

Online Appendix

“Don’t Know” Responses, Personality and the Measurement of Political Knowledge

A Appendix: Gibbs Sampling Algorithm

The model is estimated using a Gibbs sampler, with much of the procedure following that used by McCulloch and Rossi (1994) in their treatment of the standard multinomial probit model. Here, I describe the case of $p = 3$ response categories for all questions. It is straightforward to generalize this to larger numbers of response types.

In the first step of the algorithm, each w_{ij} is sampled from a truncated bivariate normal with the restriction implied by the value of the corresponding y_{ij} , where $y_{ij} = 1$ implies that $w_{ij1} > w_{ij2}$ and $w_{ij1} > 0$; $y_{ij} = 2$ implies that $w_{ij1} < w_{ij2}$ and $w_{ij2} > 0$; and $y_{ij} = 3$ implies that $w_{ij1}, w_{ij2} < 0$. Although maximum likelihood analyses of multinomial probit models often face difficulties integrating over truncated multivariate normal distributions, McCulloch and Rossi demonstrate how in a Bayesian setting, this can be accomplished via simulation through a Gibbs sampler over each individual element of w_{ij} given the values of the other elements through a series of truncated univariate normal distribu-

tions.¹ Formally, for each i , j , and k , sample

$$w_{ijk}|w_{ij-k}, \alpha_{jk}, \beta_{jk} \sim N(\alpha_{jk} + \beta_{jk}x_i, 1) \\ \times [I(k = y_{ij}) I(w_{ijk} > \max(w_{ij-k}, 0)) + I(k \neq y_{ij}) I(w_{ijk} < \max(w_{ij-k}, 0))], \quad (1)$$

where w_{ij-k} consists of all elements of w_{ij} except for element k .

Next, for each question j and response category k , sample α_{jk} and β_{jk} given the latent response propensity differences w_{ijk} and political knowledge levels x . After conditioning on these other parameters, this becomes a series of standard linear regressions with the error variance of each known to be 1. We therefore draw from

$$(\alpha_{jk}, \beta_{jk})' | w_{jk}, x \sim N \left(\left(B_0^{-1} + \tilde{X}'\tilde{X} \right)^{-1} \left(B_0^{-1}b_0 + \tilde{X}'\tilde{X}\hat{\beta}_{jk} \right), \left(B_0^{-1} + \tilde{X}'\tilde{X} \right)^{-1} \right) \quad (2)$$

for each question j and response type k , where \tilde{X} is an $n \times 2$ matrix with a first column of ones and the second column consisting of the latent political knowledge levels x and $\hat{\beta}_{jk} = \left(\tilde{X}'\tilde{X} \right)^{-1} \tilde{X}'w_{jk}$.

Finally, the latent knowledge levels x_i for each respondent are sampled conditional on the coefficients α and β as well as the latent response propensity differences w . Given that

$$\begin{bmatrix} w_{ij1} \\ w_{ij2} \end{bmatrix} = \begin{bmatrix} \alpha_{j1} + \beta_{j1}x_i \\ \alpha_{j2} + \beta_{j2}x_i \end{bmatrix} + \begin{bmatrix} \varepsilon_{ij1} \\ \varepsilon_{ij2} \end{bmatrix}, \quad (3)$$

¹In the standard multinomial probit model, this sampling involves transformations based on the covariance matrix, but because of the restriction of each Σ_j to be an identity matrix, this sampling more straightforward here, with values of w_{ij1} and w_{ij2} being independent.

we can transform to get

$$\begin{bmatrix} (w_{ij1} - \alpha_{j1}) / \beta_{j1} \\ (w_{ij2} - \alpha_{j2}) / \beta_{j2} \end{bmatrix} \sim N \left(\begin{bmatrix} x_i \\ x_i \end{bmatrix}, \begin{bmatrix} \beta_{j1}^{-2} & 0 \\ 0 & \beta_{j2}^{-2} \end{bmatrix} \right). \quad (4)$$

Defining $\tilde{w}_{ijk} = (w_{ijk} - \alpha_{jk}) / \beta_{jk}$, we get the conditional posterior

$$x_i | w, \alpha, \beta \sim N(\mu_{x_i}, \sigma_{x_i}^2), \text{ where} \quad (5)$$

$$\mu_{x_i} = \left[\frac{1}{\sigma_0^2} + \sum_{j=1}^m \sum_{k=1}^2 \beta_{jk}^2 \right]^{-1} \left[\frac{\mu_0}{\sigma_0^2} + \sum_{j=1}^m \sum_{k=1}^2 \beta_{jk}^2 \tilde{w}_{ijk} \right] \text{ and} \quad (6)$$

$$\sigma_{x_i}^2 = \left[\frac{1}{\sigma_0^2} + \sum_{j=1}^m \sum_{k=1}^2 \beta_{jk}^2 \right]^{-1}. \quad (7)$$

The Gibbs sampler cycles over these three steps, in the limit providing samples from the joint posterior over all of the model's unknown parameters. These iterations are stored and used to provide estimates and measures of uncertainty for these parameters.

B Appendix: ANES Knowledge Items

B.1 1988 ANES

Seven of the 1988 ANES knowledge items (V880871-V880877) were preceded by

I'm going to read the names of various public figures. We want to see how much information about them gets out to the public from television, newspapers and the like. (Pause after each name. Record exactly what is said but do not probe DKs. If you think R recognizes a person but has not given you his/her most recent job or political office you may repeat: Do you happen to know what job or political office he now holds?)

The stem was followed by a list of seven people: Ted Kennedy, George Shultz, William Rehnquist, Mikhail Gorbachev, Margaret Thatcher, Yasser Arafat and Jim Wright.

Subjects were also asked

Do you happen to know which party had the most members in the House of Representatives in Washington before the election (this/last) month? [V880878]

Do you happen to know which party had the most members in the U.S. Senate before the election (this/last) month? [V880879]

Would you say that over the past year, the level of unemployment in the country has gotten better, stayed about the same, or gotten worse? [V880239]

Would you say that over the past year, inflation has gotten better, stayed about the same, or gotten worse? [V880241]

Would you say that compared to 1980 the federal budget deficit has gotten smaller, stayed about the same or gotten larger? [V881036]

Has government spending on defense been increased, decreased, or has it stayed about the same as it was in 1980, or haven't you paid much attention to this? [V880909]

B.2 1992 ANES

Four of the 1992 ANES knowledge items (V925916-V925919) were preceded by

Now we have a set of questions concerning various public figures. We want to see how much information about them gets out to the public from television, newspapers and the like.

This preface was followed by questions about the “job or political office” held by Tom Foley, Dan Quayle, William Rehnquist, and Boris Yeltsin.

Subjects were also asked

Who has the final responsibility to decide if a law is constitutional or not...is it the President, the Congress, the Supreme Court, or don't you know? [V925920]

And whose responsibility is it to nominate judges to the Federal Courts...the President, the Congress, the Supreme Court, or don't you know? [V925921]

Would you say that over the past year, the level of unemployment in the country has gotten better, stayed about the same, or gotten worse? [V923527]

Would you say that over the past year, inflation has gotten better, stayed about the same, or gotten worse? [V923529]

Do you happen to know which party had the most members in the House of Representatives in Washington before the election (this/last) month? [V925951]

Do you happen to know which party had the most members in the U.S. Senate before the election (this/last) month?" [V925952]

“Worse” was coded as the correct answer to the unemployment question. “Stayed the same” was coded as the correct answer to the inflation question.

Subjects were also asked to identify the name and the party of at least one candidate for Congress in their House district (V925109, V925113). Their answers were coded as correct only if they correctly identified both a candidate's name and his party.

B.3 1996 ANES

Four of the 1996 ANES knowledge items (V961189-V961192) were preceded by

Now we have a set of questions concerning various public figures. We want to see how much information about them gets out to the public from television, newspapers and the like.

This preface was followed by questions about the “job or political office” held by Newt Gingrich, Al Gore, William Rehnquist, and Boris Yeltsin.

Subjects were also asked

Would you say that the size of the yearly budget deficit INCREASED, DECREASED, or STAYED ABOUT THE SAME during Clinton’s time as President? [V960392]

Do you happen to know which party had the most members in the House of Representatives in Washington before the election (this/last) month? [V961072]

Do you happen to know which party had the most members in the U.S. Senate before the election (this/last) month?” [V961073]

“Decreased” was coded as the correct answer to the deficit question.

In both the pre- and post-election waves, subjects were also asked to identify the name and the party of at least one candidate for Congress in their House district (V960257, V960261, V961006, V961010). Their answers were coded as correct in either wave only if they correctly identified both a candidate’s name and his party.

B.4 2008 CCAP

The CCAP was constructed based on a sample matching design (see ?) from the online respondent panel of YouGov/Polimetrix and was fielded between December 17, 2007 and November 5, 2008. The first wave of the study—containing measures of both knowledge and personality—was fielded by YouGov/Polimetrix between December 17, 2007 and January 3, 2008. Personality and knowledge were measured in a different wave for 20% of subjects. For 659 subjects (3.6%), the measurements were taken between January 24, 2008 and February 4, 2008. For 1,159 subjects (6.4%), the measurements were taken between March 21, 2008 and April 14, 2008. For 1,815 subjects (9.9%), measurements were taken between October 22, 2008 and November 3, 2008. And for 19 subjects (.1%), measurements were taken between November 5 and December 1. We use data from all waves of the study.

Knowledge Items

Ten of the CCAP knowledge items (CAP100-110) were preceded by

Here is a list of people in the news. Some of these people are members of the U.S. House of Representatives, some others are members of the U.S. Senate. Tell us which job the following people hold.

This stem was followed by a list of ten people: John Boehner, Susan Collins, John Dingell, Bill Gates, Ted Kennedy, Dennis Kucinich, Jon Kyl, Patrick Leahy, Nancy Pelosi, Condoleezza Rice, and Henry Waxman. For each person, the response options were “House Member,” “Senator,” and “Neither.”

Subjects were also asked

“What job or position does Condoleezza Rice hold?” (CAP116).

The response options were “Secretary of Defense,” “Secretary of State,” “White House Counsel,” “Secretary of Foreign Affairs,” and “Don’t Know.”

Subjects were asked

“Guantanamo Bay is in the news these days. Have you heard anything about this?”

The response options were “Yes” and “No.” Subjects who answered “Yes” were asked

“What have you heard about Guantanamo Bay?”

The response options were “There is a U.S. Detention Center there for enemy combatants,” “Many people are dying trying to emigrate from there to Miami,” “It was the site of a major environmental summit last summer,” “Fidel Castro is in a hospital there and is quite ill,” and “I’m not sure.” “No” responses to the first question and “I’m not sure” responses to the second question were coded as “don’t know.” The first response to the second question was coded as correct. All other responses to the second question were coded as incorrect.

The final two knowledge questions were

[CAP213] Over the past couple of years, would you say that the amount of manufactured goods that America has been importing from foreign countries has \lips [response options were “Increased,” “Decreased,” “Stayed about the same,” and “Don’t know”]

[CAP214] Over the past year, would you say that compared to other currencies in the world the U.S. dollar has become \lips [response options were “Stronger,” “Weaker,” “Stayed about the same,” and “Don’t know”]

Ten-Item Personality Inventory

The 2008 CCAP included the TIPI:

[CAP4050] Here are a number of personality traits that may apply to you.

Please rate the extent to which you agree that the pair of traits apply to you, even if one applies more strongly than the other.

1. Extroverted, enthusiastic
2. Critical, quarrelsome
3. Dependable, self-disciplined
4. Anxious, easily upset
5. Open to new experiences, complex
6. Reserved, quite
7. Sympathetic, warm
8. Disorganized, careless
9. Calm, emotionally stable
10. Conventional, uncreative

Response options for each item were “disagree strongly,” “disagree moderately,” “disagree slightly,” “neither agree nor disagree,” “agree slightly,” “agree moderately,” and “agree strongly.”