relationships between certainty and accuracy. These results are consistent with Graham's (2020) finding that while the relationship between certainty and accuracy is usually positive, widely-shared heurisics lead to a negative relationship on some questions.

Figure A.17: Relationship between certainty and accuracy by category of knowledge question.

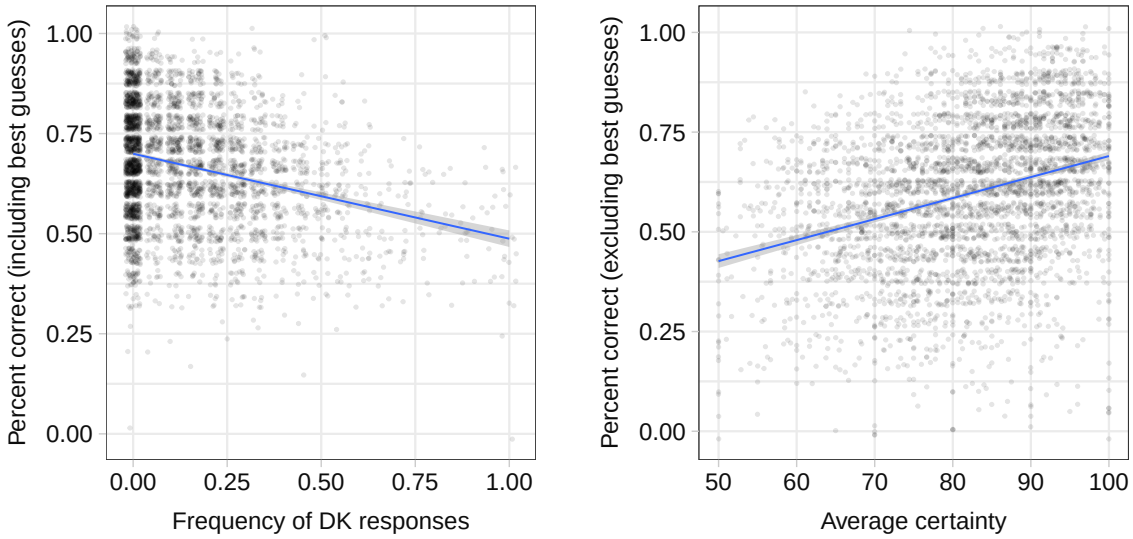


Individual-level relationships provide another window into the relationship between certainty and accuracy. Figure A.18 shows that respondents who say DK more have lower overall knowledge levels (left panel). Among questions on which the respondent provided an answer, respondents who are more certain on average are also more correct on average (right panel).

Figure A.18: Individual-level relationship between certainty and accuracy.

(a) DK rate vs. percent correct, all knowledge questions.

(b) Average certainty vs. percent correct, non-DK questions only.



A.7 Simulation study

This section briefly supplements the main studies with a simulation analysis based on two surveys conducted in 2020 (see Graham 2021 for details). These questions were similar in format to Study 2's knowledge questions, except that DK responses were not allowed and refusals were strongly discouraged.

Approach

The intuition behind these simulations is that the oft-noted pressure to produce a response in interviewer-administered surveys may be thought of as setting a relatively low confidence threshold for answering the question, while the relative ease of saying DK online can be viewed as setting the threshold higher. An opinion filter can be viewed the same way: a lack of a filter sets a low threshold, while using a filter that tells people not to answer unless they are sure sets a higher threshold.

If this intution is correct, performing simulations that compare a low and a high threshold should reproduce both the patterns seen in this study, as well as other patterns observed across these survey modes. I focus on previous studies that allow comparisons between DK rates on the phone versus online (Atkeson and Adams 2018) and with and without an opinion filter (Bishop et al. 1980).

To capture this, I compare two thresholds: a low threshold, 51 percent confidence, and a higher threshold, 60 percent. The higher threshold is set at 60 percent to match this paper's finding that the average online respondent who says DK would have stated 60 percent confidence. The 51 percent threshold is an arbitrarily lower number, representing the intution that one will guess on the phone if one even has the slightest idea about the question. Below, I relax the assumption that all respondents have the same threshold.

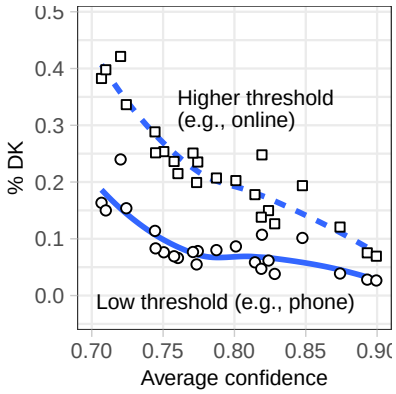
Results

Figure A.19a plots the percentage of responses that the model predicts would be converted into DKs. With both a low and a higher threshold, greater confidence means fewer DKs. However, because high-threshold technologies cast a wider net, they "convert" uncertainty into DK responses at a higher rate. This gives rise to the more general property observed by both Atkeson and Adams (2018) and Bishop et al. (1980): the more DKs are captured by a low-threshold measure, the more an increase in the threshold will increase the DK rate.

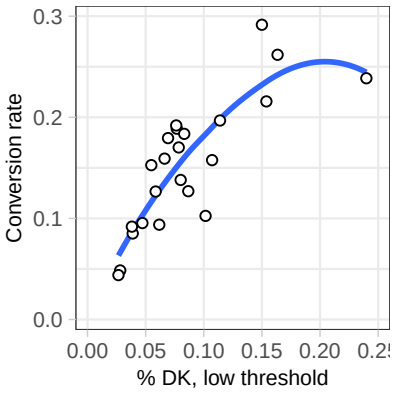
To show this more directly, Figure A.19b more directly reproduces the originally observed relationship, plotting the "conversion rate" (y-axis) against the DK rate on the lower-threshold technology. The conversion rate is the percentage of substantive responses that switch to DK when the threshold increases. Mathematically, this is given by the expression

$$\frac{E[DK|\text{higher threshold} - E[DK|\text{lower threshold}]}{1 - E[DK|\text{lower threshold}]}.$$

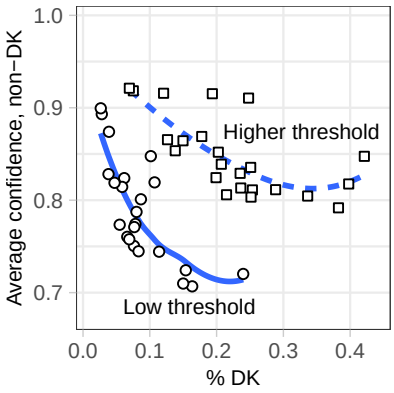
Figure A.19: Predicted differences between survey technologies under the threshold model.



(a) Predicted DK rate by average confidence.



(b) Predicted difference in DK conversion rate, low vs. higher threshold.



(c) Predicted "we don't know" means "they're not sure" relationship.

Just as in the original studies, Figure A.19b suggests that when the DK rate using the lower-threshold technology is higher, a larger share of substantive responses are eliminated by a threshold-increasing design choice.

Low thresholds' tendency to "convert" responses into DKs at a lower rate can also explain why the shape of the "we don't know" means "they're not sure" relationship differed between Study 1 and Study 2. Figure A.19c plots the predicted relationship at a low threshold and a high threshold; the x- and y-axes have the same interpretation as Figures 2, 3, 4, and 5.

The low-threshold simulation predicts that low-threshold technologies will see a sharp drop-off at lower rates of DK. This is consistent with Study 1, which used interviewer-administered surveys. Meanwhile, the higher threshold sees a more gradual relationship, consistent with the online surveys analyzed in Study 2.

Varying the Threshold

Though the threshold model is easier to illustrate under the assumption that all respondents use the same confidence threshold, this is not likely to be the case. The main text provides two reasons to think that thresholds might vary: the discussion of Mondak's findings on differences in guessing behavior, and the finding that DK responses filter out a few responses that would have been stated with 70 percent confidence or higher.

In one sense, it does not matter if the threshold varies; to whatever extent it does or does not, the "we don't know" means "they're not sure" relationship exists. But to build better understanding, it is worth checking robustness to heterogeneity in the threshold.

To examine how heterogeneity in the confidence threshold might affect the results, I re-created each panel in Figure A.19 under the following eleven alternative assumptions:

- **Small random differences.** Uniformly distributed noise from -5 to 5 is added to respon-

dent's thresholds.

- **Large random differences.** Uniformly distributed noise from -10 to 10 is added to respondent's thresholds.
- **Large random differences, reversed.** The same uniformly distributed noise is added, but is multiplied by -1.
- **Small knowledge-based.** The threshold varies as a function of the number of questions the respondent answered correctly. The more knowledge, the higher the threshold. Each respondent's threshold is equal to the overall threshold (51 or 60) plus 50 percent of the difference between their number correct and the average number.
- **Small knowledge-based, reversed.** Same as above, but reversed. Less knowledge means a higher the threshold.
- **Large knowledge-based.** The threshold varies as a function of the number of questions the respondent answered correctly. The more knowledge, the higher the threshold. Each respondent's threshold is equal to the overall threshold (51 or 60) plus 100 percent of the difference between their number correct and the average number.
- **Large knowledge-based, reversed.** Same as above, but reversed. The less knowledge, the higher the threshold.
- **Small confidence-based.** The threshold varies as a function of the respondent's average confidence level. The more confidence, the higher the threshold. Each respondent's threshold is equal to the overall threshold (51 or 60) plus 50 percent of the difference between their confidence and the average.
- **Small confidence-based, reversed.** Same as above, but reversed. Less confidence means a higher the threshold.
- **Large confidence-based.** The threshold varies as a function of the respondent's average confidence level. The more confidence, the higher the threshold. Each respondent's threshold is equal to the overall threshold (51 or 60) plus 100 percent of the difference between their confidence and the average.
- **Large confidence-based, reversed.** Same as above, but reversed. The less confidence, the higher the threshold.

The figures below reproduce each panel of Figure A.19 under these assumptions. In all cases, the relationship is robust to heterogeneity in the threshold. The final figure shows that the "we don't know" means "they're not sure" relationship should still be expected even when the threshold varies and only within-respondent variation in confidence is used.

Figure A.20: Predicted DK rate by average confidence, variable threshold scenarios.

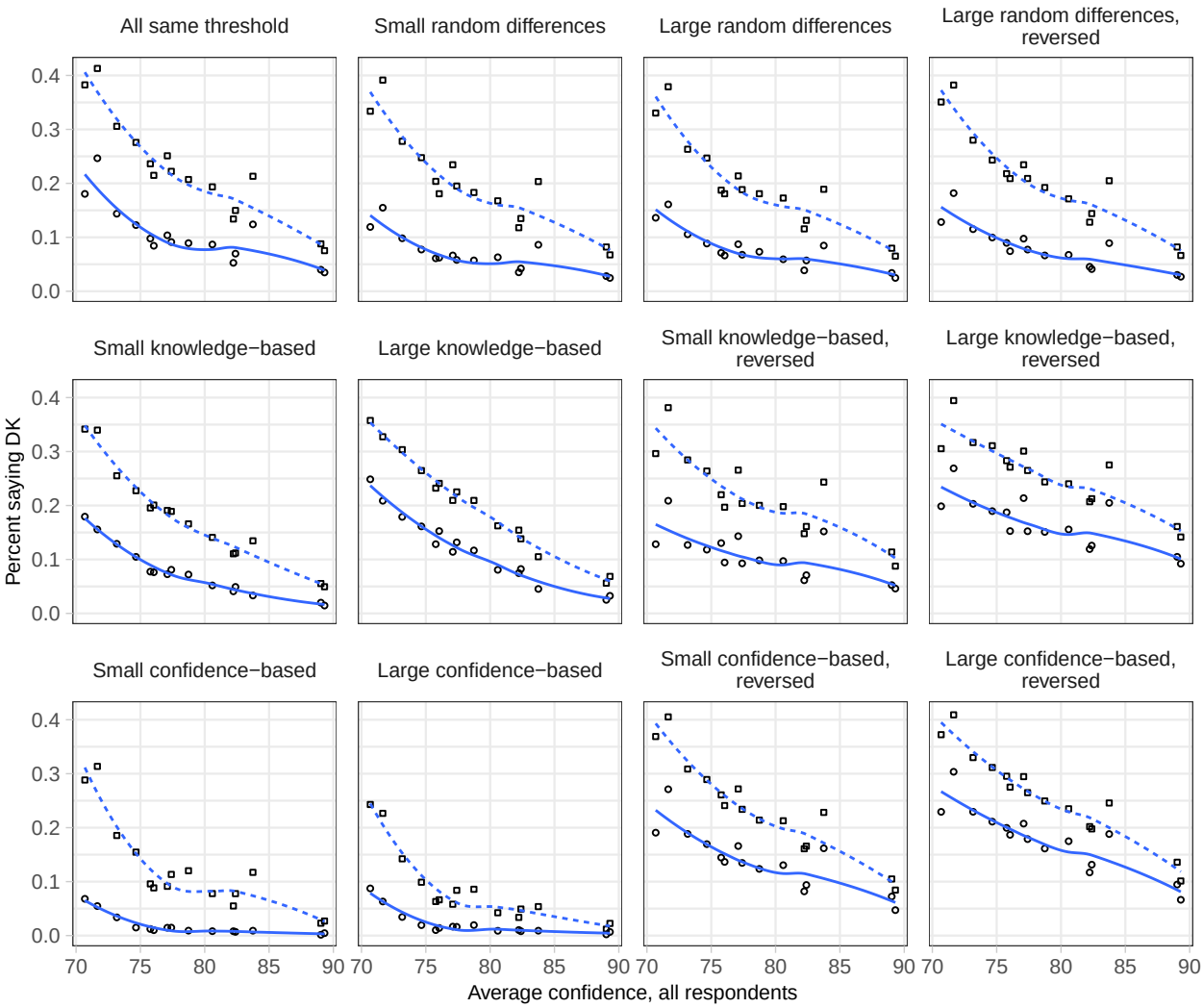


Figure A.21: Predicted difference in DK conversion rate, low vs. higher threshold, variable threshold scenarios.

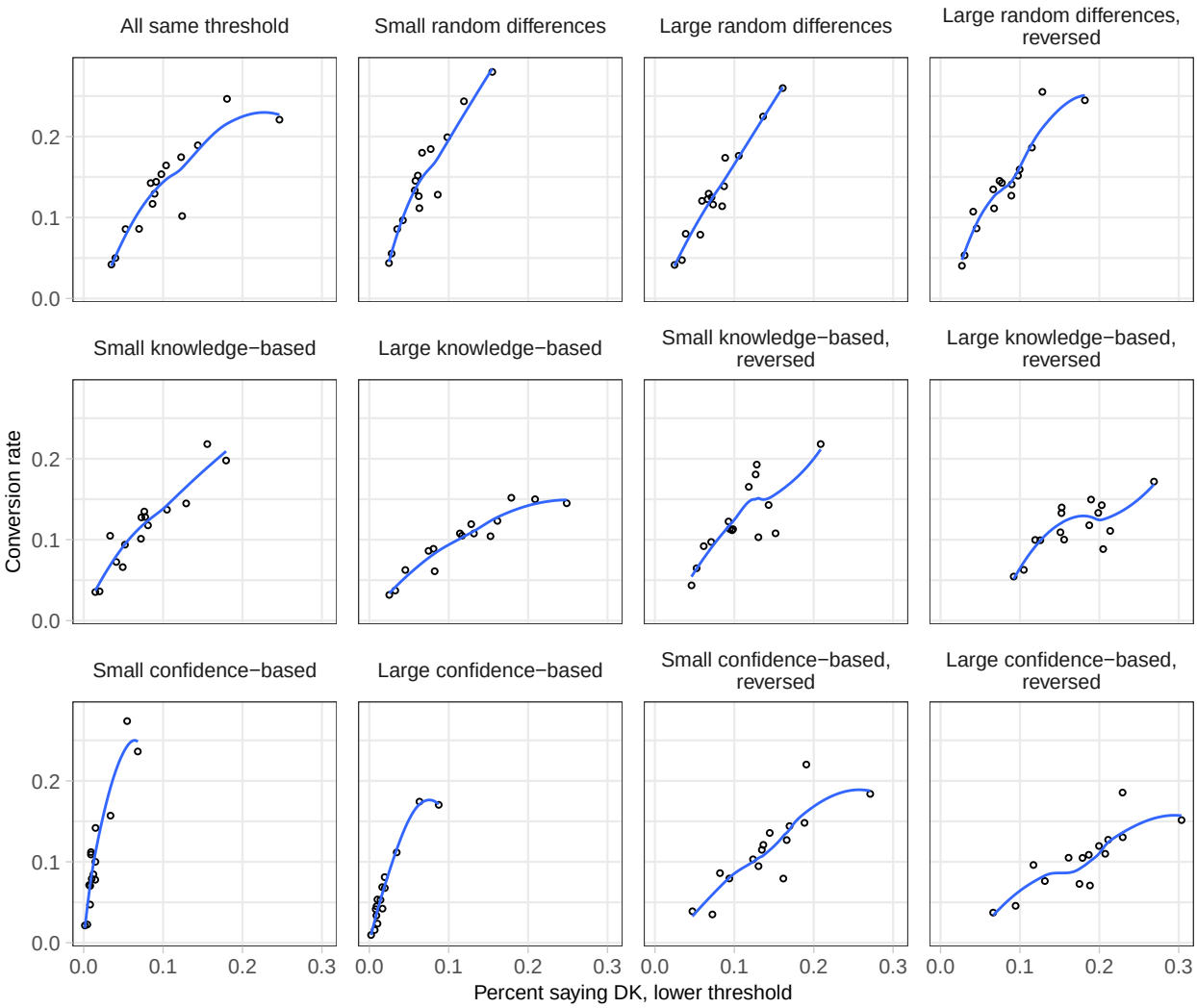


Figure A.22: Predicted "we don't know" means "they're not sure" relationship, variable threshold scenarios.

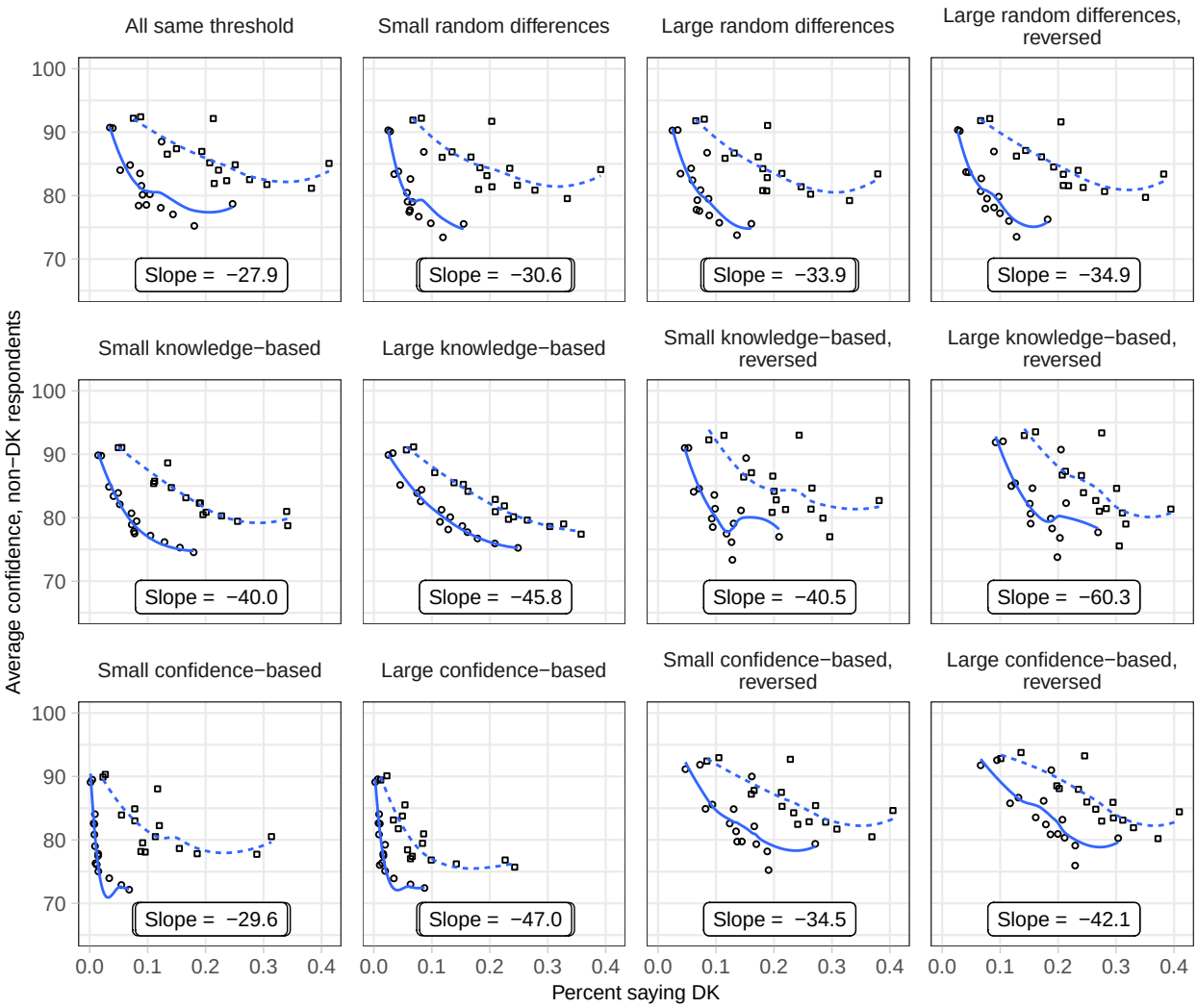
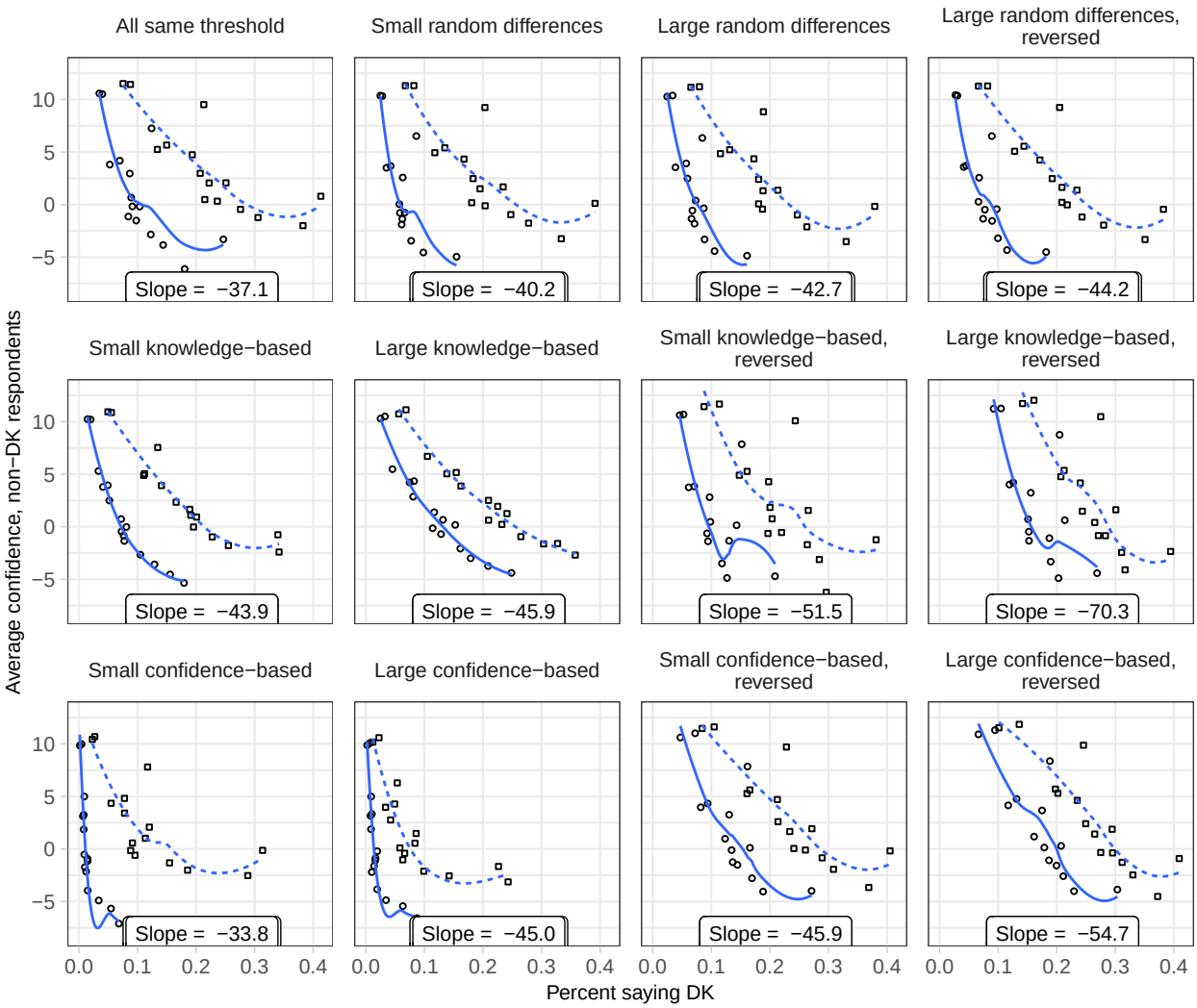


Figure A.23: Predicted "we don't know" means "they're not sure" relationship, within-respondent variation only, variable threshold scenarios.



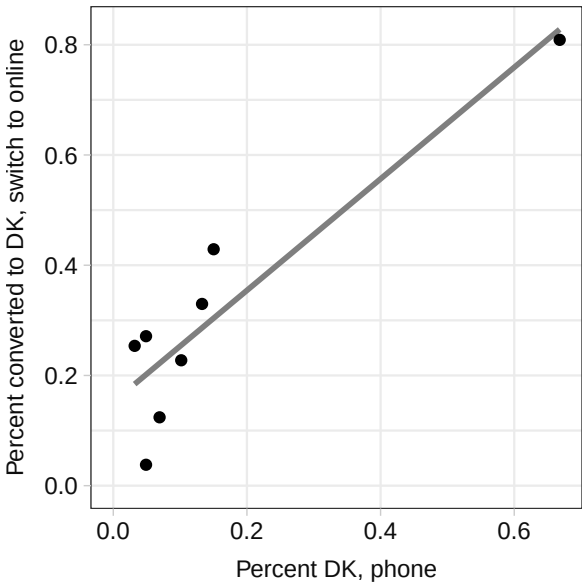
A.8 Reanalysis of Atkeson and Adams (2018) and Bishop et al. (1980)

The main text briefly discusses the consistency between the confidence threshold model and a result seen in both Atkeson and Adams (2018) and Bishop et al. (1980): in response to a change in survey technologies that can be interpreted as raising the threshold, a larger proportion of substantive responses should be "converted" to DK on questions that were high on DK to begin with. The previous section's simulation study demonstrated this prediction (Figures **??** and A.21). This section confirms that the relationship existed in the original studies through a reanalysis of their data.

Bishop et al. (1980) conducted a split ballot experiment that featured seven attitudinal questions. Though they do not directly report the relationship between the DK rate and the conversion rate, it can be backed out of their Tables 1 and 2. In the replication file, `bishop_etal_1980.xlsx` contains the complete calculations.

Figure A.24 displays the results. Just as noted in the main text, a higher percentage DK without an opinion filter predicts a higher conversion rate due to the opinion filter.

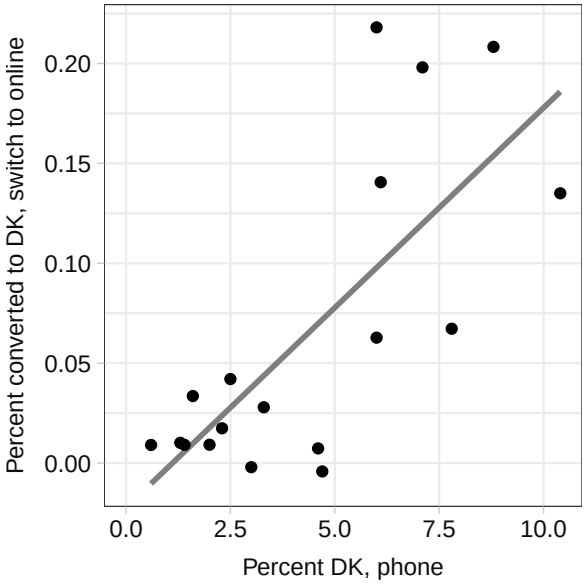
Figure A.24: Reanalysis of Bishop et al. (1980)



Atkeson and Adams (2018) describe a survey that was conducted partly over the phone and partly online. They report that on questions that were high-DK on the phone, there was an especially large increase in the DK rate with the move online. I contacted the authors and obtained cross-tabulations for all of the questions related to perceptions of election integrity and voter fraud.

Figure A.25 displays the results. Just as noted in the main text, a higher percentage DK on the phone predicts a higher conversion rate with the move online.

Figure A.25: Reanalysis of Atkeson and Adams (2018)



A.9 Examples of time trends in DK responding

To support the discussion in the main text, this section provides some examples in which the percentage of DK responses declined over time.

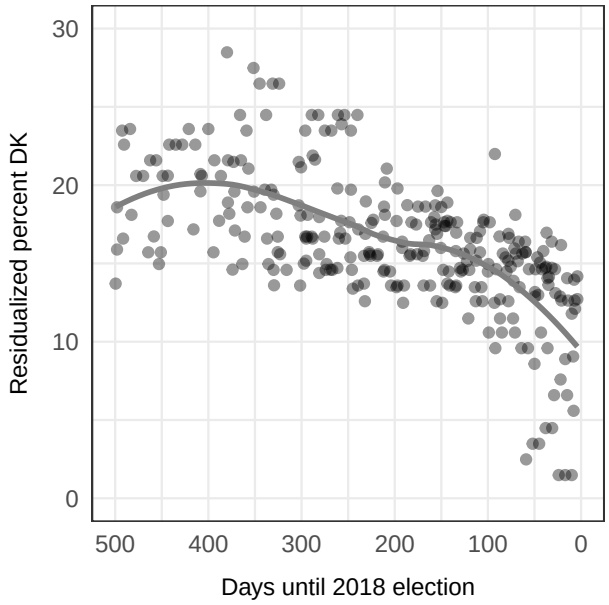
- **Vote intentions.** As election day nears, the percentage DK in response to survey questions about candidate preferences declines. In the 500 days before the 2018 election, the rate of DK declined about 1 percentage every 50 days; in the 100 days before, the DK rate lost a point every 17 days (Figure A.26). Further in advance of the election, even many of those who say they plan to vote for the Democrat or the Republican are probably still making up their minds. *Source:* Real Clear Politics, "2018 Generic Congressional Vote," accessed November 2, 2019.

- **Public support for war.** Between 1966 and 1972, the percentage DK on the ANES question about support for the Vietnam War declined from 21 to 14 percent. *Source:* ANES 1966 and 1972 time series files, available at electionstudies.org.

- **Perceptions of climate change.** The percentage DK on each of Gallup's questions has fallen by at least half since it was first asked. The questions concern when the effects of global warming will begin, whether global warming is occurring, whether the effects of global warming are exaggerated, whether global warming will pose a serious threat to the respondent's way of life, and whether global warming is attributable to natural causes. *Source:* Gallup, "Topics A to Z: Environment," accessed December 31, 2019.

- **Democratic backsliding.** Between 2011 and 2015, the percentage of Polish respondents saying DK to a question about support for a strong leader who would completely change the system of government declined from 19 percent to 11 percent (Tworzecki 2019).

Figure A.26: Time trend in DK rate, 2018 House generic ballot.



Note: For the 500 days leading up to the November 6, 2018 election, this figure displays a normalized measure of the percentage of DK responses to House generic ballot questions, which ask whether the respondent plans to vote for a Democrat or a Republican in the upcoming election. The X axis is the number of days until the election. The Y axis displays the percentage DK in each poll, normalized by (1) subtracting the mean for that poller and (2) adding back the overall mean. *Source:* Real Clear Politics, "2018 Generic Congressional Vote." Downloaded November 2, 2019.

B Survey Information

B.1 Study 1 question text

Table B.10 lists all of the ANES questions used in the analysis. The source file for the 1992-1997 surveys was the 1992-1997 merged file. The weight variables used to analyze the election-year surveys were V923008, V940004, and V960003. The source file for the 1998 post-election survey was the 1998 time series file. The weight variable used to analyze this survey was V980002. The source file for the 1998 pilot was the 1998 pilot file. No weight variable appeared in this file. The source file for the 2000 pre- and post-election surveys was the 2000 time series file. The weight variables used to analyze this survey were WT00PRE and WT00PO.

Table B.10: List of ANES questions

Survey	Initial Q	Certainty Q	Description
1993 Pilot	937204	937208	Liberal/conservative self-placement
1993 Pilot	937209	937210	* Clinton liberal/conservative placement
1993 Pilot	937214	937216	* Clinton liberal/conservative placement
1993 Pilot	937220	937221	Perot liberal/conservative placement
1993 Pilot	937220	937221	House incumbent liberal/conservative placement
1994 Post	940841	940842	Clinton liberal/conservative placement
1994 Post	940843	940844	House Dem. candidate liberal/conservative placement
1994 Post	940843	940844	House Rep. candidate liberal/conservative placement
1995 Pilot	952072	952073	Clinton strong leader
1995 Pilot	952074	952075	Clinton moral
1995 Pilot	952076	952077	Dole strong leader
1995 Pilot	952078	952079	Dole moral
1995 Pilot	952190a	952191	Environmental regulation self-placement
1995 Pilot	952194a	952195	Clinton environmental regulation placement
1995 Pilot	952204a	952205	Senator #1 environmental regulation placement
1995 Pilot	952108a	952109	Senator #2 environmental regulation placement
1996 Pre	960365	960367	Liberal/conservative self-placement
1996 Pre	960369	960370	Clinton liberal/conservative placement
1996 Pre	960371	960372	Dole liberal/conservative placement
1996 Pre	960373	960374	Perot liberal/conservative placement
1996 Pre	960375	960376	House Dem. candidate liberal/conservative placement
1996 Pre	960377	960378	House Rep. candidate liberal/conservative placement
1996 Pre	960423	960424	Clinton moral
1996 Pre	960430	960431	Clinton gets things done
1996 Pre	960432	960433	Dole moral
1996 Pre	960439	960440	Dole gets things done
1996 Pre	960441	960442	Perot moral

Table B.10: List of ANES questions (continued)

Survey	Initial Q	Certainty Q	Description
1996 Pre	960448	960449	Perot gets things done
1996 Pre	960450	960451	Spending/services self-placement
1996 Pre	960453	960454	Clinton spending/services placement
1996 Pre	960455	960456	Dole spending/services placement
1996 Pre	960457	960458	Perot spending/services placement
1996 Pre	960463	960464	Defense spending self-placement
1996 Pre	960466	960467	Clinton defense spending placement
1996 Pre	960469	960470	Dole defense spending placement
1996 Pre	960472	960473	Perot defense spending placement
1996 Pre	960487	960488	Aid to blacks self-placement
1996 Pre	960490	960491	Clinton aid to blacks placement
1996 Pre	960492	960493	Dole aid to blacks placement
1996 Pre	960494	960495	Perot aid to blacks placement
1996 Pre	960503	960504	Abortion self-placement
1996 Pre	960506	960507	Clinton abortion placement
1996 Pre	960509	960510	Dole abortion placement
1996 Pre	960512	960513	Perot abortion placement
1996 Pre	960523	960524	Environment/jobs self-placement
1996 Pre	960526	960527	Clinton environment/jobs placement
1996 Pre	960529	960530	Dole environment/jobs placement
1996 Pre	960532	960533	Perot environment/jobs placement
1996 Post	961269	961271	Liberal/conservative self-placement
1996 Post	961273	961274	Clinton liberal/conservative placement
1996 Post	961275	961276	Dole liberal/conservative placement
1998 Pilot	98P291	98P293	* Liberal/conservative self-placement
1998 Pilot	98P294	98P296	* Liberal/conservative self-placement
1998 Pilot	98P297	98P298	Governor candidate #1 liberal/conservative placement
1998 Pilot	98P299	98P300	Governor candidate #2 liberal/conservative self-placement
1998 Post	980399	980400	Liberal/conservative self-placement
1998 Post	980403	980404	Clinton liberal/conservative placement
1998 Post	980405	980406	Gore liberal/conservative placement
1998 Post	980407	980408	House Dem. candidate liberal/conservative placement
1998 Post	980409	980410	House Rep. candidate liberal/conservative placement
2000 Pre	000463	000464a	Gore liberal/conservative placement
2000 Pre	000473	000474a	Bush liberal/conservative placement
2000 Pre	000483	000484a	Buchanan liberal/conservative placement
2000 Pre	000696	000697	Gore abortion placement
2000 Pre	000698	000699	Bush abortion placement
2000 Pre	000735	000736	Gore gun control placement
2000 Pre	000739	000740	Bush gun control placement

Table B.10: List of ANES questions (continued)

Survey	Initial Q	Certainty Q	Description
2000 Pre	000783	000790	Gore environment placement
2000 Pre	000784	000791	Bush environment placement
2000 Post	001372	001373	Gore liberal/conservative placement
2000 Post	001374	001375	Bush liberal/conservative placement
2000 Post	001376	001377	Buchanan liberal/conservative placement
2000 Post	001378a	001379a	House Dem. candidate liberal/conservative placement
2000 Post	001379b	001379b	House indep. candidate #1 liberal/conservative placement
2000 Post	001380a	001381a	House Rep. candidate liberal/conservative placement
2000 Post	001380b	001381b	House indep. candidate #2 liberal/conservative placement
2000 Post	001405a	001406a	House Dem. candidate abortion placement
2000 Post	001405b	001406b	House indep. candidate #1 abortion placement
2000 Post	001407a	001408a	House Rep. candidate abortion placement
2000 Post	001407b	001408b	House indep. candidate #2 abortion placement

* denotes split ballot questions that were combined for data analysis.

B.2 Study 1 summary table

This table displays summary statistics for each question in Study 1. The values in the first three columns appear in the replication file as `survey`, `anes`, and `q`, respectively. The first two columns match the table in the previous section.

Table B.11: Question summary statistics, study 1

				Confidence distribution				
Survey	Variable	Code	% DK	Not very	Pretty	Very	Mean	SD
1996 pre	V960503	abort_self	0.3	5.3	23.2	71.1	0.830	0.288
1996 post	V961269	ideo_self	0.3	10.1	42.4	44.6	0.678	0.330
1996 pre	V960450	serv_self	0.4	7.3	45	47.1	0.700	0.311
1996 pre	V960523	env_self	0.4	7.8	46.4	45.3	0.688	0.313
1995 pilot	V952072	leader_clint	0.4	11.3	54.2	33.4	0.611	0.318
1996 pre	V960487	black_self	0.8	7.1	34.4	57.6	0.755	0.314
1996 pre	V960430	getdone_clint	0.9	16	55.9	27	0.556	0.325
1996 pre	V960365	ideo_self	1	12.7	47.4	37.4	0.627	0.335
1993 pilot	V937204	ideo_self	1.6	9.3	40.5	48.3	0.699	0.328
1998 pilot	V98P291	ideo_self	1.7	11.2	42.5	43.1	0.664	0.337
1996 pre	V960423	moral_clint	1.9	19.5	46.6	31.9	0.564	0.357
1998 post	V980399	ideo_self	2	4.2	30	28	0.691	0.305
1995 pilot	V952074	moral_clint	2.1	11.9	53.5	32.1	0.603	0.320
1995 pilot	V952190a	envReg_self	3.3	7.8	44	45.1	0.692	0.316
1996 pre	V960453	serv_clint	3.7	20.9	50.2	25.1	0.522	0.345
1993 pilot	V937209	ideo_clint	3.9	29.7	46.4	20	0.450	0.357
1996 pre	V960441	moral_perot	4.9	11.3	14.4	6.3	0.421	0.362
1996 post	V961273	ideo_clint	5	17.9	48.7	28.2	0.554	0.345
1996 pre	V960432	moral_dole	5.3	19.8	48.6	26.1	0.533	0.347
1996 pre	V960369	ideo_clint	6.1	19.9	45.7	28.2	0.544	0.355
1994 post	V940841	ideo_clint	6.3	29.5	40.5	17	0.428	0.358
1995 pilot	V952076	leader_dole	6.7	15.4	54.3	23.2	0.542	0.320
1993 pilot	V937220	ideo_perot	6.9	36.1	41.4	15.2	0.387	0.355
1996 post	V961275	ideo_dole	7.3	19.9	47.2	25.5	0.530	0.349
1996 pre	V960439	getdone_dole	7.3	22.7	48.4	21.4	0.493	0.345
1996 pre	V960466	def_clint	7.6	25.6	47.3	19.5	0.467	0.348
1996 pre	V960455	serv_dole	8.6	25.9	46.6	18.7	0.460	0.348
1996 pre	V960371	ideo_dole	8.8	24.7	43.1	23.3	0.493	0.363
1998 post	V980403	ideo_clint	8.8	19.1	49.2	22.7	0.519	0.338
1996 pre	V960526	env_clint	9.5	27.4	45.6	17.4	0.444	0.348
1996 pre	V960490	black_clint	10	27.3	43.8	18.7	0.452	0.355
1995 pilot	V952078	moral_dole	10.1	15.4	53.3	21.3	0.533	0.318

Table B.11: Question summary statistics, study 1 (continued)

				Confidence distribution				
Survey	Variable	Code	% DK	Not very	Pretty	Very	Mean	SD
1996 pre	V960448	getdone_perot	10.4	20.8	44.6	24	0.518	0.354
1996 pre	V960506	abort_clint	10.6	19.6	38.6	31.1	0.565	0.371
2000 post	V001372	ideo_gore	10.7	20.2	44.1	24.9	0.527	0.355
2000 post	V001374	ideo_bush	11.1	20.5	47.4	21	0.503	0.342
2000 pre	V000463	ideo_gore	13	21.1	42.8	22.5	0.508	0.355
2000 pre	V000473	ideo_bush	13.2	22	42.1	21.8	0.499	0.357
1996 pre	V960469	def_dole	13.7	29.8	41.8	14.5	0.411	0.348
1996 pre	V960492	black_dole	14.6	31.9	39.2	14.1	0.395	0.353
1996 pre	V960529	env_dole	14.9	33.6	40.9	10.4	0.364	0.333
1998 pilot	V98P299	ideo_gov2	15.8	32.2	39.6	12.3	0.382	0.344
1993 pilot	V937222	ideo_Hinc	16	41.7	31.1	11.1	0.318	0.352
2000 pre	V000735	gun_gore	16.5	12.2	30.1	21.8	0.575	0.356
2000 pre	V000739	gun_bush	17.1	10	17.6	10.5	0.507	0.367
1996 pre	V960509	abort_dole	17.5	26.8	37.8	17.9	0.446	0.364
1998 pilot	V98P297	ideo_gov1	18	31.6	39.9	9.9	0.367	0.331
1998 post	V980405	ideo_gore	18.8	22	40.7	18.5	0.478	0.353
1996 pre	V960373	ideo_perot	19.2	32.6	34.3	13.7	0.383	0.361
1996 pre	V960457	serv_perot	19.3	29.6	36.8	14.3	0.405	0.356
1995 pilot	V952194a	envReg_clint	23.3	30.2	37.4	10.5	0.374	0.339
2000 pre	V000783	env_gore	24.9	20.2	30.4	23.3	0.521	0.383
2000 pre	V000696	abort_gore	25	21.1	30	23.7	0.517	0.387
2000 pre	V000698	abort_bush	27.2	24.1	31.2	17.5	0.455	0.376
2000 pre	V000790	env_bush	27.3	24.4	31.6	14.2	0.427	0.363
1995 pilot	V952204a	envReg_sen1	27.8	28.2	33.1	13	0.398	0.358
1996 pre	V960494	black_perot	28.6	30.5	28.9	11.8	0.369	0.363
2000 post	V001376	ideo_buch	32.5	18.6	25.5	23.5	0.537	0.393
1996 pre	V960532	env_perot	33	34.9	24.7	7.1	0.292	0.338
1995 pilot	V952208a	envReg_sen2	33.5	24.9	32.5	10.1	0.390	0.343
1996 pre	V960472	def_perot	35.2	34	23.7	7	0.291	0.339
2000 pre	V000483	ideo_buch	37.4	17.6	21.3	23.3	0.546	0.403
1994 post	V940843	ideo_Hdem	39	26.2	24.8	8.4	0.350	0.351
2000 post	V001380a	ideo_Hrep	40.3	19.5	28.4	11.8	0.436	0.356
2000 post	V001378a	ideo_Hdem	41.8	19.3	27.1	11.7	0.434	0.359
1994 post	V940845	ideo_Hrep	42	24.1	24.2	7.7	0.354	0.347
1998 post	V980407	ideo_Hdem	43.6	17.2	27.8	11.4	0.449	0.353
1998 post	V980409	ideo_Hrep	44.6	16.5	25.9	13	0.468	0.364
1996 pre	V960512	abort_perot	45.6	31.6	17.3	5.6	0.261	0.337
1996 pre	V960377	ideo_Hrep	53.5	17.6	20.1	8.8	0.405	0.365
1996 pre	V960375	ideo_Hdem	56.7	15.3	18.7	9.3	0.431	0.371

Table B.11: Question summary statistics, study 1 (continued)

				Confidence distribution				
Survey	Variable	Code	% DK	Not very	Pretty	Very	Mean	SD
2000 post	V001407a	abort_Hrep	66.3	14.7	13.7	5.1	0.358	0.357
2000 post	V001405a	abort_Hdem	67.5	13.3	13.1	6.1	0.388	0.370

B.3 Study 2 question text

Full text of all questions, Survey 1

Form 1

1. What job or political office does Mike Pence hold? [Vice President, Senate Majority Leader]
2. What job or political office does Mike Pompeo hold? [Secretary of Defense, Secretary of State]
3. What country does Angela Merkel lead? [Germany, Austria]
4. What country does Viktor Orban lead? [Turkey, Hungary]
5. In which chamber of Congress must revenue bills originate? [House of Representatives, Senate]
6. What Senate procedure allows budget changes with a simple majority vote? [Filibuster, Reconciliation]
7. How many votes in Congress are required to override a presidential veto? [A 2/3 majority of both the House and Senate, A simple majority of both the House and Senate]
8. Which party currently has the most members in the U.S. House of Representatives? [Democrats, Republicans]
9. Which party currently has the most members in the U.S. Senate? [Democrats, Republicans]
10. Each month, the Bureau of Labor Statistics estimates the *unemployment rate*. [break] Over the past year, did the unemployment rate increase or decrease? [Increased (more unemployment now), Decreased (less unemployment now)]
11. The amount of money people earn at their jobs is often measured using the *median real wage*. "Median" means the person right in the middle and "real" means adjusted for inflation. [break] Over the past year, did the median real wage increase or decrease? [Increased (higher wages now), Decreased (lower wages now)]
12. The rate of *inflation* measures how quickly prices are rising. [break] Over the past year, has inflation been higher or lower than the historical average (since 1945)? [Higher than average, Lower than average]
13. True or false? *The United States has never overthrown Iran's government.* [True, False]
14. Over the past year, did the percentage of Americans who have health insurance increase or decrease? [Increased (higher percentage has insurance now), Decreased (lower percentage has insurance now)]
15. True or false? *While she was Secretary of State, Hillary Clinton used a private email server to send and receive classified information.* [True, False]

16. True or false? *In 2017, a former Bernie Sanders campaign volunteer shot Republican congressman Steve Scalise and three other people during a practice for the House Republican baseball team.* [True, False]

17. True or false? *During the 2016 presidential campaign, Michael Cohen paid adult film actress Stormy Daniels to keep quiet about an alleged sexual encounter with President Trump.* [True, False]

18. True or false? *Before becoming president, Donald Trump was tape recorded saying that he kisses women and grabs them between the legs without their consent.* [True, False]

Form 2

1. When the U.S. buys more products from other countries than it sells to other countries, the U.S. has a *trade deficit*. [break] Between May 2018 and May 2019, did the U.S. trade deficit with other countries increase or decrease? [Increased, Decreased]

2. The value of the stock market is often measured using the Dow Jones Industrial Average (the Dow). [break] Over the past year, has the value of the stock market increased or decreased? [Increased, Decreased]

3. Most years, the U.S. national government spends more than it collects in taxes. In these years, the government has an *annual budget deficit*. [break] From 2017 to 2018, did the budget deficit increase or decrease? [Increased, Decreased]

4. Each year, how many immigrants are allowed to become legal permanent residents of the United States? [More than 1 million, Less than 1 million]

5. Over the past few decades, has the percentage of U.S. residents who are immigrants increased or decreased? [Increased, Decreased]

6. The pay gap between blacks and whites is often measured as the difference in their average hourly earnings. [break] Over the past forty years, has the pay gap between black and white men gotten larger or smaller? [Larger (less equal now), Smaller (more equal now)]

7. The pay gap between men and women is often measured using the difference in their median hourly earnings. [break] Over the past forty years, has the pay gap between men and women gotten larger or smaller? [Larger (less equal now), Smaller (more equal now)]

8. What job or political office does Kevin McCarthy hold? [House Minority Leader, Secretary of Defense]

9. What job or political office does John Roberts hold? [White House Chief of Staff, Chief Justice of the Supreme Court]

10. What job or political office does William Barr hold? [Attorney General, Secretary of State]

11. What country does Vladimir Putin lead? [Russia, Ukraine]

12. What country does Recep Erdogan lead? [Hungary, Turkey]

13. For how many years is a United States Senator elected – that is, how many years are there in one full term of office for a U.S. Senator? [2 years, 6 years]

14. On which of the following does the U.S. federal government currently spend the least? [Medicare, Foreign Aid]

15. Which political party is generally considered to be more conservative? [The Democratic Party, The Republican Party]

16. Which branch of government decides whether laws are constitutional? [Congress, Judiciary]

17. Under federal law, are lesbian, gay, and bisexual people currently protected from sexual orientation discrimination? [Yes, No]

18. Under federal law, are transgender people currently protected from gender identity discrimination? [Yes, No]

Full text of all questions, Survey 2

Form 1: CCES questions
Response options: Yes, No, Don't know

1. Do you support or oppose this proposal? *Always allow a woman to obtain an abortion as a matter of choice.*

2. Do you support or oppose this proposal? *Permit abortion ONLY in case of rape, incest or when the woman's life is in danger.*

3. Do you support or oppose this proposal? *Ban abortions after the 20th week of pregnancy.*

4. Do you support or oppose this proposal? *Allow employers to decline coverage of abortions in insurance plans.*

5. Do you support or oppose this proposal? *Prohibit the expenditure of funds authorized or appropriated by federal law for any abortion.*

6. Do you support or oppose this proposal? *Make abortions illegal in all circumstances.*

7. Do you support or oppose this proposal? *Increase spending on border security by $25 billion, including building a wall between the U.S. and Mexico.*

8. Do you support or oppose this proposal? *Provide legal status to children of immigrants who are already in the United States and were brought to the United States by their parents. Provide these children the option of citizenship in 10 years if they meet citizenship requirements and commit no crimes.*

9. Do you support or oppose this proposal? *Withhold federal funds from any local police department that does not report to the federal government anyone they identify as an illegal immigrant.*

10. Do you support or oppose this proposal? *Reduce legal immigration by 50 percent.*

11. Do you support or oppose this proposal? *Increase the number of visas for overseas workers to work in the US.*

12. Do you support or oppose this proposal? *Send to prison any person who has been deported from the United States and reenters the United States.*

Form 2: Additional policy attitudes (designed to vary in the percent saying DK)
Response options: Yes, No, Don't know

1. Do you support or oppose repealing the Affordable Care Act of 2010, also known as Obamacare?
2. Do you support or oppose repealing the "Cadillac tax" on high-cost employer-sponsored insurance plans?
3. Do you support or oppose allow Americans to purchase cheaper prescription drugs from Canada?
4. Do you support or oppose prohibiting drug companies from paying rebates to pharmacy benefit managers?
5. Do you support or oppose requiring banks that make risky investments to hold enough assets to cover their potential losses?
6. Do you support or oppose increasing set-aside requirements for banks engaged in derivatives trading?
7. Do you support or oppose allowing same-sex couples to marry?
8. Do you support or oppose discrimination protections under federal law for LGBTQ people?
9. Do you have a generally favorable or unfavorable opinion of the 2010 health reform law?
10. Do you have a generally favorable or unfavorable opinion of the 2015 education reform law?
11. Do you have a generally favorable or unfavorable opinion of the 2018 tax cut law?
12. Do you have a generally favorable or unfavorable opinion of the recent budget agreement in Congress?

Form 3: Favorability toward politicians
Response options: Yes, No, Don't know

1. Do you have a generally favorable or unfavorable opinion of Donald Trump?
2. Do you have a generally favorable or unfavorable opinion of Barack Obama?
3. Do you have a generally favorable or unfavorable opinion of Joe Biden?
4. Do you have a generally favorable or unfavorable opinion of Bernie Sanders?
5. Do you have a generally favorable or unfavorable opinion of Elizabeth Warren?
6. Do you have a generally favorable or unfavorable opinion of Kamala Harris?
7. Do you have a generally favorable or unfavorable opinion of Pete Buttigieg?
8. Do you have a generally favorable or unfavorable opinion of Kirsten Gillibrand?

9. Do you have a generally favorable or unfavorable opinion of Cory Booker?
10. Do you have a generally favorable or unfavorable opinion of Amy Klobuchar?
11. Do you have a generally favorable or unfavorable opinion of Steve Bullock?
12. Do you have a generally favorable or unfavorable opinion of Mike Gravel?

Form 4: Perceptions of policy
Response options: Yes, No, Don't know

1. Do you think this would happen under a national health care plan, sometimes called Medicare For All? *All United States residents would have health insurance coverage.*
2. Do you think this would happen under a national health care plan, sometimes called Medicare For All? *Taxes for most people would increase.*
3. Do you think this would happen under a national health care plan, sometimes called Medicare For All? *Individuals and employers would continue to pay health insurance premiums.*
4. Do you think this would happen under a national health care plan, sometimes called Medicare For All? *People would continue to pay deductibles and co-pays when they use health care services.*
5. Do you think this would happen under a national health care plan, sometimes called Medicare For All? *People with insurance through their jobs would be able to keep their current plans.*
6. Do you think this would happen under a national health care plan, sometimes called Medicare For All? *People who buy their own insurance would be able to keep their current plans.*
7. Do you think this would happen under a national health care plan, sometimes called Medicare For All? *Private health insurance companies would still be the primary way Americans get health coverage.*
8. Do you think this would happen under a national health care plan, sometimes called Medicare For All? *Doctors and hospitals would be paid less.*
9. Which statement best describes the Green New Deal? [Response options: A set of goals, proposed in Congress as a resolution; A complete plan, proposed in Congress as a bill]
10. Does the proposed Green New Deal include this feature? *Guarantee every American a job.*
11. Does the proposed Green New Deal include this feature? *Guarantee every American access to clean water.*
12. Does the proposed Green New Deal include this feature? *Build a more sustainable food system.*
13. Does the proposed Green New Deal include this feature? *Government investments in renewable energy companies.*
14. Does the proposed Green New Deal include this feature? *Ban all oil drilling in the United States by 2030.*

15. Does the proposed Green New Deal include this feature? *Ban all gasoline powered cars by 2040.*

16. Does the proposed Green New Deal include this feature? *Create a new immigrant visa for victims of global climate change.*

Certainty scale

For all questions in Study 2, the certainty scale appeared just below each question immediately after the respondent chose their answer. The question asked, "How sure are you about that?" and presented respondents a six-item scale with the options 50, 60, 70, 80, 90, 100. The points 50 and 100 were labelled "Pure guess" and "Absolutely sure."

B.4 Study 2 summary table

This table displays summary statistics for each question in Study 2. The values in the first three columns appear in the replication file as `category`, `number`, and `q`, respectively. The number column matches the list of questions in the previous section, following the format form.question. For example, Trump favorability is the first question listed under survey 2, form 3, question 1; its number is 3.1

Table B.12: Question summary statistics, study 2

				Confidence distribution							
Category	Number	Code	% DK	50	60	70	80	90	100	Mean	SD
Favorability	3.2	favObama	4.7	2.6	3.3	4.4	10.1	13.7	61.2	92.3	12.8
ratings	3.1	favTrump	5.7	4.7	2.7	4.3	7.9	10.5	64.2	92.2	14.0
	3.4	favSanders	9.2	4.2	4.6	9.6	13.5	16.7	42.1	87.7	14.8
	3.3	favBiden	11.5	5.1	7.6	10.0	14.8	15.0	36.0	85.3	15.8
	3.5	favWarren	23.9	5.2	4.9	9.5	12.4	11.9	32.2	85.4	16.0
	3.6	favHarris	28.1	5.7	5.7	9.7	12.8	12.0	25.9	83.6	16.3
	3.9	favBooker	35.8	6.1	6.9	9.4	11.1	8.7	22.0	81.7	17.1
	3.7	favButtigieg	43.6	6.3	5.1	8.0	10.7	8.7	17.5	81.2	17.0
	3.8	favGillibrand	45.2	6.1	6.2	10.3	10.2	7.5	14.5	79.2	16.8
	3.10	favKlobuchar	48.5	6.5	7.6	8.4	9.3	7.2	12.4	77.8	17.2
	3.11	favBullock	58.6	7.1	5.0	7.4	7.6	5.4	8.9	76.2	17.5
	3.12	favGravel	69.2	5.3	4.0	5.4	6.1	4.4	5.6	75.5	17.1
Knowledge	2.16	judicialReview	8.6	6.0	6.4	9.2	13.8	14.9	41.1	86.3	15.9
(civic trivia)	2.15	whichConserv	9.6	3.0	3.0	4.7	7.9	10.2	61.6	92.6	13.2
	2.13	senateTerm	11.7	7.4	6.9	9.8	13.1	13.8	37.2	84.8	16.7
	2.17	gayLaw	13.2	4.6	5.3	11.8	15.3	18.4	31.5	85.2	15.0
	1.9	senate	13.9	7.5	7.6	7.8	11.1	12.6	39.4	85.3	17.1
	1.7	veto	14.5	7.5	8.6	9.3	14.9	17.1	28.1	82.9	16.5
	1.8	house	14.8	7.2	6.1	9.1	13.2	10.9	38.6	85.3	16.8
	2.18	transLaw	24.4	6.6	5.6	12.1	15.9	14.3	21.0	81.7	15.9
	1.5	revenue	27.6	11.9	8.4	10.3	11.8	11.8	18.3	78.0	17.9
	1.13	iran	29.9	7.8	7.1	9.9	13.1	12.8	19.3	80.6	16.8
	1.6	reconciliation	33.1	10.5	7.7	9.5	12.9	10.8	15.5	77.8	17.5
Knowledge	2.11	putin	5.6	2.4	2.1	2.5	3.1	7.4	76.9	95.6	11.1
(public figures)	1.15	email	7.7	3.6	3.1	5.1	9.6	14.5	56.4	91.4	13.6
	1.1	pence	8.0	2.9	1.9	2.8	3.1	6.4	74.8	95.3	11.8
	1.18	grab	16.4	3.8	3.0	4.6	6.8	12.5	52.9	91.5	14.0
	1.17	stormy	17.5	3.5	3.7	6.0	9.3	14.9	45.0	89.8	14.3
	1.3	merkel	27.6	6.4	4.2	4.6	4.6	7.0	45.6	89.1	17.0
	1.2	pompeo	31.0	8.4	5.9	6.6	8.1	9.2	30.8	84.0	18.2
	1.16	shooting	32.5	7.9	5.2	6.3	11.5	11.2	25.5	83.2	17.4

Table B.12: Question summary statistics, study 2 (continued)

				Confidence distribution							
Category	Number	Code	% DK	50	60	70	80	90	100	Mean	SD
	2.10	barr	32.8	7.1	5.1	4.3	5.7	8.5	36.4	86.8	17.8
	2.9	roberts	34.0	7.4	4.7	5.8	7.2	7.1	33.7	85.6	18.0
	2.8	mccarthy	41.3	8.0	6.9	8.0	7.0	7.3	21.6	80.8	18.5
	1.4	orban	49.2	13.8	5.1	4.7	6.5	5.7	15.0	76.0	20.2
	2.12	erdogan	53.3	9.0	3.5	4.1	5.5	4.4	20.1	81.4	19.8
Knowledge	1.10	unemp	9.5	5.4	6.6	11.8	16.0	20.1	30.6	84.4	15.3
(statistics)	2.7	gapGender	12.3	6.2	8.5	14.6	18.9	19.9	19.7	81.0	15.2
	2.5	imm	14.4	5.6	6.6	10.4	16.4	19.0	27.7	84.0	15.4
	2.3	deficit	17.0	7.2	7.5	10.7	13.0	15.9	28.7	83.1	16.6
	2.6	gap	18.4	7.3	8.7	14.0	17.9	15.6	18.2	79.8	15.8
	2.2	stock	20.4	6.5	6.4	9.4	14.4	14.3	28.7	83.8	16.3
	2.14	foreignAid	21.8	11.8	8.3	12.9	16.1	12.4	16.7	77.6	17.0
	1.12	inflat	22.3	9.1	10.8	12.4	16.7	13.4	15.2	77.7	16.4
	1.11	wage	22.4	9.0	9.3	11.3	17.1	15.1	15.8	78.7	16.3
	1.14	health	26.1	10.0	8.0	13.2	17.6	12.7	12.3	77.0	16.1
	2.1	trade	27.4	8.9	8.0	12.8	16.2	12.7	13.9	77.9	16.2
	2.4	lpr	34.2	12.3	8.3	11.1	13.0	9.6	11.4	75.1	17.2
Policy	1.6	abortBan	8.5	2.4	1.9	3.3	6.8	10.9	66.3	94.2	11.7
(attitudes)	2.7	marriage	8.6	2.2	2.3	4.0	8.0	10.2	64.6	93.6	12.1
	2.3	drugCanada	9.0	2.0	3.3	6.5	12.6	16.4	50.2	90.7	12.8
	1.8	immDream	9.5	2.3	3.0	7.0	14.0	18.1	46.1	90.0	13.0
	1.2	abortRape	9.8	3.6	2.2	5.5	8.8	13.3	56.8	91.8	13.4
	1.1	abortAlways	10.3	1.7	2.0	6.2	8.0	13.6	58.2	92.8	12.0
	2.1	acaRepeal	11.3	2.5	2.7	5.6	10.9	16.5	50.5	91.2	12.8
	1.7	immWall	11.3	2.1	2.0	4.7	11.5	13.7	54.7	92.2	12.2
	2.8	discrim	12.3	2.6	3.8	5.8	10.8	13.4	51.2	90.8	13.5
	2.5	reserves	12.6	3.3	4.2	8.4	13.8	19.1	38.7	88.0	14.1
	1.12	immReentry	14.9	3.4	4.0	7.6	14.3	14.5	41.3	88.4	14.3
	1.4	abortInsurance	16.0	2.2	2.8	5.4	10.0	12.9	50.6	91.5	13.0
	1.3	abort20	16.2	2.4	2.2	4.4	8.5	12.3	53.9	92.4	12.6
	1.10	immReduce	17.9	3.0	3.3	6.4	11.0	15.7	42.9	89.7	13.8
	1.5	abortFederal	18.4	3.4	3.2	6.8	12.6	12.7	43.0	89.2	14.2
	1.9	immPolice	20.2	2.8	2.9	7.2	11.7	13.8	41.3	89.4	13.9
	1.11	immGuest	20.4	3.8	4.1	8.1	14.2	15.7	33.7	87.0	14.7
	2.4	drugRebate	21.4	5.0	4.4	9.3	15.0	15.0	29.9	85.3	15.3
	2.9	acaApprove	24.0	4.1	4.9	10.0	16.2	16.5	24.4	84.4	14.8
	2.11	tcja	25.5	4.6	4.6	8.7	15.2	16.0	25.4	84.7	15.1
	2.12	budget	38.7	4.8	5.6	10.4	14.9	11.0	14.6	80.7	15.4
	2.2	cadillac	41.4	4.8	5.0	7.0	14.2	11.3	16.4	82.2	15.7

Table B.12: Question summary statistics, study 2 (continued)

				Confidence distribution							
Category	Number	Code	% DK	50	60	70	80	90	100	Mean	SD
	2.10	essa	47.5	4.8	5.0	9.1	12.2	9.4	11.9	80.0	15.7
	2.6	setAside	49.7	4.5	4.3	8.2	11.3	8.5	13.6	81.1	15.9
Policy	4.1	medUniversal	14.2	7.8	6.8	10.6	14.9	18.0	27.6	83.0	16.4
(perceptions)	4.2	medTax	18.3	8.0	5.1	9.7	14.1	15.8	29.0	83.6	16.5
	4.4	medCopay	20.9	9.0	6.5	12.4	17.5	14.4	19.3	80.1	16.3
	4.7	medPrivate	22.4	8.8	8.0	12.9	16.4	14.9	16.5	79.0	16.2
	4.3	medPremiums	22.9	9.3	7.7	10.5	17.2	14.5	17.9	79.6	16.5
	4.6	medKeep	23.2	8.2	7.7	11.5	15.8	14.6	19.1	80.2	16.4
	4.8	medPayCut	23.6	8.2	6.8	10.0	14.8	16.3	20.4	81.2	16.5
	4.5	medEmployer	23.6	7.9	7.3	11.9	17.2	13.4	18.9	80.1	16.2
	4.13	gndInvest	24.5	9.4	6.8	11.2	15.3	15.0	17.8	79.7	16.6
	4.11	gndWater	24.7	11.5	7.2	10.5	14.7	12.9	18.4	78.7	17.4
	4.10	gndJob	27.0	13.1	7.0	8.0	11.3	11.1	22.6	79.3	18.7
	4.12	gndFood	30.3	10.9	7.4	11.1	14.4	11.2	14.8	77.5	17.1
	4.15	gndCars	35.0	10.0	8.7	9.3	10.4	10.5	16.1	77.9	17.8
	4.14	gndOil	35.5	12.4	7.4	9.6	11.1	10.9	13.0	76.2	17.8
	4.16	gndImm	42.7	12.8	7.4	8.3	9.8	7.5	11.5	74.6	18.2
	4.9	gndPlan	46.6	8.0	7.6	10.6	11.3	7.6	8.3	75.2	16.3