Appendices

Online Appendix:
Let's Talk Politics – A Naive Approach for Measuring Political Sophistication

Appendix A   Detailed Information on Open-Ended Responses and Discursive Sophistication Components

I   Distribution of Word Counts in Open-Ended Responses

(a) 2012 ANES

(b) 2016 ANES
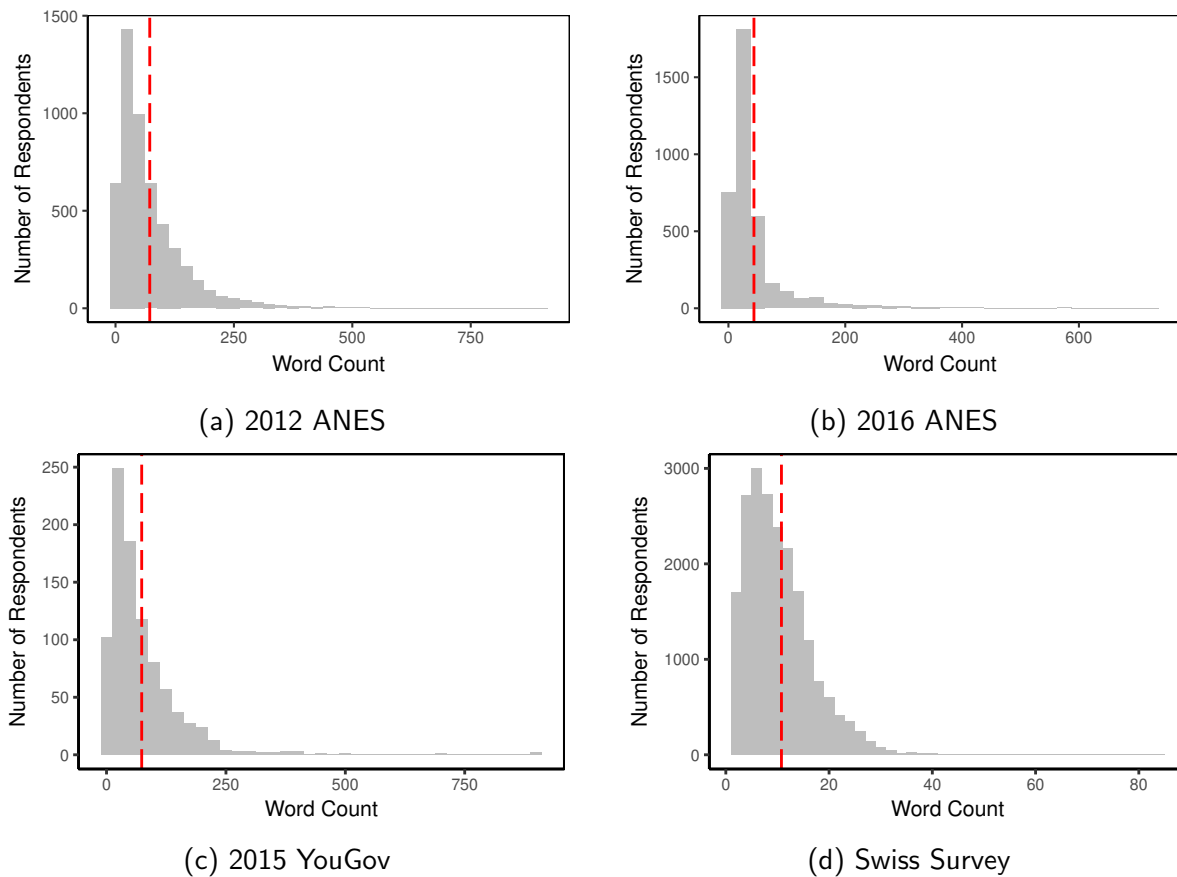
(c) 2015 YouGov

(d) Swiss Survey

Figure A.1: Histograms of total word count in the collection of open-ended responses for each individual. The dashed red lines indicate the average response lengths in each survey.

II Overview of Topic Proportions

2012 ANES (k = 49)

Topic 25: help, peopl, rich, tri, poor
Topic 1: like, think, just, dint, that
Topic 45: polici, social, issu, econom, foreign
Topic 46: thing, one, get, lot, say
Topic 38: peopl, work, need, understand, hard
Topic 32: class, middl, lower, wealthi, concern
Topic 36: parti, republican, democrat, polit, vote
Topic 22: job, good, done, creat, get
Topic 44: tax, pay, lower, rais, want
Topic 31: seem, interest, best, american, doesnt
Topic 41: abort, marriag, gay, stanc, pro
Topic 17: care, health, insur, afford, reform
Topic 48: will, countri, believ, back, get
Topic 42: busi, big, experi, small, success
Topic 29: right, women, equal, issu, woman
Topic 43: money, spend, much, give, away
Topic 18: conserv, liber, fiscal, tend, socialist
Topic 35: govern, less, believ, want, involv
Topic 5: man, person, good, famili, can
Topic 3: way, run, fact, chang, see
Topic 34: program, cut, social, secur, fund
Topic 2: view, healthcar, issu, reform, abort
Topic 39: put, lie, tell, truth, honest
Topic 4: economi, improv, turn, around, affair
Topic 8: control, nation, gun, spend, govt
Topic 24: believ, trust, liar, sincer, politician
Topic 40: alway, promis, made, keep, elect
Topic 7: stand, everyth, noth, els, togeth
Topic 47: poor, chanc, minor, white, sometim
Topic 10: year, past, last, presid, four
Topic 28: better, romney, mitt, chang, idea
Topic 16: obama, barack, presid, isnt, worker
Topic 26: bring, back, home, black, troop
Topic 15: support, militari, strong, environ, educ
Topic 23: talk, answer, question, show, head
Topic 19: valu, moral, christian, american, tradit
Topic 20: plan, point, clear, move, specif
Topic 14: obamacar, compromis, get, extrem, tea
Topic 37: budget, balanc, privat, constitut, record
Topic 9: attitud, word, hold, arrog, public
Topic 30: histori, posit, presid, current, appear
Topic 33: even, never, clinton, wife, get
Topic 13: agre, immigr, illeg, law, disagre
Topic 27: war, bush, end, bin, got
Topic 12: decis, make, commit, address, effort
Topic 49: general, enough, import, think, certain
Topic 6: world, level, top, play, rest
Topic 21: two, feel, evil, happi, lesser
Topic 11: hope, old, communiti, countri, good

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Expected Topic Proportions

2016 ANES (k = 47)

Topic 7: conserv, liar, liber, politician,
Topic 12: experi, lack, racist, polit, incl
Topic 39: peopl, work, care, favor, americ
Topic 36: like, dint, just, way, talk
Topic 27: countri, get, job, back, believ
Topic 11: thing, say, lot, done, get
Topic 28: issu, care, health, social, racism
Topic 31: think, well, good, republican, know
Topic 5: polici, foreign, econom, social, affair
Topic 42: trump, polit, donald, racist, correct
Topic 18: everyth, parti, stand, system, democrat
Topic 2: abort, pro, stanc, life, marriag
Topic 24: lack, valu, dishonesti, honesti, crimin
Topic 45: better, feel, candid, seem, qualifi
Topic 29: govern, interest, less, budget, best
Topic 15: view, immigr, agre, share, militari
Topic 25: help, poor, rich, seem, femal
Topic 41: clinton, hillari, run, bill, hous
Topic 38: support, idea, dishonest, healthcar, respect
Topic 13: will, presid, woman, obama, first
Topic 40: right, women, equal, human, treat
Topic 1: tax, spend, pay, plan, free
Topic 32: lie, give, much, away, truth
Topic 17: busi, good, man, work, platform
Topic 21: class, middl, lower, look, focus
Topic 6: want, theyr, educ, mouth, famili
Topic 23: trust, cant, tell, alway, truth
Topic 46: gun, control, amend, law, second
Topic 19: tri, america, make, great, hard
Topic 4: money, big, much, corpor, citizen
Topic 10: make, speak, mind, decis, open
Topic 3: email, benghazi, scandal, experienc, state
Topic 33: fiscal, respons, general, self, conservat
Topic 43: toward, attitud, minor, women, intellig
Topic 8: arrog, togeth, past, sometim, power
Topic 22: nation, secur, court, strong, suprem
Topic 30: moral, belief, record, ethic, track
Topic 16: mani, program, social, govt, hand
Topic 14: untrustworthi, illeg, weak, washington, pro-choic
Topic 44: approach, world, everi, leader, war
Topic 9: vote, parti, can, reason, usa
Topic 26: total, presid, unqualifi, narcissist, incompet
Topic 34: old, new, chang, might, good
Topic 20: abil, base, christian, limit, believ
Topic 47: democrat, republican, strong, person, much
Topic 37: tend, agenda, side, opinion, thought
Topic 35: like, demo, feel, think, parti

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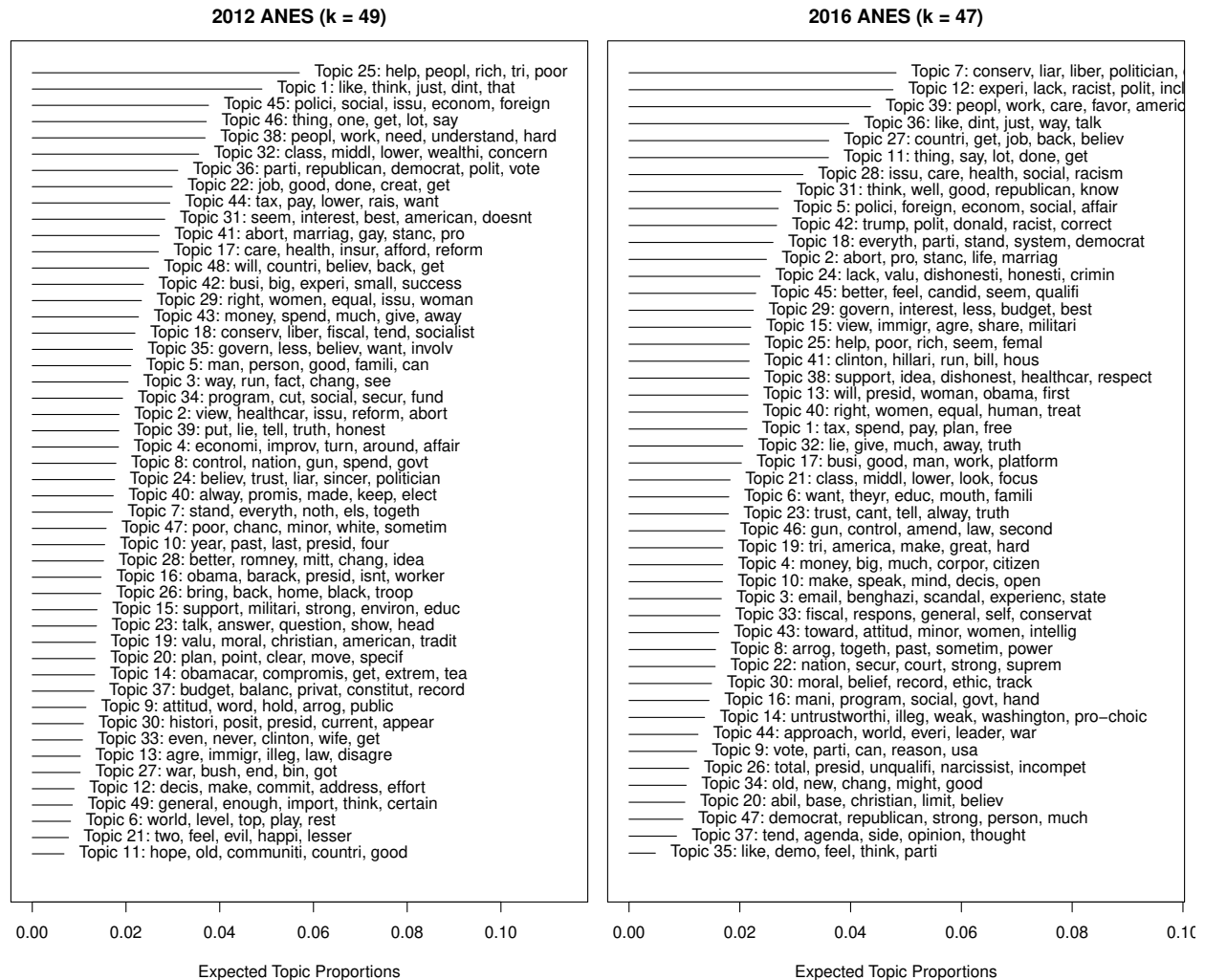
Expected Topic Proportions

Figure A.2: Estimated topic proportions in the 2012 and 2016 ANES based on the structural topic model. See Appendix B for details on the model specification.
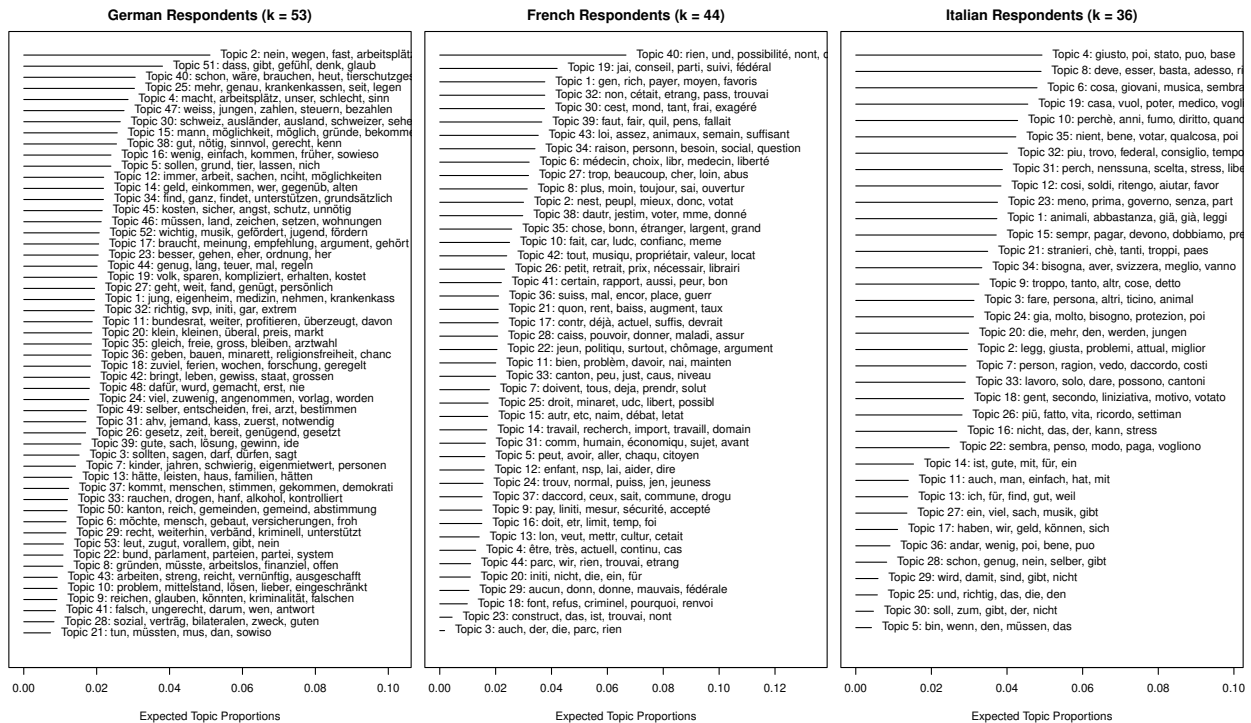
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YouGov Survey (k = 47)

Topic 46: health, care, afford, provid,
Topic 40: peopl, kill, cant, afford, incom
Topic 42: get, can, will, gun, everyon
Topic 9: law, gun, citizen, enforc, alreadi
Topic 5: control, gun, shoot, mass, countri
Topic 39: govern, terror, much, control, individu
Topic 23: access, easi, gun, profit, system
Topic 25: mental, ill, issu, unstabl, greedi
Topic 21: gun, buy, can, make, harder
Topic 24: insur, compani, pharmaceut, system, lobbi
Topic 34: shoot, greed, poor, plan, mass
Topic 12: gun, sure, help, wrong, peopl
Topic 36: pay, forc, time, fine, just
Topic 1: think, just, lot, better, big
Topic 16: cost, doctor, noth, medic, hospit
Topic 17: dont, know, want, much, gun
Topic 37: nra, assault, republican, weapon, rifl
Topic 45: will, one, crimin, crime, drug
Topic 33: healthcar, obamacar, system, american, went
Topic 41: check, background, better, obes, good
Topic 4: take, away, thing, right, gun
Topic 29: weapon, automat, ban, limit, militari
Topic 10: money, will, game, put, much
Topic 20: mani, gun, countri, way, street
Topic 13: now, countri, even, legal, one
Topic 38: polit, industri, social, radic, failur
Topic 35: abl, obtain, purchas, afford, weapon
Topic 43: lack, hand, prevent, coverag, educ
Topic 15: like, good, well, gun, congress
Topic 11: enough, firearm, also, much, far
Topic 22: right, amend, second, america, keep
Topic 32: person, arm, right, secur, bear
Topic 44: thought, mind, fact, also, peopl
Topic 27: work, tax, program, rais, children
Topic 31: protect, famili, self, treatment, place
Topic 26: life, respect, class, citizen, nation
Topic 2: need, stricter, sale, behind, peopl
Topic 7: increas, cost, factor, rate, system
Topic 8: obama, lie, polici, drug, fail
Topic 19: terrorist, medic, understand, societi, list
Topic 3: expens, general, individu, larg, american
Topic 18: price, servic, higher, moral, less
Topic 28: much, live, also, everi, lazi
Topic 30: bad, parent, etc, food, live
Topic 14: realli, stupid, dint, make, doctor
Topic 6: violenc, food, safeti, anger, danger
Topic 47: gun, repeal, peopl, countri, system

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Expected Topic Proportions

Figure A.3: Estimated topic proportions in the 2015 YouGov survey based on the structural topic model. See Appendix B for details on the model specification.

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German Respondents (k = 53)

Topic 2: nein, wegen, fast, arbeitsplät
Topic 51: dass, gibt, gefühl, denk, glaub
Topic 40: schon, wäre, brauchen, heut, tierschutzge
Topic 25: mehr, genau, krankenkassen, seit, legen
Topic 4: macht, arbeitsplätz, unser, schlecht, sinn
Topic 47: weiss, jungen, zahlen, steuern, bezahlen
Topic 30: schweiz, ausländer, ausland, schweizer, sehe
Topic 15: mann, möglichkeit, möglich, gründe, bekomm
Topic 38: gut, nötig, sinnvol, gerecht, kenn
Topic 16: wenig, einfach, kommen, früher, sowieso
Topic 5: sollen, grund, tier, lassen, nich
Topic 12: immer, arbeit, sachen, nciht, möglichkeiten
Topic 14: geld, einkommen, wer, gegenüb, alten
Topic 34: find, ganz, findet, unterstützen, grundsätzlich
Topic 45: kosten, sicher, angst, schutz, unnötig
Topic 46: müssen, land, zeichen, setzen, wohnungen
Topic 52: wichtig, musik, gefördert, jugend, fördern
Topic 17: braucht, meinung, empfehlung, argument, gehört
Topic 23: besser, gehen, eher, ordnung, her
Topic 44: genug, lang, teuer, mal, regeln
Topic 19: volk, sparen, kompliziert, erhalten, kostet
Topic 27: geht, weit, fand, genügt, persönlich
Topic 1: jung, eigenheim, medizin, nehmen, krankenkass
Topic 32: richtig, svp, initi, gar, extrem
Topic 11: bundesrat, weiter, profitieren, überzeugt, davon
Topic 20: klein, kleinen, überal, preis, markt
Topic 35: gleich, freie, gross, bleiben, arztwahl
Topic 36: geben, bauen, minarett, religionsfreiheit, chanc
Topic 18: zuviel, ferien, wochen, forschung, geregelt
Topic 42: bringt, leben, gewiss, staat, grossen
Topic 48: dafür, wurd, gemacht, erst, nie
Topic 24: viel, zuwenig, angenommen, vorlag, worden
Topic 49: selber, entscheiden, frei, arzt, bestimmen
Topic 31: ahv, jemand, kass, zuerst, notwendig
Topic 26: gesetz, zeit, bereit, genügend, gesetzt
Topic 39: gute, sach, lösung, gewinn, ide
Topic 3: sollten, sagen, darf, dürfen, sagt
Topic 7: kinder, jahren, schwierig, eigenmietwert, personen
Topic 13: hätte, leisten, haus, familien, hätten
Topic 37: kommt, menschen, stimmen, gekommen, demokrati
Topic 33: rauchen, drogen, hanf, alkohol, kontrolliert
Topic 50: kanton, reich, gemeinden, gemeind, abstimmung
Topic 6: möchte, mensch, gebaut, versicherungen, froh
Topic 29: recht, weiterhin, verbänd, kriminell, unterstützt
Topic 53: leut, zugut, vorallem, gibt, nein
Topic 22: bund, parlament, parteien, partei, system
Topic 8: gründen, müsste, arbeitslos, finanziel, offen
Topic 43: arbeiten, streng, reicht, vernünftig, ausgeschafft
Topic 10: problem, mittelstand, lösen, lieber, eingeschränkt
Topic 9: reichen, glauben, kriminalität, falschen
Topic 41: falsch, ungerecht, darum, wen, antwort
Topic 28: sozial, verträg, bilateralen, zweck, guten
Topic 21: tun, müssten, mus, dan, sowiso

French Respondents (k = 44)

Topic 40: rien, und, possibilité, nont, c
Topic 19: jai, conseil, parti, suivi, fédéral
Topic 1: gen, rich, payer, moyen, favoris
Topic 32: non, cétait, etrang, pass, trouvai
Topic 30: cest, mond, tant, frai, exagéré
Topic 39: faut, fair, quil, pens, fallait
Topic 43: loi, assez, animaux, semain, suffisant
Topic 34: raison, personn, besoin, social, question
Topic 6: médecin, choix, libr, medecin, liberté
Topic 27: trop, beaucoup, cher, loin, abus
Topic 2: nest, peupl, mieux, donc, votat
Topic 8: plus, moin, toujour, sai, ouvertur
Topic 38: dautr, jestim, voter, mme, donné
Topic 35: chose, bonn, étranger, largent, grand
Topic 10: fait, car, ludc, confianc, meme
Topic 42: tout, musiqu, propriétair, valeur, locat
Topic 26: petit, retrait, prix, nécessair, librairi
Topic 41: certain, rapport, aussi, peur, bon
Topic 36: suiss, mal, encor, place, guerr
Topic 21: quon, rent, baiss, augment, taux
Topic 17: contr, déjà, actuel, suffis, devrait
Topic 28: caiss, pouvoir, donner, maladi, assur
Topic 22: jeun, politiqu, surtout, chômage, argument
Topic 11: bien, problèm, davoir, nai, mainten
Topic 33: canton, peu, just, caus, niveau
Topic 7: doivent, tous, deja, prendr, solut
Topic 25: droit, minaret, udc, libert, possibl
Topic 15: autr, etc, naim, débat, letat
Topic 14: travail, recherch, import, travaill, domain
Topic 31: comm, humain, économiqu, sujet, avant
Topic 5: peut, avoir, aller, chaqu, citoyen
Topic 12: enfant, nsp, lai, aider, dire
Topic 24: trouv, normal, puiss, jen, jeuness
Topic 37: daccord, ceux, sait, commune, drogu
Topic 9: pay, liniti, mesur, sécurité, accepté
Topic 16: doit, etr, limit, temp, foi
Topic 13: lon, veut, mettr, cultur, cetait
Topic 4: être, très, actuell, continu, cas
Topic 44: parc, wir, rien, trouvai, etrang
Topic 20: initi, nicht, die, ein, für
Topic 29: aucun, donn, donne, mauvais, fédérale
Topic 18: font, refus, criminel, pourquoi, renvoi
Topic 23: construct, das, ist, trouvai, nont
Topic 3: auch, der, die, parc, rien

Italian Respondents (k = 36)

Topic 4: giusto, poi, stato, puo, base
Topic 8: deve, esser, basta, adesso, ri
Topic 6: cosa, giovani, musica, sembra
Topic 19: casa, vuol, poter, medico, vogl
Topic 10: perchè, anni, fumo, diritto, quand
Topic 35: nient, bene, votar, qualcosa, poi
Topic 32: piu, trovo, federal, consiglio, tempo
Topic 31: perch, nenssuna, scelta, stress, libe
Topic 12: cosi, soldi, ritengo, aiutar, favor
Topic 23: meno, prima, governo, senza, part
Topic 1: animali, abbastanza, giã, già, leggi
Topic 15: sempr, pagar, devono, dobbiamo, pre
Topic 21: stranieri, chè, tanti, troppi, paes
Topic 34: bisogna, aver, svizzera, meglio, vanno
Topic 9: troppo, tanto, altr, cose, detto
Topic 3: fare, persona, altri, ticino, animal
Topic 24: gia, molto, bisogno, protezion, poi
Topic 20: die, mehr, den, werden, jungen
Topic 2: legg, giusta, problemi, attual, miglior
Topic 7: person, ragion, vedo, daccordo, costi
Topic 33: lavoro, solo, dare, possono, cantoni
Topic 18: gent, secondo, liniziativa, motivo, votato
Topic 26: più, fatto, vita, ricordo, settiman
Topic 16: nicht, das, der, kann, stress
Topic 22: sembra, penso, modo, paga, vogliono
Topic 14: ist, gute, mit, für, ein
Topic 11: auch, man, einfach, hat, mit
Topic 13: ich, für, find, gut, weil
Topic 27: ein, viel, sach, musik, gibt
Topic 17: haben, wir, geld, können, sich
Topic 36: andar, wenig, poi, bene, puo
Topic 28: schon, genug, nein, selber, gibt
Topic 29: wird, damit, sind, gibt, nicht
Topic 25: und, richtig, das, die, den
Topic 30: soll, zum, gibt, der, nicht
Topic 5: bin, wenn, den, müssen, das

Figure A.4: Estimated topic proportions in the Swiss survey based on the structural topic model. See Appendix B for details on the model specification.

III Discursive Sophistication Components

(a) 2012 ANES

(b) 2016 ANES

(c) 2015 YouGov

(d) Swiss Survey

Figure A.5: Correlation matrix of individual components of discursive sophistication. The plots on the diagonal display univariate densities for each component. The panels in the lower triangular display the scatter plot of two measures as well as a linear fit.

Appendix B   Pre-Processing and Topic Model Specification

I   PreText Analysis

Two components of discursive sophistication (*considerations* and *word choice*) rely on quantities extracted from structural topic models (Roberts et al., 2014). As with any other text-as-data approach, a necessary first step before estimating the topic model is to pre-process the raw text and convert it into a document term matrix (DTM, see for example Manning et al., 2008). Common pre-processing procedures include stemming and lowercasing, as well as the removal of numbers, punctuation, stopwords, and infrequent terms. However, topic models and other unsupervised learning techniques can be sensitive to these pre-processing choices (c.f., Denny and Spirling, 2018). To address this issue, Denny and Spirling (2018) recommend that researchers compare DTMs under all possible pre-processing regimes. The authors propose *preText scores* as a measure to quantify the extent to which varying pre-processing regimes may yield unusual results compared to a baseline without any pre-processing.
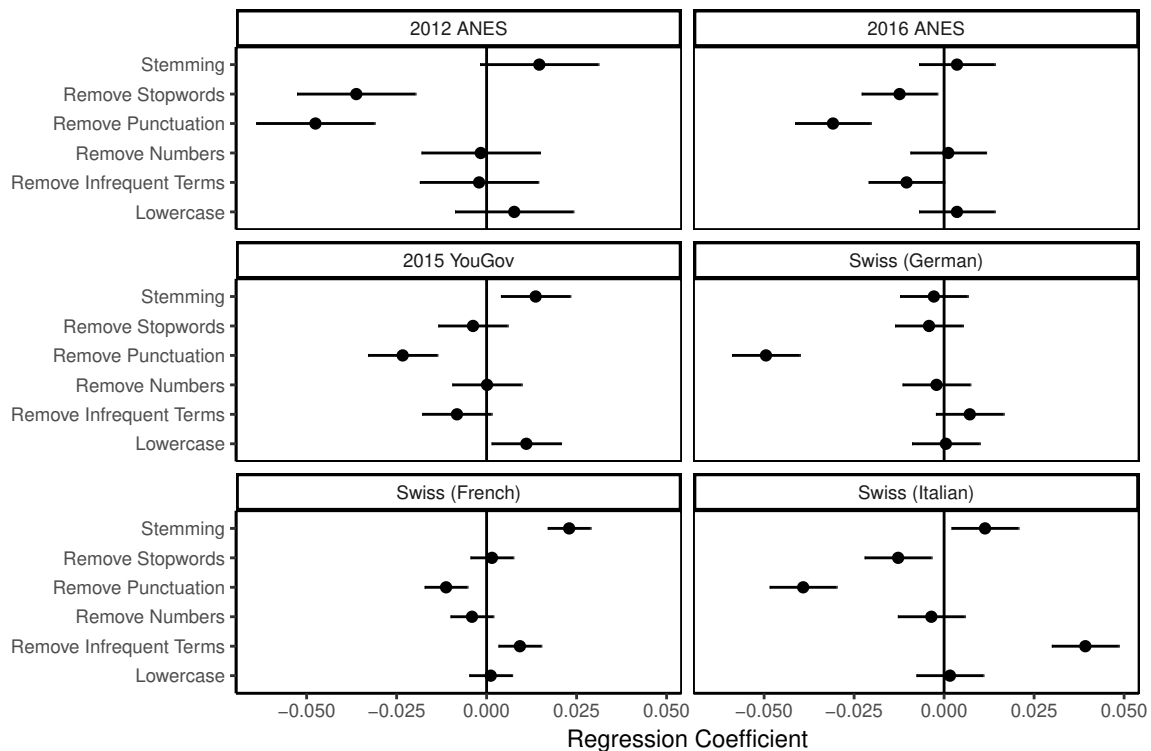
Figure B.1: PreText analysis of pre-processing decisions of open-ended responses across all datasets. Regression coefficients display the effects of each of the six pre-processing choices on the resulting preText score.

II Robustness Checks for Varying Model Specifications

Following the procedure outlined in Denny and Spirling (2018), Figure B.1 displays the results of a linear model regressing preText scores resulting from all possible pre-processing regimes on each individual step for a random subset of 500 open-ended responses in each of the studies included in the analyses. Significant coefficients indicate that the topic model results my be sensitive to the respective pre-processing step. As such, removing stopwords and punctuation, as well as removing infrequent terms (at least in the 2016 ANES) might be problematic. Denny and Spirling (2018), however, emphasize that the most important consideration in choosing pre-processing steps are theoretical. Given that the purpose of the topic model is to extract considerations related to political preferences, there are strong theoretical reasons to remove stopwords and punctuation from open-ended responses as they do not contain any relevant content. Furthermore, I apply lowercasing and stemming of terms to reduce resulting document term matrix to a computationally more manageable size and since these pre-processing steps should not be influential according to the preText analysis.

It is less obvious from a theoretical perspective whether to remove infrequent terms from open-ended responses, although it is preferred in order to make the estimation of the discursive sophistication components computationally efficient. Since the preText analysis for the 2016 ANES suggests that this pre-processing step might be influential, I compare discursive sophistication for both alternative regimes below (c.f., Denny and Spirling, 2018). Before turning to this sensitivity check, however, I consider another crucial modeling choice when working with topic models: determining the total number of topics k to be estimated. For all analyses reported below, the number of topics was selected using the algorithm proposed by Lee and Mimno (2014) and implemented in the stm package in **R** (Roberts, Stewart, and Tingley, 2014).

Figure B.2 examines whether the proposed measure of discursive sophistication is sensitive to the removal of infrequent terms as well as the chosen number of topics k. The y-axis depicts the preferred pre-processing regime including all steps discussed above while the x-axis plots results for alternative specifications. The panels on the left compare the preferred specification to discursive sophistication based on a reduced number of topics ($k = 20$). The middle panels additionally include infrequent terms instead of removing them.[11] The panels on the right do not perform stemming as part of the pre-processing step. Across all panels, discursive sophistication scores are highly correlated and therefore insensitive to pre-processing choices and varying numbers of topics.

In summary, open-ended responses in the analyses reported in the main text are pre-processed by stemming and lowercasing, as well as the removing numbers, punctuation, stopwords, and infrequent terms (i.e., terms that appear in fewer than 10 responses).[12] While the results discussed in the manuscript are based on this preferred specification, the substantive results are robust for alternative pre-processing regimes or varying numbers of topics.

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[11]Calculating discursive sophistication with large numbers of topics while including infrequent terms is computationally prohibitive.

[12]Prior to applying these pre-processing steps, open-ended responses in the 2012 & 2016 ANES as well as the 2015 YouGov survey are cleaned by correcting spelling errors using an implementation of the Aspell spell-checking algorithm (www.aspell.net).
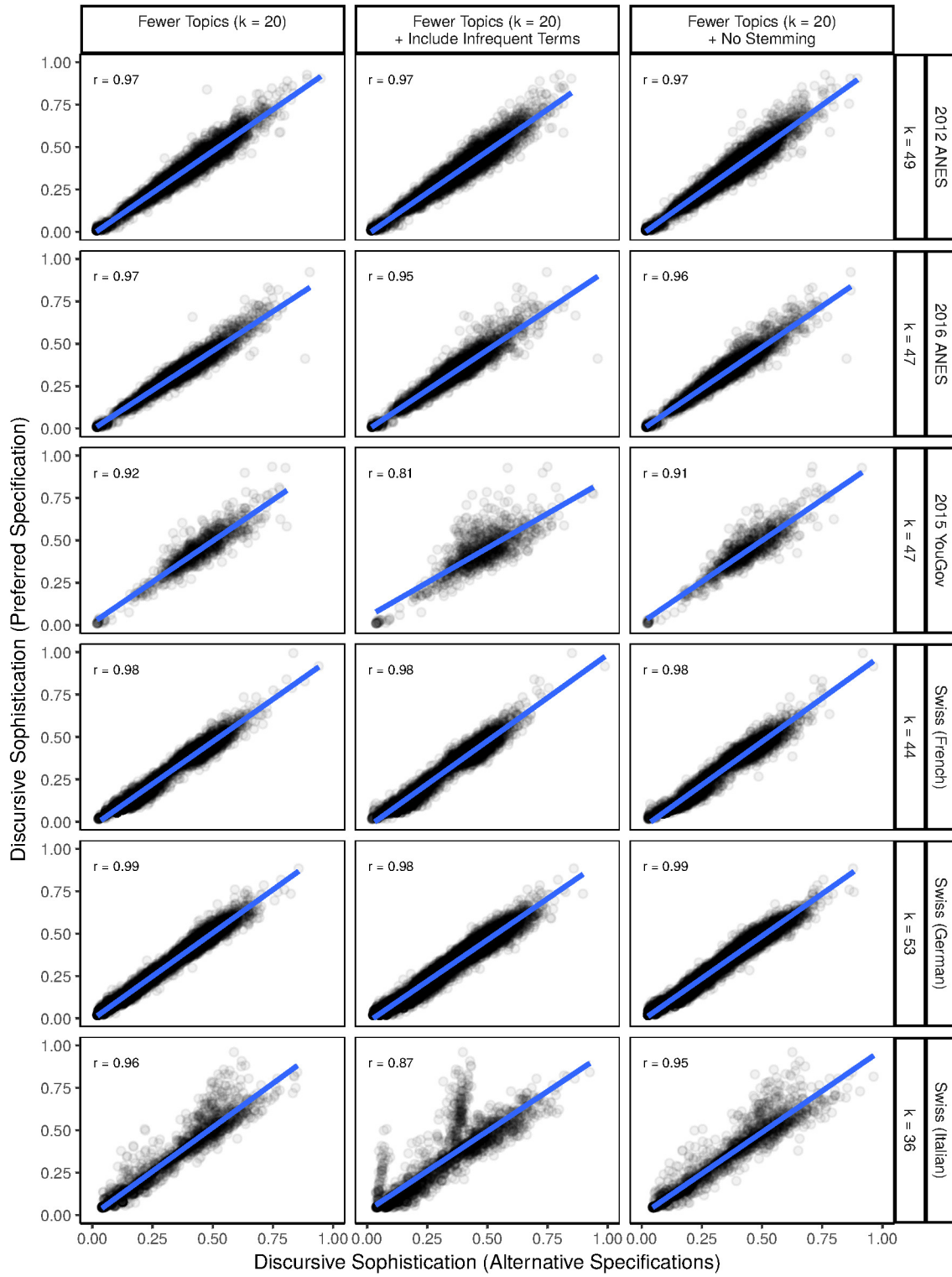
Figure B.2: Robustness of discursive sophistication measure for different pre-processing choices and topic model specifications.

Appendix C   Additional Information on Remaining Variables

I   Item Selection and Recoding

Conventional measures of political knowledge:

- *2012 ANES*: Additive index of correct responses to 5 knowledge items included in the pre-election wave (number of Presidential terms, size of budget deficit, length of Senate term, meaning of Medicare, federal government spending). 'Don't know' responses are considered incorrect. Interviewer evaluations are based on the assessment of the respondent's general level of information about politics recorded at the end of the pre-election wave.

- *2016 ANES*: Additive index of correct responses to 4 knowledge items included in the pre-election wave (length of Senate term, federal government spending, majority in House, majority in Senate). 'Don't know' responses are considered incorrect. Interviewer evaluations are based on the assessment of the respondent's general level of information about politics recorded at the end of the pre-election wave.

- *2015 YouGov Survey*: Additive index of correct responses to 8 knowledge items (Speaker of the House, meaning of TPP, Chair of Federal Reserve Board, current unemployment rate, Presidential veto override, meaning of Common Core, leading source of electricity in US, majority in Senate). 'Don't know' responses are considered incorrect.

Dependent variables:

- *Turnout* (2012 & 2016 ANES): Dichotomous indicator, based on post-election wave.

- *Non-conventional participation* (2012 & 2016 ANES): Additive index of different forms of political engagement (participated in protest, signed petition, wore campaign button, wrote letter to public official).

- *Internal efficacy* (2012 & 2016 ANES): Sum of two agree/disagree items (politics too complicated, good understanding of political issues [reversed]).

- *External efficacy* (2012 & 2016 ANES): Sum of two agree/disagree items (public officials don't care, people have no say about what the government does).

- *Information retrieval (2015 YouGov Survey)*: Additive index of correct answers to 9 questions about the fictional disease described in the news article (symptoms: fatigue, headaches, diarrhea, joint pain, boils, warts, fever; virus spread; cure for the virus)

- *Candidate policy positions* (2012 & 2016 ANES): Placement of Republican and Democratic Presidential candidates on 7-point scale (ideology, government spending, defense spending, insurance policy, job guarantee, aid to Blacks, environment vs jobs).

Control variables:

- *Gender* (2012 & 2016 ANES, 2015 YouGov Survey): Dichotomous indicator for female respondents.

- *Wordsum vocabulary scores* (2012 & 2016 ANES): Modified version of the GSS wordsum vocabulary test consisting of 10 terms.

- *Media exposure* (2012 & 2016 ANES): Additive index of the frequency of weekly exposure to various political information sources such as newspapers or TV news (2012 ANES). In the 2016 ANES, it only consists of a single item measuring the number of days in the past week the respondent has spent watching/reading/listening news on any media.

- *Political discussion frequency* (2012 & 2016 ANES): Self-reported count of days in the past week spent discussing politics with family or friends.

- *College education* (2012 & 2016 ANES, 2015 YouGov Survey): Dichotomous indicator for Bachelor's degree or higher.

- *Family/Household income* (2012 & 2016 ANES, 2015 YouGov Survey): Self-reported household income categories.

- *Age* (2012 & 2016 ANES, 2015 YouGov Survey): Logged age in years.

- *Race* (2012 & 2016 ANES, 2015 YouGov Survey): Dichotomous indicator for black non-Hispanic vs. others.

- *Church attendance* (2012 & 2016 ANES, 2015 YouGov Survey): Six-category indicator of the frequency of church attendance.

- *Survey Mode* (2012 & 2016 ANES): Dichotomous indicator for face-to-face vs. online samples of the ANES surveys.

- *Personality characteristics* (2012 & 2016 ANES): Measures of extraversion and being reserved, part of the Ten Item Personality Inventory (TIPI) measuring the "Big Five" personality traits.

- *Response length* (2012 & 2016 ANES): Logged number of words in the collection of open-ended responses by each individual.

II   Variable Distributions – 2012 ANES
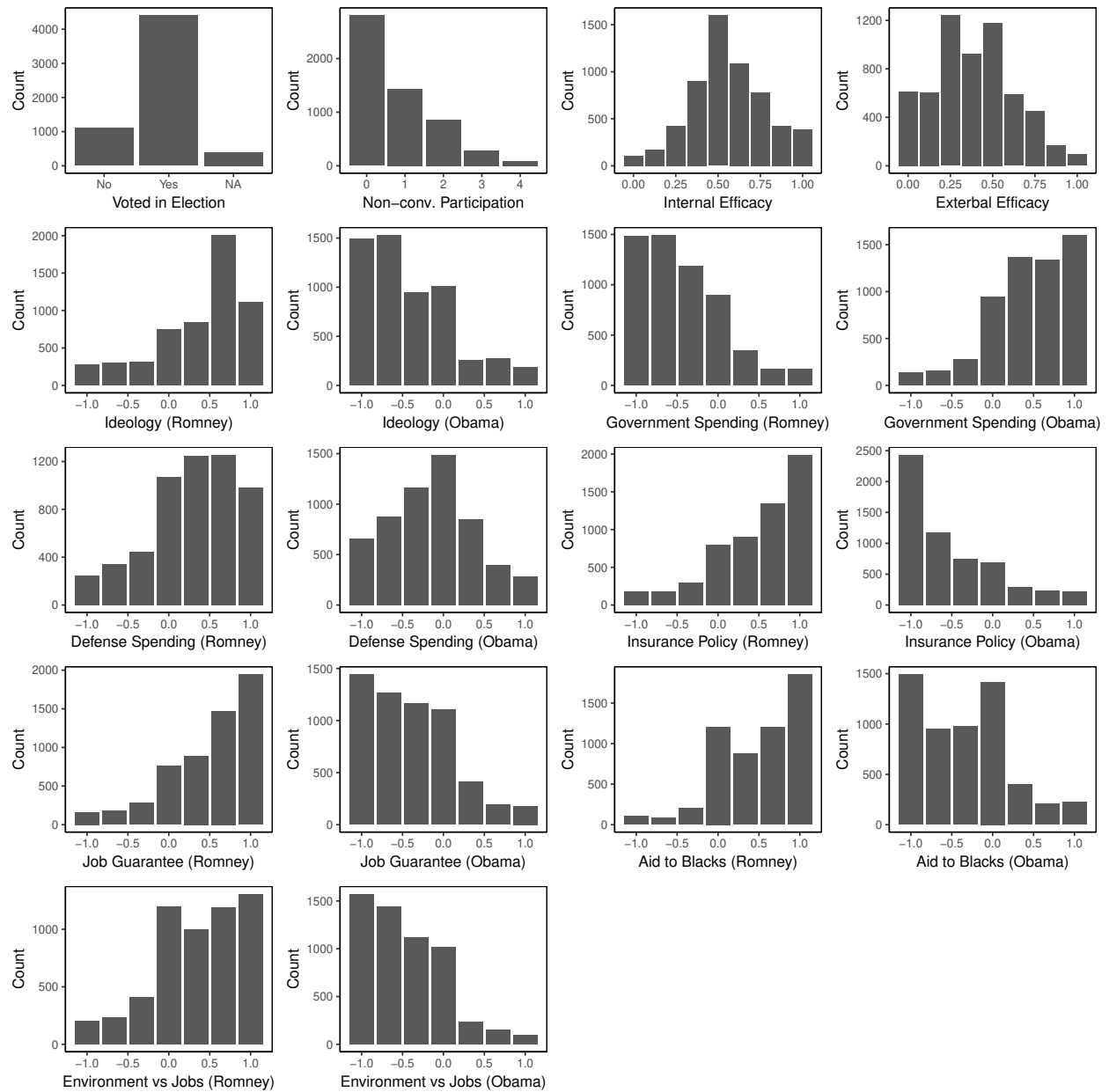
Figure C.1: Histograms of dependent variables included in 2012 ANES.
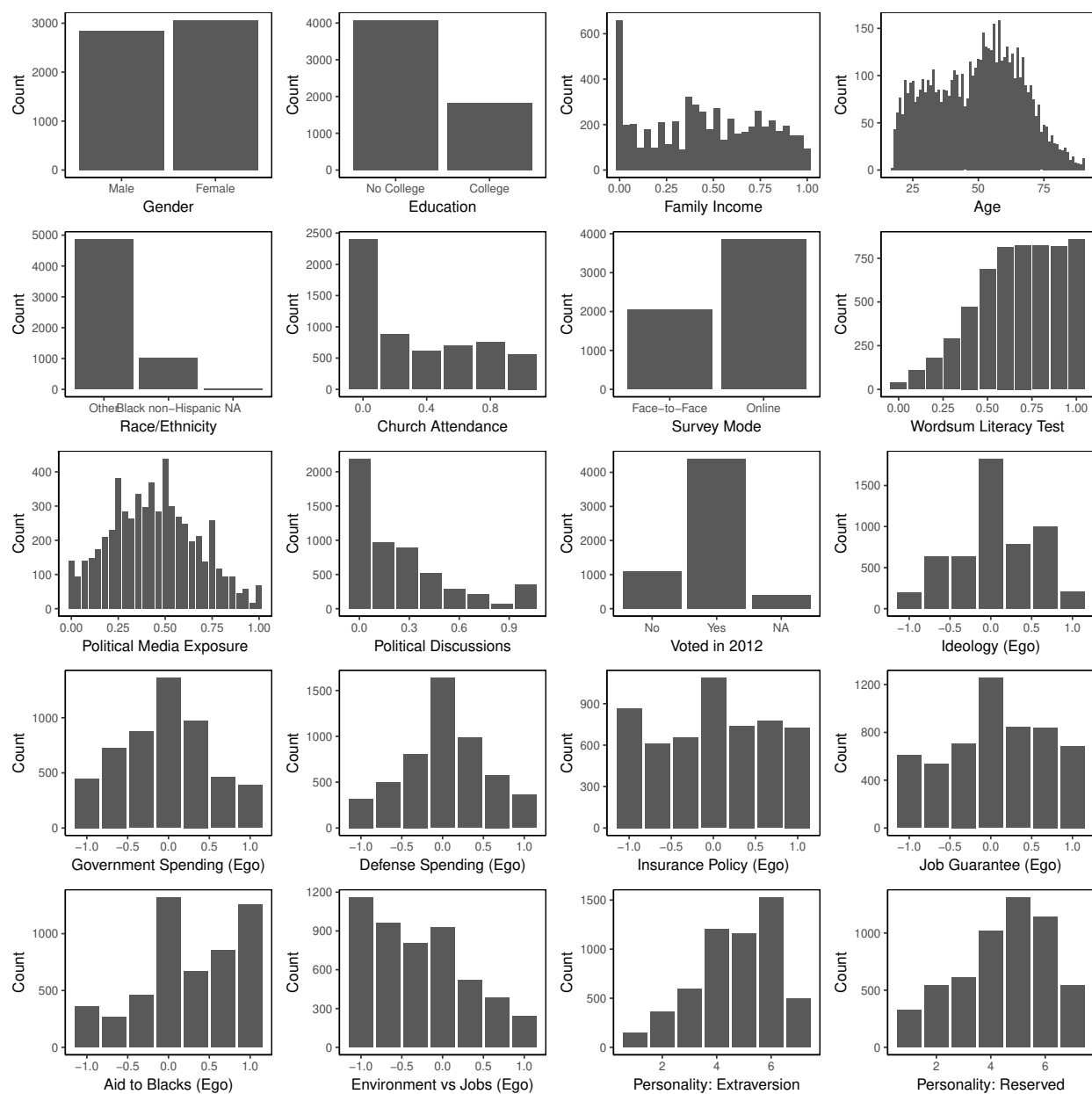
Figure C.2: Histograms of independent variables included in 2012 ANES.

III   Variable Distributions – 2016 ANES
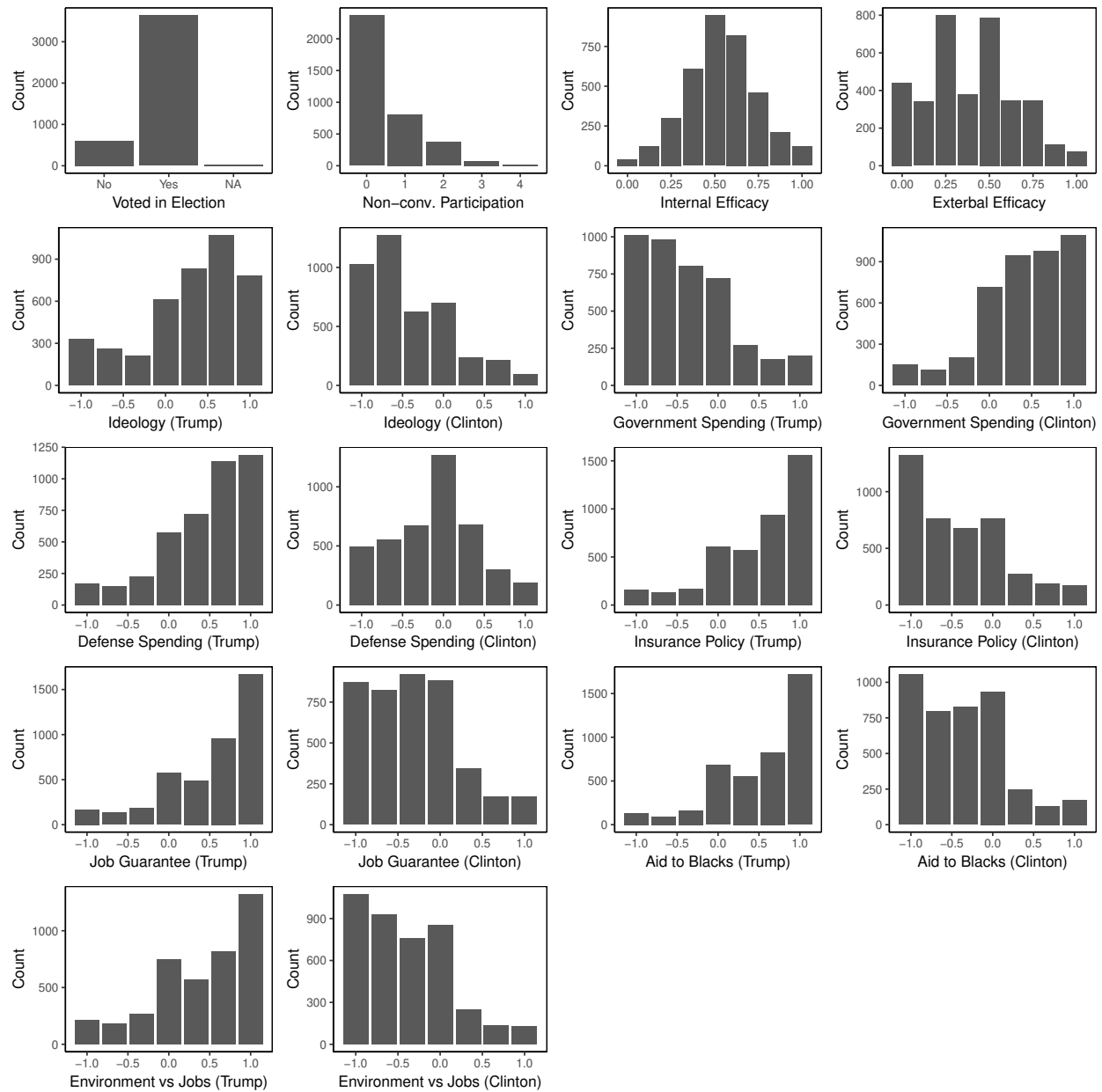
Figure C.3: Histograms of dependent variables included in 2016 ANES.
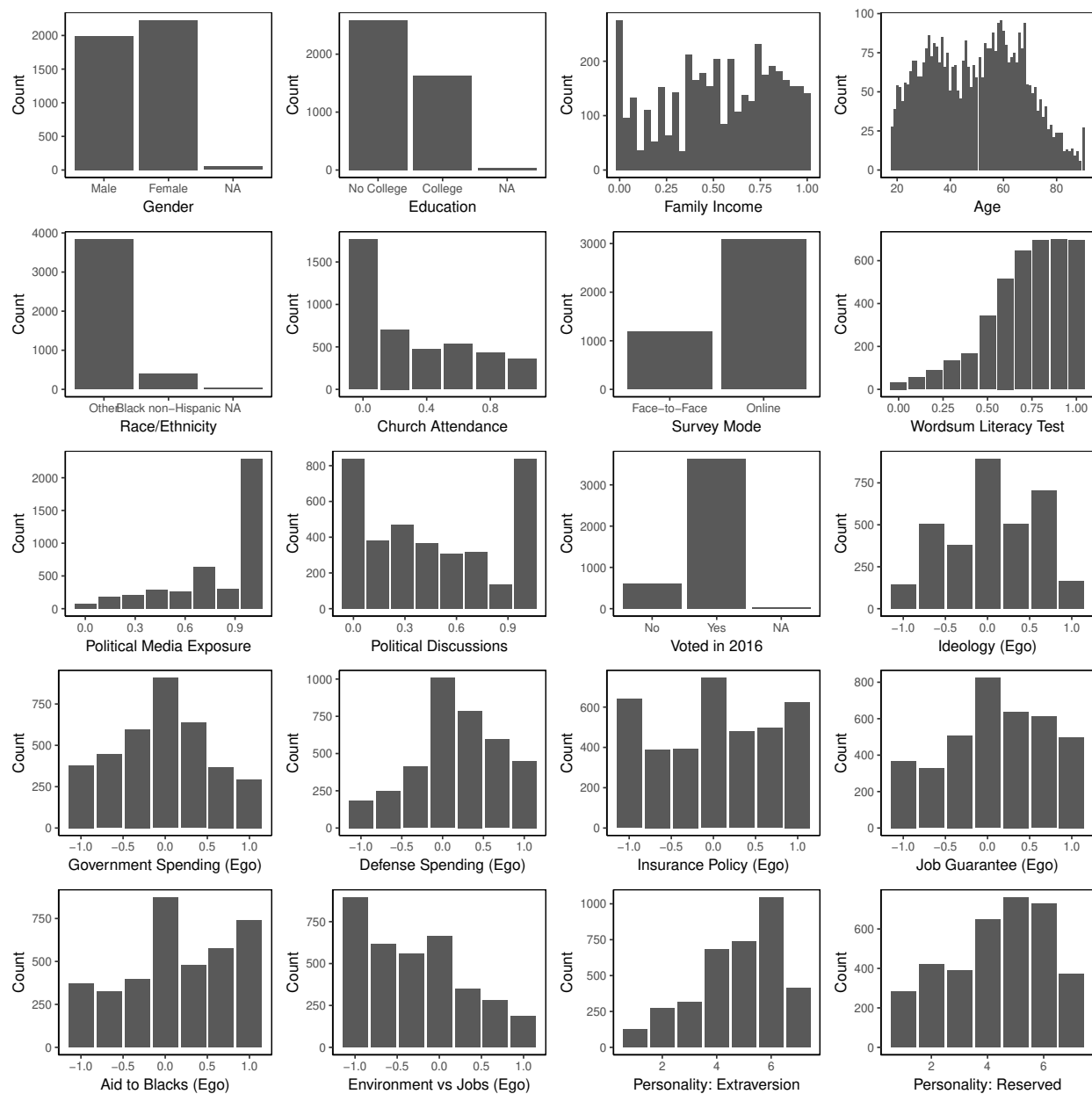
Figure C.4: Histograms of independent variables included in 2016 ANES.

IV Variable Distributions – 2015 YouGov
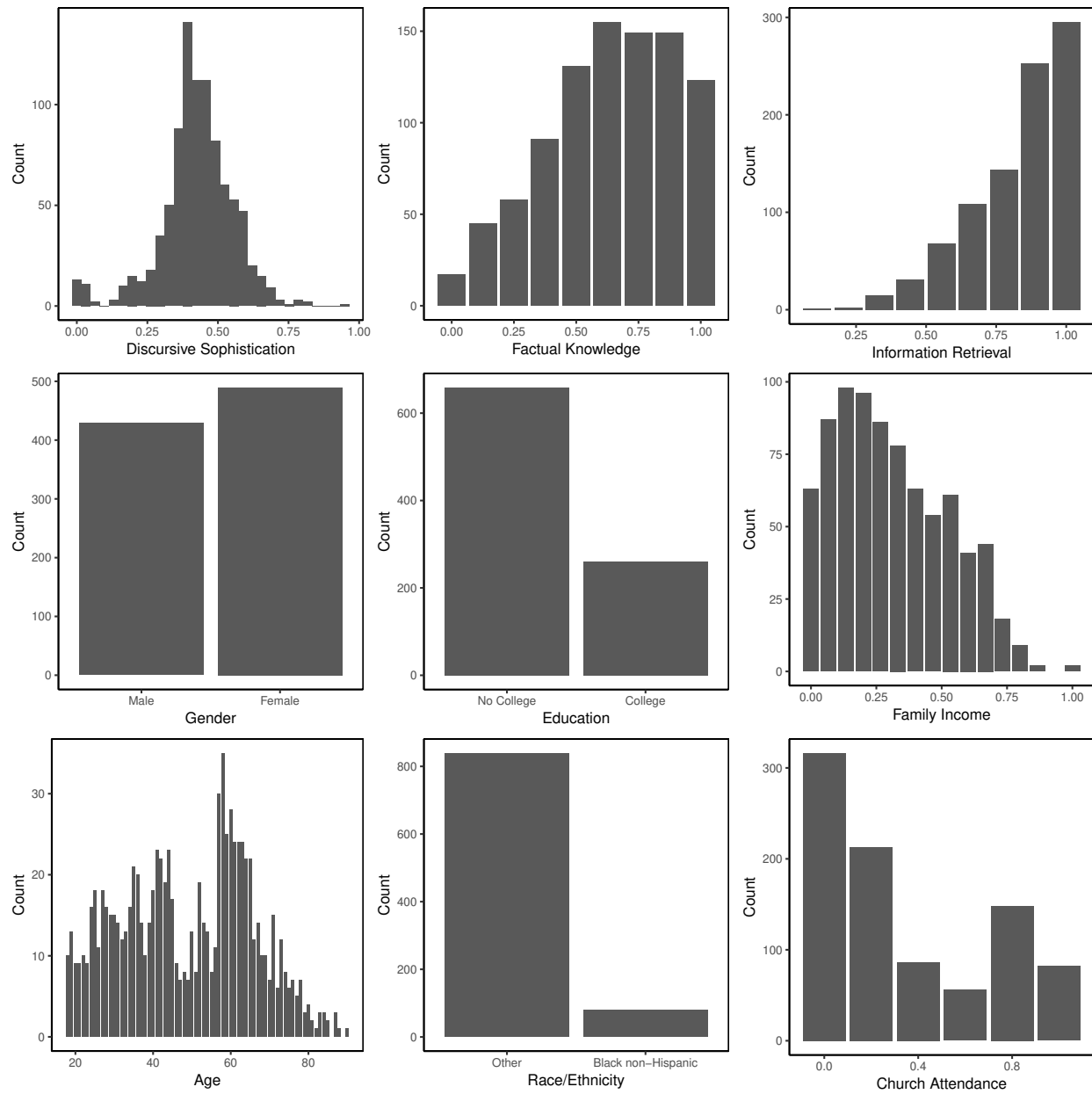
Figure C.5: Histogram of variables included in 2015 YouGov survey.

Appendix D   Robustness Checks

I   Controlling for Personality Characteristics
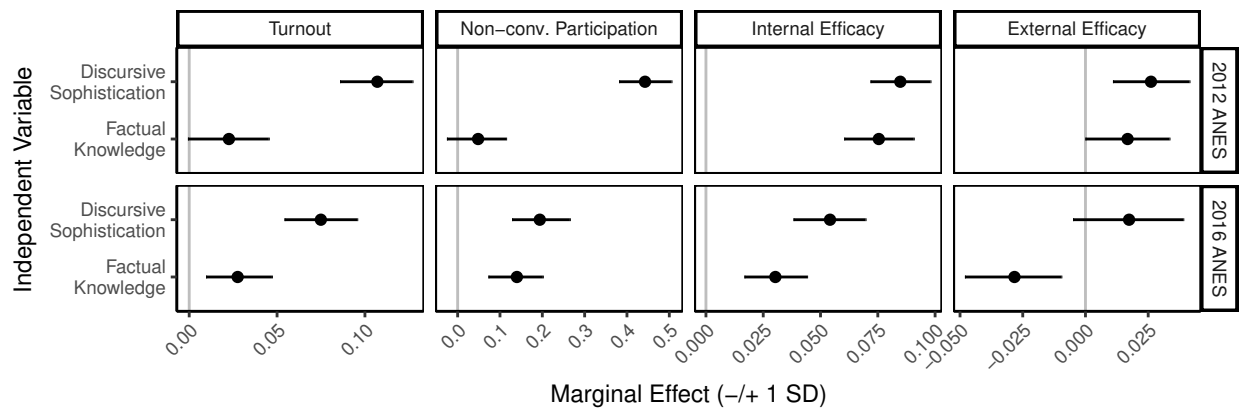
Figure D.1: Effects of sophistication on internal efficacy, external efficacy, non-conventional participation, and turnout in the 2012 and 2016 ANES. For each dependent variable, the figure displays the change in expected values after increasing each sophistication measure from -1 to +1 standard deviation from its mean (including 95% confidence intervals). Model estimates are based on logistic regression (turnout) or OLS (internal efficacy, external efficacy, non-conventional participation). Both sophistication measure are included simultaneously while controlling for gender, education, income, age, race, church attendance, survey mode, Wordsum vocabulary scores, as well as personality characteristics (extraversion and being reserved). Full model results are presented in the appendix, Tables E.6 and E.7.

II   Controlling for Individual Response Length
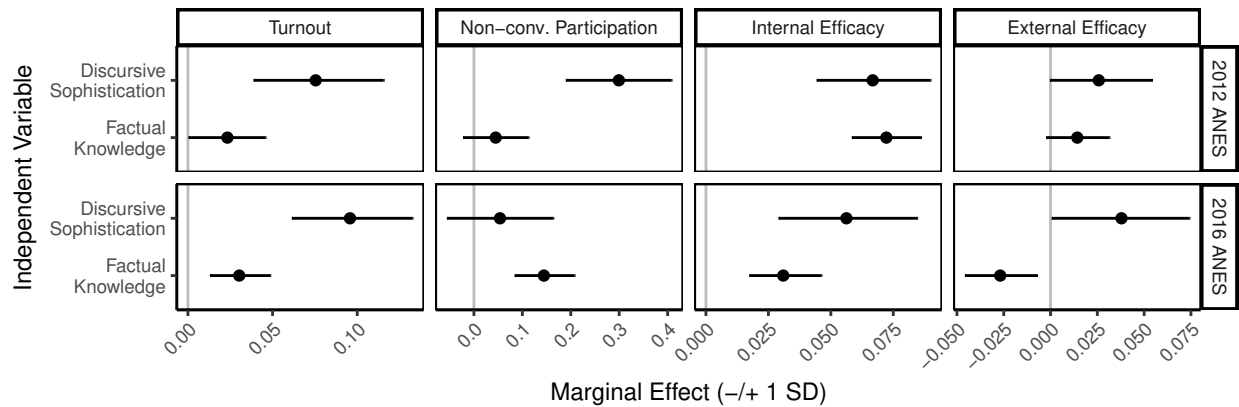
Figure D.2: Effects of sophistication on internal efficacy, external efficacy, non-conventional participation, and turnout in the 2012 and 2016 ANES. For each dependent variable, the figure displays the change in expected values after increasing each sophistication measure from -1 to +1 standard deviation from its mean (including 95% confidence intervals). Model estimates are based on logistic regression (turnout) or OLS (internal efficacy, external efficacy, non-conventional participation). Both sophistication measure are included simultaneously while controlling for gender, education, income, age, race, church attendance, survey mode, Wordsum vocabulary scores, as well as the logged word count across open-ended responses. Full model results are presented in the appendix, Tables E.8 and E.9.

Appendix E   Tables of Model Estimates

I   Main Analyses

Table E.1: Effects of sophistication on turnout, non-conventional participation, internal efficacy, and external efficacy in the 2012 ANES. Standard errors in parentheses. Estimates are used for Figure 3 in the main text.

	Dependent variable:			
	Turnout	Participation	Internal Efficacy	External Efficacy
Discursive Soph.	2.921	1.440	0.278	0.084
	(0.299)	(0.098)	(0.020)	(0.024)
Factual Knowledge	0.432	0.099	0.158	0.032
	(0.218)	(0.075)	(0.016)	(0.018)
Female	0.086	−0.067	−0.053	0.016
	(0.085)	(0.028)	(0.006)	(0.007)
College Degree	0.350	0.159	0.022	0.035
	(0.112)	(0.034)	(0.007)	(0.008)
Family Income	0.947	0.022	0.010	0.016
	(0.156)	(0.052)	(0.011)	(0.013)
Age (log)	0.988	0.102	−0.006	−0.014
	(0.105)	(0.038)	(0.008)	(0.009)
African American	0.910	0.096	0.066	0.082
	(0.123)	(0.038)	(0.008)	(0.009)
Church Attendance	0.752	0.112	0.010	0.048
	(0.129)	(0.040)	(0.008)	(0.010)
Mode: Online	0.530	0.227	0.017	−0.039
	(0.094)	(0.033)	(0.007)	(0.008)
Wordsum Score	0.638	0.403	0.092	0.013
	(0.219)	(0.076)	(0.016)	(0.019)
Constant	−5.019	−0.598	0.326	0.352
	(0.401)	(0.145)	(0.030)	(0.035)
Observations	4,716	4,692	4,996	4,985
R^2		0.124	0.161	0.043
Log Likelihood	−1,868.199			

Table E.2: Effects of sophistication on turnout, non-conventional participation, internal efficacy, and external efficacy in the 2016 ANES. Standard errors in parentheses. Estimates are used for Figure 3 in the main text.

| | Dependent variable: | | | |
	Turnout	Participation	Internal Efficacy	External Efficacy
Discursive Soph.	3.891	0.792	0.229	0.076
	(0.487)	(0.131)	(0.031)	(0.041)
Factual Knowledge	0.730	0.269	0.058	−0.051
	(0.219)	(0.058)	(0.014)	(0.018)
Female	0.177	0.061	−0.059	−0.003
	(0.114)	(0.029)	(0.007)	(0.009)
College Degree	0.554	0.092	0.058	0.057
	(0.141)	(0.033)	(0.008)	(0.010)
Family Income	0.487	−0.077	0.020	0.062
	(0.207)	(0.055)	(0.013)	(0.017)
Age (log)	0.840	−0.110	0.020	−0.005
	(0.139)	(0.038)	(0.009)	(0.012)
African American	1.126	0.097	0.057	−0.020
	(0.237)	(0.051)	(0.012)	(0.016)
Church Attendance	1.067	−0.175	−0.006	0.080
	(0.191)	(0.043)	(0.010)	(0.014)
Mode: Online	0.192	0.110	0.069	−0.016
	(0.136)	(0.036)	(0.009)	(0.011)
Wordsum Score	0.931	0.402	0.103	0.017
	(0.275)	(0.079)	(0.019)	(0.025)
Constant	−4.276	0.213	0.231	0.338
	(0.535)	(0.151)	(0.036)	(0.048)
Observations	3,486	3,039	3,037	3,038
R^2		0.062	0.147	0.043
Log Likelihood	−1,085.646			

Table E.3: Effects of sophistication on information retrieval in the 2015 YouGov study. Standard errors in parentheses. Estimates are used for Figure 4 in the main text.

	Dependent variable:
	Information Retrieval
Discursive Soph.	0.247
	(0.045)
Factual Knowledge	0.133
	(0.027)
Female	0.044
	(0.012)
College Degree	0.015
	(0.014)
Family Income	−0.062
	(0.030)
Age (log)	0.032
	(0.016)
African American	−0.026
	(0.021)
Church Attendance	−0.059
	(0.017)
Constant	0.534
	(0.061)
Observations	792
R^2	0.136

Table E.4: Effects of gender on discursive sophistication and factual knowledge in the 2012 ANES and 2016 ANES. Standard errors in parentheses. Estimates are used for Figure 7 in the main text.

| | *Dependent variable:* | | | |
| | Discursive Sophistication | | Factual Knowledge | |
	2012 ANES	2016 ANES	2012 ANES	2016 ANES
Female	0.001	−0.002	−0.050	−0.029
	(0.004)	(0.004)	(0.006)	(0.009)
Media Exposure	0.042	0.034	0.067	0.056
	(0.010)	(0.008)	(0.014)	(0.019)
Discussion Freqency	0.121	0.058	0.062	0.078
	(0.008)	(0.006)	(0.010)	(0.013)
College Degree	0.070	0.045	0.091	0.045
	(0.005)	(0.004)	(0.007)	(0.010)
Family Income	0.054	0.043	0.116	0.089
	(0.008)	(0.007)	(0.010)	(0.017)
Age (log)	0.017	0.003	0.081	0.092
	(0.006)	(0.005)	(0.008)	(0.013)
African American	−0.010	−0.026	−0.085	−0.004
	(0.006)	(0.007)	(0.008)	(0.016)
Church Attendance	0.004	0.005	−0.003	−0.006
	(0.006)	(0.006)	(0.008)	(0.013)
Mode: Online	−0.044	−0.110	0.092	0.085
	(0.005)	(0.004)	(0.006)	(0.010)
Constant	0.199	0.284	0.195	0.009
	(0.022)	(0.020)	(0.030)	(0.046)
Observations	4,690	3,119	4,690	3,108
R^2	0.178	0.265	0.282	0.110

Table E.5: Effects of gender on discursive sophistication and factual knowledge in the 2015 YouGov Study. Standard errors in parentheses. Estimates are used for Figure 7 in the main text.

| | Dependent variable: | |
	Discursive Sophistication	Factual Knowledge
Female	0.008	−0.157
	(0.009)	(0.016)
College Degree	0.027	0.108
	(0.011)	(0.019)
Family Income	0.003	0.233
	(0.024)	(0.041)
Age (log)	0.040	0.135
	(0.013)	(0.021)
African American	−0.064	−0.086
	(0.017)	(0.029)
Church Attendance	−0.008	−0.051
	(0.013)	(0.023)
Constant	0.272	0.125
	(0.049)	(0.083)
Observations	792	792
R^2	0.043	0.272

II Robustness Checks

Table E.6: Effects of sophistication on turnout, non-conventional participation, internal efficacy, and external efficacy controlling for personality characteristics in the 2012 ANES. Standard errors in parentheses. Estimates are used for Figure D.1 in the appendix.

| | *Dependent variable:* | | | |
	Turnout	Participation	Internal Efficacy	External Efficacy
Discursive Soph.	2.912	1.419	0.272	0.085
	(0.300)	(0.098)	(0.021)	(0.025)
Factual Knowledge	0.434	0.105	0.165	0.036
	(0.218)	(0.075)	(0.016)	(0.019)
Female	0.088	−0.078	−0.059	0.009
	(0.085)	(0.028)	(0.006)	(0.007)
College Degree	0.352	0.160	0.020	0.033
	(0.112)	(0.034)	(0.007)	(0.008)
Family Income	0.941	−0.002	0.006	0.010
	(0.157)	(0.052)	(0.011)	(0.013)
Age (log)	0.981	0.102	−0.003	−0.017
	(0.106)	(0.039)	(0.008)	(0.010)
African American	0.902	0.101	0.067	0.078
	(0.124)	(0.038)	(0.008)	(0.010)
Church Attendance	0.732	0.104	0.006	0.044
	(0.130)	(0.040)	(0.008)	(0.010)
Mode: Online	0.541	0.249	0.022	−0.033
	(0.096)	(0.033)	(0.007)	(0.008)
Wordsum Score	0.649	0.409	0.092	0.021
	(0.220)	(0.076)	(0.016)	(0.019)
Extraversion	0.029	0.032	0.009	0.020
	(0.030)	(0.010)	(0.002)	(0.002)
Reserved	0.009	−0.023	−0.005	0.002
	(0.026)	(0.009)	(0.002)	(0.002)
Constant	−5.181	−0.645	0.296	0.255
	(0.449)	(0.158)	(0.034)	(0.039)
Observations	4,691	4,685	4,691	4,679
R^2		0.129	0.171	0.058
Log Likelihood	−1,861.790			

Table E.7: Effects of sophistication on turnout, non-conventional participation, internal efficacy, and external efficacy controlling for personality characteristics in the 2016 ANES. Standard errors in parentheses. Estimates are used for Figure D.1 in the appendix.

	Dependent variable:			
	Turnout	Participation	Internal Efficacy	External Efficacy
Discursive Soph.	3.936	0.760	0.213	0.070
	(0.543)	(0.132)	(0.031)	(0.042)
Factual Knowledge	0.717	0.260	0.056	−0.052
	(0.241)	(0.059)	(0.014)	(0.019)
Female	0.172	0.046	−0.064	−0.004
	(0.125)	(0.029)	(0.007)	(0.009)
College Degree	0.616	0.085	0.056	0.055
	(0.155)	(0.033)	(0.008)	(0.010)
Family Income	0.471	−0.085	0.017	0.060
	(0.230)	(0.055)	(0.013)	(0.017)
Age (log)	0.894	−0.119	0.018	−0.010
	(0.153)	(0.039)	(0.009)	(0.012)
African American	1.228	0.102	0.057	−0.026
	(0.267)	(0.052)	(0.012)	(0.016)
Church Attendance	0.930	−0.172	−0.007	0.078
	(0.205)	(0.043)	(0.010)	(0.014)
Mode: Online	0.199	0.111	0.069	−0.015
	(0.148)	(0.036)	(0.009)	(0.011)
Wordsum Score	0.999	0.436	0.114	0.022
	(0.311)	(0.080)	(0.019)	(0.025)
Extraversion	0.090	0.023	0.011	0.012
	(0.041)	(0.010)	(0.002)	(0.003)
Reserved	0.005	−0.013	−0.002	0.005
	(0.037)	(0.009)	(0.002)	(0.003)
Constant	−4.948	0.196	0.199	0.277
	(0.646)	(0.163)	(0.039)	(0.051)
Observations	2,999	3,011	3,012	3,012
R^2		0.065	0.155	0.047
Log Likelihood	−907.430			

Table E.8: Effects of sophistication on turnout, non-conventional participation, internal efficacy, and external efficacy controlling for individual response length in the 2012 ANES. Standard errors in parentheses. Estimates are used for Figure D.2 in the appendix.

| | *Dependent variable:* | | | |
	Turnout	Participation	Internal Efficacy	External Efficacy
Discursive Soph.	2.053	0.967	0.215	0.082
	(0.543)	(0.186)	(0.039)	(0.045)
Factual Knowledge	0.426	0.096	0.158	0.032
	(0.218)	(0.075)	(0.016)	(0.018)
Female	0.067	−0.076	−0.054	0.016
	(0.085)	(0.028)	(0.006)	(0.007)
College Degree	0.370	0.167	0.023	0.035
	(0.113)	(0.034)	(0.007)	(0.008)
Family Income	0.948	0.026	0.011	0.016
	(0.156)	(0.052)	(0.011)	(0.013)
Age (log)	0.976	0.094	−0.007	−0.014
	(0.106)	(0.039)	(0.008)	(0.009)
African American	0.896	0.088	0.064	0.082
	(0.123)	(0.038)	(0.008)	(0.009)
Church Attendance	0.758	0.113	0.010	0.048
	(0.129)	(0.040)	(0.008)	(0.010)
Mode: Online	0.574	0.246	0.020	−0.039
	(0.097)	(0.034)	(0.007)	(0.008)
Wordsum Score	0.626	0.396	0.091	0.013
	(0.219)	(0.076)	(0.016)	(0.019)
Word Count (log)	0.970	0.539	0.071	0.003
	(0.507)	(0.180)	(0.037)	(0.044)
Constant	−5.237	−0.710	0.311	0.352
	(0.418)	(0.150)	(0.031)	(0.036)
Observations	4,716	4,692	4,996	4,985
R^2		0.126	0.162	0.043
Log Likelihood	−1,866.366			

Table E.9: Effects of sophistication on turnout, non-conventional participation, internal efficacy, and external efficacy controlling for individual response length in the 2016 ANES. Standard errors in parentheses. Estimates are used for Figure D.2 in the appendix.

	Dependent variable:			
	Turnout	Participation	Internal Efficacy	External Efficacy
Discursive Soph.	4.762	0.224	0.222	0.153
	(0.843)	(0.231)	(0.055)	(0.073)
Factual Knowledge	0.727	0.269	0.058	−0.051
	(0.219)	(0.058)	(0.014)	(0.018)
Female	0.189	0.054	−0.059	−0.002
	(0.114)	(0.029)	(0.007)	(0.009)
College Degree	0.547	0.096	0.058	0.056
	(0.141)	(0.033)	(0.008)	(0.010)
Family Income	0.487	−0.074	0.020	0.062
	(0.207)	(0.055)	(0.013)	(0.017)
Age (log)	0.842	−0.111	0.020	−0.005
	(0.139)	(0.038)	(0.009)	(0.012)
African American	1.137	0.090	0.057	−0.019
	(0.237)	(0.051)	(0.012)	(0.016)
Church Attendance	1.057	−0.171	−0.006	0.079
	(0.191)	(0.043)	(0.010)	(0.014)
Mode: Online	0.081	0.180	0.069	−0.026
	(0.162)	(0.043)	(0.010)	(0.014)
Wordsum Score	0.931	0.401	0.103	0.017
	(0.275)	(0.079)	(0.019)	(0.025)
Word Count (log)	−1.016	0.659	0.009	−0.089
	(0.802)	(0.220)	(0.053)	(0.070)
Constant	−3.972	0.017	0.228	0.365
	(0.586)	(0.165)	(0.039)	(0.052)
Observations	3,486	3,039	3,037	3,038
R^2		0.065	0.147	0.043
Log Likelihood	−1,084.839			