Ideology, Deliberation and Persuasion within Small Groups: A Randomized Field Experiment on Fiscal Policy

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Kevin M. Esterling
University of California, Riverside

Archon Fung
Harvard Kennedy School

Taeku Lee
University of California, Berkeley

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Abstract

This paper evaluates the dynamics of small group persuasion within a large scale randomized deliberative experiment, in particular whether persuasion in this context is driven by the ideological composition of small groups, to which participants were randomly assigned. In these discussions focusing on U.S. fiscal policy, ideological persuasion occurs but does not tend to be polarizing, a result that is inconsistent with the "law" of group polarization identified in small group research. In addition, the results demonstrate the presence of persuasion that is net of ideological considerations, a residual form of preference change that we label "deliberative persuasion." The direction and magnitude of deliberative persuasion are each associated with participants' perceptions of the informativeness of the discussion, but not with the civility or the enjoyableness of the discussion. In addition, informativeness is most closely associated with deliberative persuasion for liberals who come to agree with conservative policies, for conservatives who come to agree with liberal policies, and equally associated for both liberals and conservatives on items that are orthogonal to ideology. The results show that small group dynamics depend heavily on the context in which discussion occurs; that much of the small group experimental work pays little to no attention to this context; and that deliberative institutions are likely to ameliorate many of the pathologies that are often attributed to small group discussion.

1 Introduction

Persuasion is central to any conception of normative deliberative theory. One of the core propositions of deliberative theory holds that preferences among debate participants should be responsive to arguments, at least on occasion (Gutmann and Thompson, 1996, 2004; Habermas, 1984; Hamilton, Madison, and Jay, 1961; Knight and Johnson, 1994; Manin, 1987; Sunstein, 1988). When debate participants recognize merits in each others' claims, agreements possess legitimacy beyond that gained from majority rule (Cohen, 1989; Hamilton, Madison, and Jay, 1961, 325; Pitkin, 1967, 218). The possibility of noncoercieve persuasion is central, for example, to Gutmann and Thompson's (1996, 52) conception of "reciprocity," and Habermas's (1984, 9) conception of "communicative action" (see also Johnson, 1991, 184).

We use field experimental data to investigate the dynamics of noncoercive persuasion within small deliberative groups. Much of the experimental small group discussion research is conducted outside of deliberative institutions, and in the absence of a deliberative context the typical finding is that groups tend to polarize in the direction of the majority ideology within the group (see, e.g., cites that can be found in Isenberg, 1986; Sunstein, 2002, 2008), in a way that can undermine well functioning democratic processes (Cohen, 1989). The institutions that govern these experimental interactions, however, are typically not purposefully designed to induce a deliberative exchange among participants.

We examine opinion change within small *deliberative* groups using data collected from the "Our Budget, Our Economy" nationwide townhall meetings organized by America*Speaks*. The event was held on June 26, 2010 in 19 separate cities, with between 100 and 500 participants in each townhall. Within each townhall, participants' seating assignments were randomized among small group discussion tables, and we administered opinion surveys both before and after the event. We use these surveys to measure participants' ideology and preference change on a set of policy items, and we use table assignment numbers to assess dependence in the post-test preferences among those seated at the same

table.

Holding constant each participant's pretest expressed preference and her own ideology, we find that participants' preference changes are responsive to the majority ideological position among their table co-discussants, but we find no evidence of polarization within these deliberative interactions. At the same time, we are able to examine the amount of persuasion that occurs beyond ideological considerations by modeling dependence among participants' *residual* preference change on each item, net of their pretest preference, their own ideological ideal point, and the ideological influences of those seated at their table. We find that the direction and magnitude of this residual are each associated with participants' perceptions of the informativeness of the discussion, but that this residual preference change is not associated with their perception of the civility or of the enjoyableness of the discussion. In addition, we find that informativeness is most closely associated with this residual preference change for liberals who come to agree with conservative policies, for conservatives who come to agree with liberal policies, and equally associated for both liberals and conservatives on items that are orthogonal to ideology. Since this persuasion we observe is associated with informed discussion, tends to be consistent with moderation, and is a preference shift that is outside the constraints of ideology, and we label this discussion dynamic "deliberative persuasion."

Overall, these results differ from those found in the unmediated discussions of the small group polarization literature. The apparent constructiveness of the discussions we observe suggests the importance of the context within which discussion occurs, and the need for understanding small group dynamics within purposefully-designed deliberative institutions that are designed to further the normative ends of democratic society.

2 Ideological and Deliberative Persuasion

There has been a considerable amount of laboratory research regarding the effect of group composition on the dynamics of persuasion in small groups (summarized in Isenberg, 1986; Sunstein, 2002, 2008). One consistent finding is that preferences tend to become polarized within unstructured small group discussions. For example, if a liberal individual were to discuss policy options within a group of other like-minded liberals, the group as a whole would become even more extreme in their liberal views as the discussion progressed. Polarization tends to undermine democratic legitimacy to the extent it induces extremism, which can lead citizens to lack respect or empathy toward those who hold differing opinions (Cohen, 1989).

Political discussions do not occur in a vacuum, however, and typically research in this literature pays little attention to the institutional circumstances in which small group discussion unfolds (certainly there are notable exceptions, such as Jesuino, 1986; Tetlock, Skitka, and Boettger, 1989). Deliberative theorists emphasize that some institutions are better at inducing constructive discussion than others, and in particular that structured discussion among participants with diverse but informed views will be more constructive than unmediated, homogeneous, uninformed, and unstructured discussions, a set of adjectives that fairly describes the institutional design of most experimental small group research. In this paper we examine the dynamics of persuasion within small group structured discussions at a purposefully-designed deliberative forum (similar to Farrar, Green, Green, Nickerson, and Shewfelt, 2009). We evaluate persuasion in two separate ways.

First, similar to Sunstein (2008) we examine the degree to which debate participants' views are influenced by the ideological composition of the group. Ideology is an empirical and normative ordering of complex social and political reality (Eatwell, 1993), and as such it is a heuristic that enables citizens to make sense of and engage in policy debates even with limited information (Hinich and Munger, 1994). In the American context ide-

ology typically reduces to a single left-right dimension (Poole and Rosenthal, 1997).[1] In a deliberative exchange among liberals and conservatives, one might expect to observe ideologically-based persuasion based on the balance of arguments in favor of one or the other ideological pole, a mechanism labeled "persuasive arguments" in the small group literature. So for example, if a liberal were seated at a discussion table with mostly conservative discussion partners, we might expect her to hear a greater quantity of conservative reasoning, and so her post-discussion preferences might move in a conservative direction. Under the persuasive arguments mechanism, one can expect linear or diminishing returns from increasing the size of the ideological majority, under a mild assumption of diminishing returns to each additional argument.

In addition, we can test whether the ideological composition of a small group tends to have a *polarizing* effect on participants' views; in this case, if structured discussions were polarizing, a liberal seated at a table of other liberals would become even more liberal, and vice versa with conservatives. While ideologically-based persuasion in and of itself poses no challenge for democratic legitimacy, and indeed may reflect a healthy democratic exchange, polarization of ideological views can present a challenge to the extent that it induces extremism and reduces the prospects for civility, empathy and recognition across diverse viewpoints. Small group researchers have theorized that one possible mechanism for polarization is that participants engage in "social comparison," where each participant wants to offer stronger views as a way to appear more forceful, decisive, and exemplary of the dominant identity of a group (Isenberg, 1986). If the participants' views were merely a product of this interpersonal dynamic, not grounded in the discourse itself, one would not characterize persuasion at the discussion as a product of deliberation.

We can distinguish between the persuasive arguments and the social comparison dynamics by examining induced changes in participants' preferences as the ideological com-

[1] In the American context race can constitute a second ideological dimension (Poole and Rosenthal, 1997), but since this study focuses on broad fiscal policy preferences we can assume a single dimension. We also test for differences in responses by race in the model below.

position of the discussion group changes. A linear or diminishing effect of increasing the size of the ideological majority would indicate a dynamic driven by persuasive arguments. An increasing effect would indicate polarization perhaps driven by non-discursive social comparisons.

Second, we are able to examine the amount of persuasion that occurs "outside" of ideology. In the townhall event we study, participants were provided policy reading material and expert testimony to inform discussions. While ideology structures a considerable amount of political discourse, especially among citizens with low levels of political knowledge, deliberative theorists also are interested in noncoercive persuasion that can happen among citizens with relatively high levels of political knowledge, and who make grounded empirical claims to each other regarding good public policy. These claims need not be constrained by ideology (Gutmann and Thompson, 1996, 56); indeed, ideological discourse typically engages in value statements, or a kind of statement that often has less prospect for fostering mutual agreement compared to empirically grounded discourse (Esterling 2011; Gutmann and Thompson 1996, 56; Habermas 1984, 99).

We are able to assess the amount of persuasion that occurs outside the constraints of ideology in small group discussions by examining the degree of dependence among preference changes at a given table, after accounting for both individual- and group-level ideological influences. In our statistical model we estimate a *residual* preference change, which is a parameter that we estimate for each participant at our townhall, and so we are able to test for the correlation in the expected values of these residual changes among participants seated at a given table. We demonstrate that this residual preference dependence within a discussion group reflects persuasion that is grounded outside of ideological constraints, and that the dependence is associated with participants' perceptions of the informativeness of the discussion. In light of these findings, we label this residual preference change "deliberative persuasion."

3 The OBOE Townhalls: A Randomized Experiment

We are able to test for small group dynamics in a deliberative small group setting using a unique dataset from a randomized, large-scale deliberative field experiment. On June 26, 2010, over 3,000 individuals in 19 different cities convened in townhall meetings to discuss America's long term fiscal future.[2] The event, entitled "Our Budget, Our Economy," brought together diverse citizen-deliberators, armed with background reading material, to discuss and prioritize policy options that would help put the nation's budget on a more sustainable long term path. To recruit participants, the event organizers, America*Speaks*, worked with hundreds of local groups in each of the 19 cities, from all walks of life, to create a group of participants that closely mirrors the demographic composition of each community (Esterling, Fung, and Taeku Lee, 2010).[3] In addition, America*Speaks* worked with over 30 national organizations that research and advocate budget policies, both liberal and conservative, to develop technical background reading material that was factual, balanced, and that represented the views of diverse ideological perspectives.

On the day of the event, participants were randomly assigned to small group discussion tables, with the randomization occurring within each site. They spent the entire day reading the materials, watching some instructional videos, and discussing their policy views with others seated at their table.[4] Given the diversity of the participants in the

[2]The event was held simultaneously in 19 sites in 19 different cities, and the sites were coordinated via videoconferencing technology. Six of the sites were designated "large sites" with approximately 500 participants each: Albuquerque, Chicago, Columbia (SC), Dallas, Philadelphia, and Portland (OR). The remaining sites were smaller and had 100 or fewer participants: Los Angeles, Des Moines, Overland Park (Kansas City), Louisville, Augusta (ME), Detroit, Jackson (MS), Missoula, Portsmouth (NH), Grand Forks, Richmond, Caspar, and Silicon Valley.

[3]Since America*Speaks* could not compel a truly representative sample of citizens to participate in the experiment, we can only state the in-sample group dynamics. The in-sample results remain interesting since they test for dynamics among those who are belong to a "deliberative class." We draw the analogy to research in labor economics regarding the efficacy of worker training programs. Generally the effectiveness of these programs on the average citizen is of no interest, while the effect on those who participate in training programs is of considerable interest. The in-sample results represent the responses of over 3,000 ordinary Americans, from all walks of life, from a very diverse set of cities, who are ordinary citizens rather than policy wonks, but who show an interest in engaging in deliberation.

[4]Most of the 349 tables had 10 participants each, although this varied to some degree. In the analyses below, we dropped the handfull of tables with fewer than five participants.

townhalls, the randomization served two purposes. First, randomizing participants to small group discussions helped to assure that at least some participants were exposed to the views of citizens who were very different from themselves. In the absence of fixed seating assignments, participants are likely to seek out other participants that are like themselves (Fowler, Heaney, Nickerson, Padgett, and Sinclair, 2011), which in turn would minimize the diversity of viewpoints available at each table. Since the groups were small in number, typically 10 participants, sampling variability under randomization assured that the composition of preferences would vary across tables, ranging from homogeneous to heterogeneous groups.

Second, random assignment allows us to identify the causal effects of exposure to different group compositions on small-group persuasion (Farrar et al., 2009). In the present case, the mix of pre-discussion viewpoints among participants at a given table is exogenous to the analysis.[5]

The context in which deliberation occurs can affect the nature of discussion, and much of the small group literature pays little to no attention to the institutional design within which discussion occurs. In the OBOE structured deliberation, America*Speaks* assigned a moderator to each table. The moderator did not participate substantively in the discussion and was trained by the event organizers in techniques to ensure that everyone at the table had the chance to speak, to encourage everyone to participate, and to enforce a set of rules (written on cards located at the center of each table) that were designed to make each table a "neutral, safe space" for expressing diverse views. We expect this careful structure to induce deliberative exchanges within the small groups, and so our findings might well depart from those of previous studies.

[5]Prior to the event, the organizers printed up cards with table numbers, and then shuffled the cards before handing them to participants as they arrived. Randomization and balance tests show that the quality of the randomization was very good. For example, for a set of knowledge items on our survey, the table mean of each item calculated without a participant's response does not predict the participant's response. And demographic and other pretest covariates are well balanced across the mean levels of knowledge, and the variation of knowledge, within a table.

4 Data and Model

The statistical model tests for the presence of persuasion within the small groups seated at tables regarding various policy proposals considered at the event. We use spatial regression methods to test whether there is a dependence of policy preferences among participants seated at the same table along two dimensions: an ideological dimension and a residual dimension that is net of left-right ideology. Since this latter dimension is outside of a liberal-conservative ideological dimension, we label dependence among participants' preferences along these lines "deliberative persuasion." To assess the degree of deliberative persuasion at this event, the model tests whether there is a residual shift in participants' expected post-test policy preferences across the items, net of ideology, and whether this shift itself is a function of the shifts of others seated at the same table. We assess this dependence separately for liberals, moderates, and conservatives for each of our policy preference survey items.

At each of the 19 townhalls, we asked participants to complete a short survey as they arrived, before the event began, and to complete another survey at the conclusion of the event. We refer to the former as the pretest survey, and the latter as the post-test survey. A total of 2,793 participants filled out one or the other of these surveys.

Figure 1 diagrams the statistical model we use as well as the data we use to specify the model. In this figure, variables listed in squares are observed in the survey and variables in ovals are latent and hence estimated. Arrows assign variables to equations. The shaded rectangles list the pretest variables and the unshaded rectangle indicates the post-test outcome variable. We estimate this model separately for each of six policy preference items. See the appendix table [to do] for descriptive statistics.

The pretest and post-test surveys each had a block of items asking participants their policy preferences on a set of proposals. The block of six questions is preceded with "Here are several things the government could do to cut the budget deficit. Please tell us what you think about each approach to reducing the deficit. Do you strongly support,

somewhat support, somewhat oppose, strongly oppose, or do you neither support nor oppose the approach?" The response categories each have a five point scale: "Strongly disagree," "Disagree," "Neither," "Agree," "Strongly agree." The items are (labels for items shown below in bold font were *not* in the survey):

Q1: Tax Rich Raise income taxes on the very wealthy – individuals making $250,000 ore more and households making $500,000 or more.

Q2: Cut Programs Cut discretionary federal programs and services by 5% across the board.

Q3: Tax Both Raise taxes on the middle-class as well as the wealthy.

Q4: Cut Entitlements Cut the growth of spending on entitlement programs such as social security and Medicare benefits.

Q5: Cut Defense Cut the spending on national defense and the military.

Q6: Federal Sales Tax Create a new federal consumption tax, which would be like a federal sales tax that would be on top of any state and local sales tax.

The statistical model also makes use of pretest values of these items; an indicator of whether the pretest is missing for a participant who submitted a post-test (9 percent of pretests are missing);[6] a variable indicating a unique table identification number (among 339 tables total); and dummy variables indicating the site (out of the 19 sites, omitting one site) for each participant.

4.1 First Cut Test of Polarization

As a first cut at testing for polarization on these questions, we identified the set of homogeneous tables for each item.[7] To identify homogenous tables, we selected tables where there were no participants who responded "strongly agreed" or "agreed" on the pretest to a given policy preference item, and the set of tables where no participants "strongly disagreed" or "disagreed" on the pretest with a given item. That is, we identified tables

[6] Among those who filled out a pretest, 22 percent failed to fill out a post-test.

[7] Recall that participants are randomly assigned to tables so participants at these tables should be representative of all participants.

where everyone offered either a neutral or a liberal response to a policy preference item, and the tables where everyone offered either a neutral or conservative response.[8] Recall that the law of polarization asserts that a group of all moderate liberals will become even more extremely liberal, and a group of moderate conservatives will become more conservative, in their post-discussion response. Because of randomization to groups of size 10, we had no tables that contained only participants who only "agreed" or only "disagreed" with the preference item on the pretest (which would reflect moderate liberal or moderate conservative responses to the items, depending on the item), so including those who "strongly agreed" or "strongly disagreed" with the item should bias this test in the direction of even more polarization.

While one would expect some test-retest error, under polarization one should expect to see a tendency for post-discussion responses to be biased in favor of the consensus view at the table. We find, however, no evidence to this effect. We evaluated the percentage of respondents who changed their response in the expected direction relative to all respondents who changed their responses, and tested whether the resulting percentage statistically differed from 50 percent. In this analysis we had a total of eight tests, where there were enough tables of either all liberals or all conservatives on an item to conduct a meaningful test. Among the eight tests, we found four that did not differ from 50 percent; in two tests participants displayed a polarized pattern of greater than 50 percent; and in two tests participants displayed a moderating pattern of less than fifty percent.[9] These

[8]Specifically, a table was retained if everyone either strongly agreed, agreed, or neither agreed nor disagreed; or if everyone either strongly disagree, disagreed, or neither agreed nor disagreed on a given item. We conducted this analysis separately for each item. For this preliminary analysis, we disregard missing observations.

[9]The items where the preference changes were equally in both directions were: liberals on cutting programs (3 tables, 30 participants, 19 changing responses); conservatives on cutting programs (11 tables, 71 participants, 39 changing responses); liberals on increasing the federal sales tax (two tables, 10 participants, 7 changing responses); and conservatives on increasing the federal sales tax (17 tables, 138 participants, 65 changing responses). Items that showed a polarized pattern were: liberals on taxing the rich (49 tables, 385 participants, 119 changing responses); and liberals on cutting defense spending (23 tables, 174 participants, 61 changing responses). And the items that showed a moderating pattern were: conservatives on taxing the middle class as well as the wealthy (21 tables, 163 participants, 86 changing responses); and liberals on cutting entitlements (18 tables, 117 participants, 58 changing responses).

preliminary results are not consistent with any "law" of group polarization.

4.2 Statistical Model

While the first cut analysis is inconsistent with much of the literature on polarization in small group discussions, we are able to examine this question as well as others more systematically in a full econometric model.

In the statistical model, we control for the participant's response on the same item on the pretest survey by including a set of dummy variables indicating each of the first four response categories for the item (omitting the fifth category). We also use pretest responses to the tax rich, cut programs, cut entitlements, and cut defense items to estimate an ideological ideal point that is also included in the model to control for each individual's ideology.[10] We use estimates of ideological ideal points in two ways. First, we dynamically estimate ideal points within the model and use these estimates to include as a control variable in the outcome model,[11] and to estimate the ideological composition of the participants seated at a given table.

Second, to evaluate the interactive effect of ideology within the model, we retrieve the estimated ideal point for each participant and tricotomize this scale with cut points that create three equally sized groups, which we label liberals, moderates and conservatives. We must use these fixed ideal points rather than the estimated scale itself for the interactions in order to identify and estimate the model. We tricotomize the scale so as not

[10] We estimate each participant's ideological ideal point dynamically within the model and include that estimate as a variable in the outcome equation in a full structural equation model. We demonstrate in a separate analysis that there is a one factor solution for this set of items, where the first and last items had negative loadings and the other two positive, results not reported. The ideological ideal points of all participants also enter the model via functions that estimate means and standard deviations of ideal points for each table, as we describe below. These functions of ideal point estimates also are estimated dynamically within the structural equation model. Since we must estimate each participant's ideological ideal point, we model the ideal points dynamically within the model and so incorporate the estimation uncertainty from the ideal points into the variable itself as well as into our estimates of the table's ideological composition.

[11] Including this latent variable in the outcome model also has the methodological benefit of capturing the endogenous dependence between the pretest and post-test response on the item, and so corrects for any endogenous variable bias that comes from including the pretest item in the outcome equation (see Skrondal and Rabe-Hesketh, 2004, 107-8).

to confine ideological interactive effects to linear relationships.

The model is a nonlinear spatial auto-regression model, as described in Congdon (2003, chapter 7), which enables tests of dependence among the preferences of participants seated at a table.[12] The post-test policy preferences for each individual are modeled as a function of her pretest ideological ideal point and pretest policy preference, as well as a function of the mean ideology of the participants at her table and her own residual preference shift. This preference shift itself is a function of the mean post-test residual preference shifts of others seated at her table.

The key parameters are listed in figure 1. The parameter α_1 estimates the degree to which person i's preferences depend on the ideological composition of others seated at her table, and β_1 and β_2 test whether there is polarization within this dependence, separately for liberals and conservatives. The parameters γ_1, γ_2, and γ_3 test whether the dispersion of ideal points at a table – a pretreatment measure of disagreement – itself has an effect on preference change, separately for liberals, moderates and conservatives. The parameters ρ_1, ρ_2, and ρ_3 estimate the degree of dependence among table participants for liberals, moderates, and conservatives (respectively) after netting out ideological influences. These nine structural parameters capture the effects of the preferences among the participant's small group discussion partners on the participant's pretest to post-test preference change. In particular, if a $\rho_.$ is positive and significant, this indicates if everyone else at the table has a shift in their expected post-test preference, netting ideological discourse, then person i also can be expected to have a shift in the same direction; conversely, if everyone else's preferences stay put, so does person i's. (Negative rhos are very unusual in this type of model.)

[12] Since participants are randomly assigned to tables, we can state that any dependence among preferences we observe is due to causal autoregressive processes, rather than due to omitted variables and homophily.

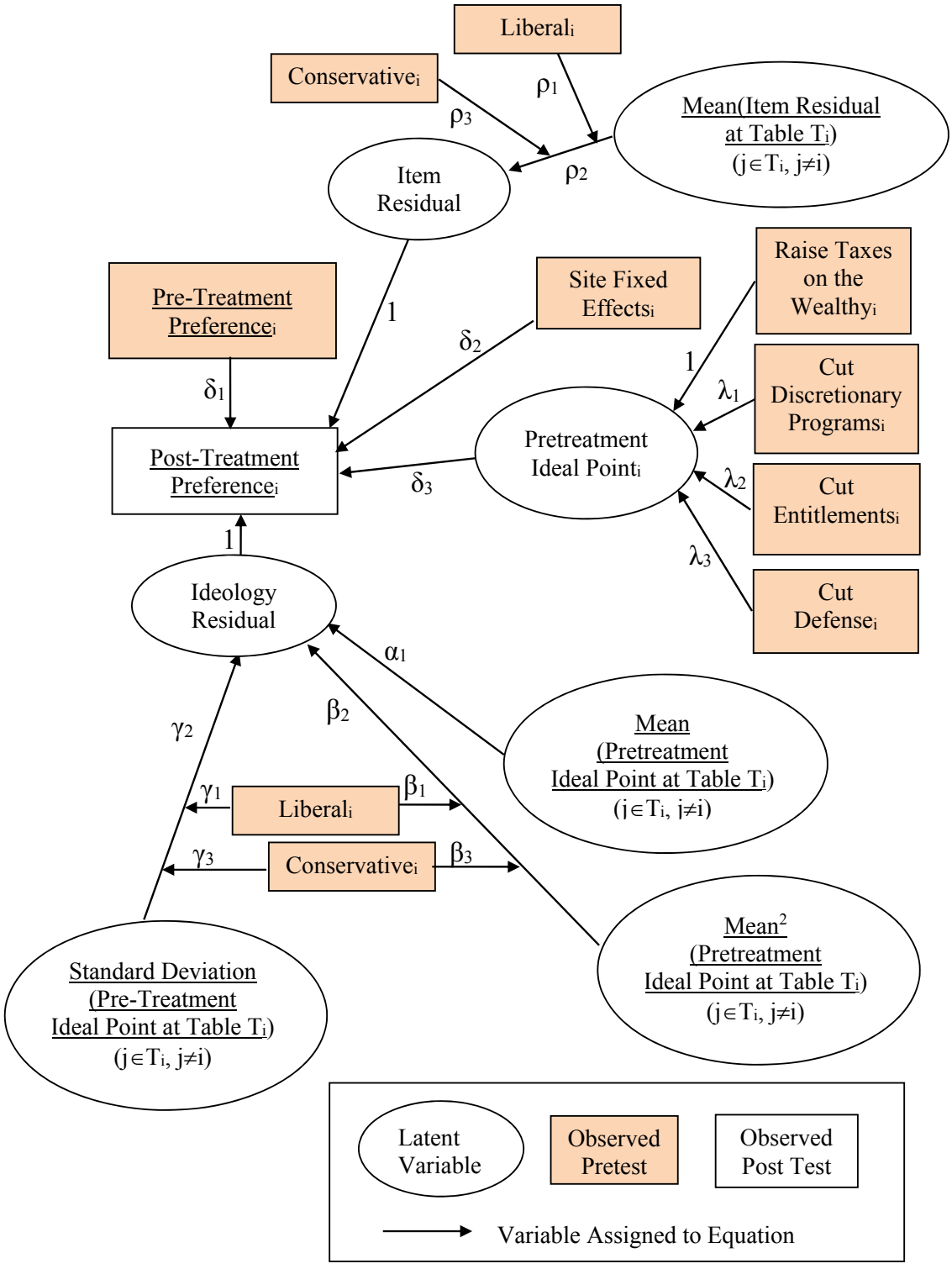

Figure 1: Persuasion Statistical Model

4.3 Estimation

Because the analysis depends on table-level summary statistic functions, we drop all tables with fewer than five participants, or fewer than five participants filling out a pretest survey (this omits 46 participants who were seated at 20 tables). This leaves 2,793 participants seated at 339 tables for the analysis. We estimate the model in `WinBUGS` using Bayesian MCMC methods (Spiegelhalter, Thomas, Best, and Gilks, 1996). The pretest variables have missing data rates ranging from 28 percent to 9 percent, and the post-test variables have missing data rates around 25 percent. We impute the missing post-test data as missing at random given the observed and latent variables and we impute the missing pretest variables as missing at random conditional on the participant's site. The model estimates incorporate the additional uncertainty that is due to the missing data, which are imputed as full distributions (Tanner and Wong, 1987). We run the model until the posterior distribution of the structural estimates are stationary, and then sample from the posterior distribution to create marginal distributions of each parameter of interest.

5 Results

We report the conditional estimates for ideological persuasion in figure 2, using $\widehat{\alpha_1}$, $\widehat{\beta_1}$ and $\widehat{\beta_2}$) to estimate the degree of persuasion conditionally on mean table ideology, separately for liberals, moderates and conservatives. Figure 3 shows the effect of (pretreatment-measured) disagreement on preferences, estimated by $\widehat{\gamma_1}$, $\widehat{\gamma_2}$, and $\widehat{\gamma_3}$. We present the results for deliberative persuasion ($\widehat{\rho_1}$, $\widehat{\rho_2}$ and $\widehat{\rho_3}$ for each of the six outcomes) in figure 4.

5.1 The Role of Ideology

Recall we measure ideology as a continuous factor scale using each subject's pretest responses to four policy preference items.[13] The model estimates each participant's ideological ideal point and simultaneously uses each estimate to create a table-level function of the average of i's co-discussants' ideal points. The curves in figure 2 show the effect of increasing the proportion of the participant's co-discussants that are conservative on the participant's propensity to offer conservative responses to the post-test preference items, holding constant her own ideology and pretest response to the items.[14] The middle panel of the figure (moderates) shows that $\widehat{\alpha}_1$ is positive, substantively quite large, and statistically significant. The left hand (liberals) panel indicates that $\widehat{\beta}_1$ is relatively small, positive in sign, and not significantly different from zero, and the right hand panel (conservatives) shows that $\widehat{\beta}_2$ is small, negative in sign, and also not significant.

These results are consistent with a linear pattern or even (by their point estimates) a diminishing return pattern to increasing ideological extremity of a table's ideological composition. For example, as a table grows more conservative in composition, all participants tend to give more conservative responses on the post-test; but the right hand panel shows that conservatives themselves do not become especially more conservative; this pattern is symmetric for liberals. In both cases, under a law of polarization we would expect to see the curve in the right hand panel to be convex or upward-bending. The figure shows that the effect of ideological persuasion is large, but similar for each group. This shows that the participants are persuaded by fellow co-participants' ideological appeals, but that ideologues are not especially persuaded by co-ideologues; in the interaction model we do

[13] To create figure 2, we use the ideology scale to classify participants as either liberal, moderate, or conservative by setting cutpoints so that equal numbers of participants fall into each category.

[14] For identification, the statistical model constrains the α_1, $\beta_\cdot$ and $\gamma_\cdot$ parameters to be identical in magnitude across all six items, and the sign of the effect in each equation determined by the liberal or conservative direction of the question (for details, see the detailed model in the appendix). In the items where agreeing with the item is a liberal response (raise taxes on the wealthy, cut defense, raise taxes on both the wealthy and middle class, and federal sales tax) the sign is set to negative, and in the items where agreeing is a conservative response (cut programs and cut entitlements) the sign is set to positive.

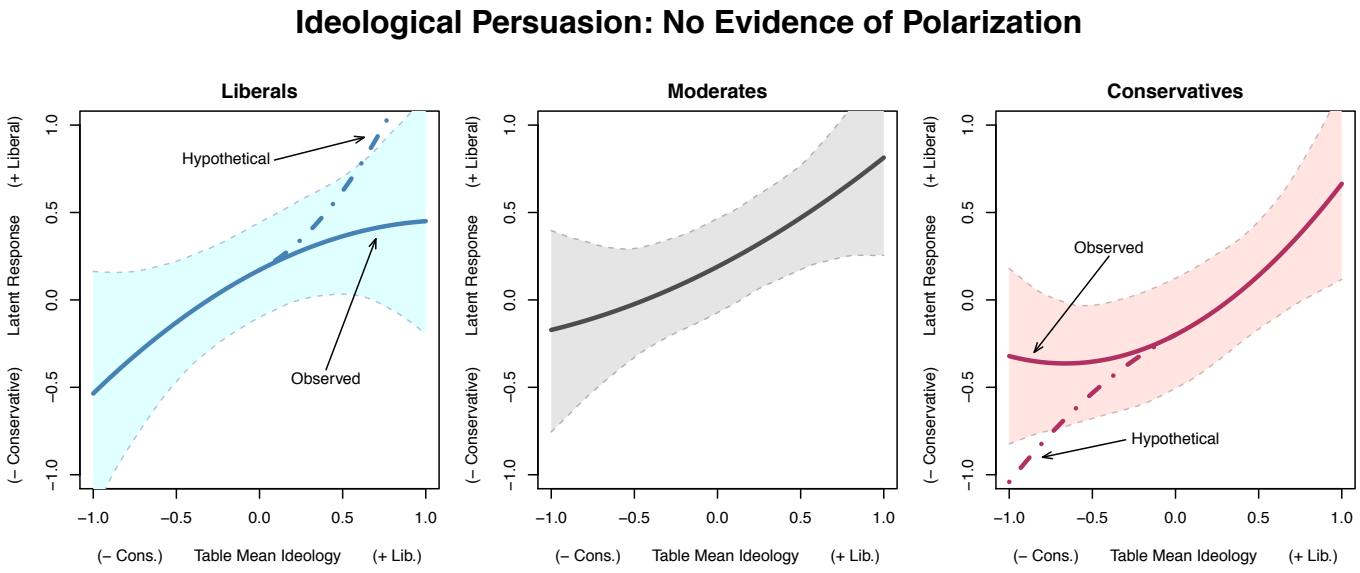

Figure 2: Ideological Persuasion

not observe ideological polarization within these small groups.

Recall that participants were randomly assigned to tables, and as a result the effects of table composition can be taken as causal effects.

In addition to the mean ideology, the statistical model also includes a second table level function, the standard deviation of ideological ideal points among participants at each table. This function is a measure of the diversity of viewpoints available at a given table. Participants might respond to diverse viewpoints in one of two ways. First, upon hearing a mixture of views a participant might average those views and so provide a response on the post-test that is close to the center. Second, participants might use motivated reasoning to selectively attend to the arguments that tend to support their own preconceptions (see, e.g., Edwards and Smith, 1996; Nyhan and Reifler, 2010; Tabor and Lodge, 2006). In the model the $\gamma_{\cdot}$ parameters test for this dynamic. Figure 3 shows the results. We find that with greater diversity, liberals tend to become more liberal, conservatives more conservatives, and in this event moderates tend to have the same response pattern as liberals.[15] These results suggest that it is diversity among discussants

[15]This is not to confirm the view of Stephen Colbert that the truth has a liberal bias. In a separate

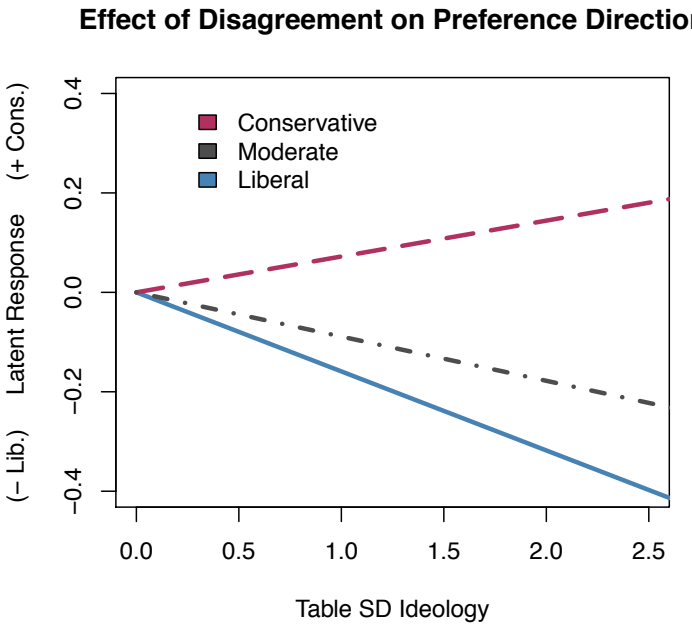

Figure 3: Disagreement and Persuasion

coupled with motivated reasoning, rather than ideological homogeneity, that may increase polarization in a deliberative context.

That diverse composition tends to increase polarization also is a good indicator that liberals and conservatives are able to express their arguments arguments and opinions, even at tables where they encounter disagreement.

5.2 Deliberative Persuasion

Figure 4 shows the estimates of the $\rho_{\cdot}$ correlation parameters assessing the degree of dependence in the residual preference changes among table co-participants, separately by the ideology of the participant and the issue. Overall, the figure indicates a very strong dependence of preference shifts within tables net of ideology, and hence, when

study of health care policy in California, we found the opposite in that moderates tended to respond similarly with conservatives.

remembering that assignment to tables is random,[16] these results make a strong case for the existence of persuasion that is outside of the constraints of ideology. We have three reasons by which we can assert this persuasion is outside of ideology. First, the model controls for both the individual's own ideological ideal point as well as ideological influences from interacting with co-discussants at a table. Second, as figure 4 makes clear, the degree of dependence does not vary among liberals, moderates and conservatives for any of the items.

Third, we analyze the expected residual for each participant and for each of the six preference items. We find that the residuals are highly correlated across all six items; the correlations among the residuals ranged from 0.7 to 0.3 for all items ($p < 0.001$) except for the tax both and federal sales tax items which both correlate with the cut defense item at 0.1 ($p < 0.001$). The expected residuals meanwhile have only a minuscule negative correlation with the ideological ideal points scale, in which substantively increasing the ideology scale by one standard deviation decreases each expected residual by about 0.06 of a standard deviation ($p \leq 0.05$). In addition, we do not observe any site-level factors that explain the residuals; regressing the site dummies on each residual vector shows only one site (Silicon Valley) that had a non-zero shift in the expected residual. This site was very small (n=87), however, and is only one of 19 sites and thus its deviation from zero is consistent with sampling variability.

Figure 4 makes a compelling case that persuasion occurs at tables in a way that is outside of ideological considerations, especially keeping in mind that the co-discussants were randomly assigned to tables and hence the dependence cannot be due to unobserved or omitted variables. Figure 4 does not in itself establish that this persuasion is rational or deliberative in nature, however. Persuasion and preference dependence among a set of interacting individuals could instead be driven by an orthogonal ideological dimension (for

[16]Random assignment solves the basic problem of "heterogeneity" in testing causal effects in a spatial context (see Congdon, 2003, chapter 7). In short, the problem of heterogeneity involves the existence of unobserved variables that are spatially distributed, and is analogous to the problem of homophily we discuss above.

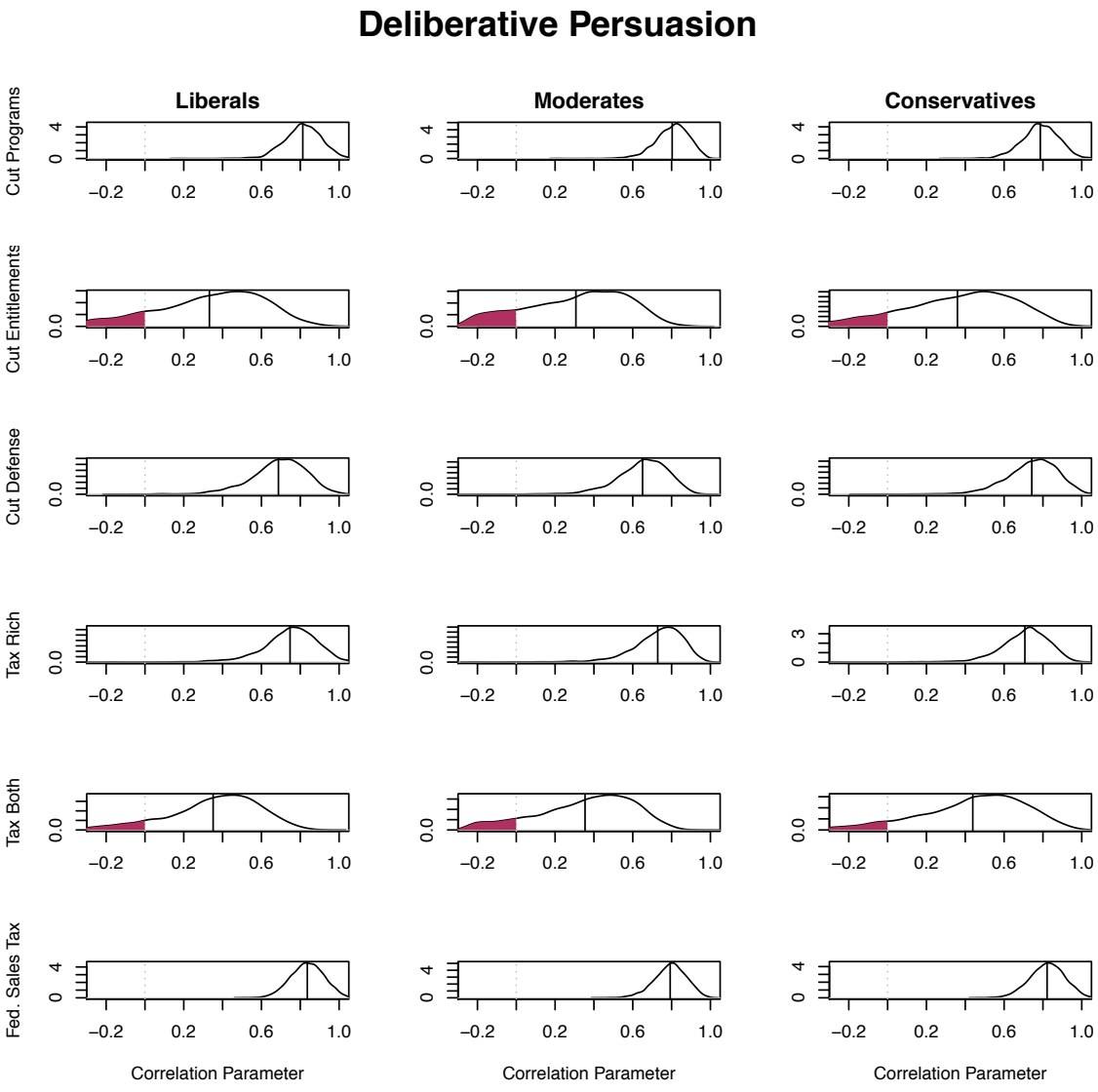

Figure 4: Deliberative Persuasion

Table 1: Correlates of the Residual Shift: Direction

	Tax Rich	Cut Programs	Cut Entitle-ments	Cut Defense	Tax Both	Federal Sales Tax
Discussion Ratings						
Informative	*0.10***	*0.05**	*0.13***	*0.04*	*0.13***	*0.15***
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Civil	0.02	0.02	-0.03	-0.01	-0.02	-0.02
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Enjoyable	-0.01	0.04	-0.02	0.05	-0.08**	-0.03
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Self-Efficacy Scales						
Internal	-0.01	0.05**	-0.04	-0.04	0.03	0.04*
	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.02)
External	-0.05**	-0.05**	0.03	0.03	0.04	-0.01
	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
Individual Attributes						
Black	-0.09*	-0.00	-0.38**	-0.16**	-0.04	-0.13*
	(0.05)	(0.06)	(0.08)	(0.07)	(0.08)	(0.07)
Hispanic	-0.03	-0.20*	0.00	-0.03	-0.24*	-0.08
	(0.08)	(0.10)	(0.13)	(0.13)	(0.13)	(0.12)
Asian	0.12	0.05	0.20	0.17	0.16	0.01
	(0.11)	(0.14)	(0.17)	(0.17)	(0.16)	(0.15)
Education	0.04	0.01	0.04	0.03	0.09	-0.09*
	(0.04)	(0.04)	(0.06)	(0.05)	(0.06)	(0.05)
Constant	-0.00	0.01	0.04	0.01	0.00	0.03
	(0.05)	(0.05)	(0.05)	(0.04)	(0.05)	(0.05)

$^{*} * p \leq 0.05$, $^{*}p \leq 0.10$

Dependent variables are the individual-level random effect point estimates taken from the corresponding equation in the statistical model described in figure 1. Cell entries are standardized coefficients from a single-equation random effect model in which the clusters are defined by small group discussion tables (OLS estimates give substantively identical results).

N = 1628, number of tables = 329

Table 2: Correlates of the Residual Shift: Magnitude

	Tax Rich	Cut Programs	Cut Entitle-ments	Cut Defense	Tax Both	Federal Sales Tax
Discussion Ratings						
Informative	*0.02*	*0.11***	*0.10***	*0.05*	*0.05*	*0.07***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Civil	-0.01	0.00	-0.02	0.01	-0.02	-0.03
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Enjoyable	0.00	0.00	0.02	-0.03	0.03	0.02
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Self-Efficacy Scales						
Internal	0.04*	-0.01	0.03	0.03	0.00	0.05**
	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)
External	-0.02	0.06**	0.02	-0.05**	0.04	-0.03
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Individual Attributes						
Black	0.14**	0.07	0.13*	0.11	0.04	-0.05
	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Hispanic	0.07	-0.02	-0.04	-0.05	-0.14	-0.02
	(0.10)	(0.11)	(0.12)	(0.11)	(0.12)	(0.12)
Asian	-0.05	-0.20	0.18	0.05	-0.33**	-0.31**
	(0.13)	(0.15)	(0.16)	(0.15)	(0.16)	(0.15)
Education	-0.01	0.00	0.03	0.01	-0.10*	0.00
	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Constant	0.07	0.14**	0.14**	0.15**	0.23**	0.17**
	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)

*$p < 0.05$

Dependent variables are the individual-level random effect point estimates taken from the corresponding equation in the statistical model described in figure 1. Cell entries are standardized coefficients from a single-equation random effect model in which the clusters are defined by small group discussion tables (OLS estimates give substantively identical results).

N = 1628, number of tables = 329

Table 3: Correlation of the Residual Shift with Informative Discussion, by Ideology

	Tax Rich	Cut Programs	Cut Entitlements	Cut Defense	Tax Both	Federal Sales Tax
Direction						
Liberal	0.06	0.10**	0.27**	0.06	0.18**	0.12**
	(0.04)	(0.05)	(0.06)	(0.06)	(0.06)	(0.05)
Moderate	0.03	-0.01	0.11*	0.01	0.07	0.20**
	(0.04)	(0.05)	(0.06)	(0.06)	(0.07)	(0.06)
Conservative	0.15**	0.05	0.04	0.00	0.14**	0.15**
	(0.03)	(0.04)	(0.05)	(0.04)	(0.05)	(0.04)
Magnitude						
Liberal	0.11**	0.12**	0.14**	0.21**	0.02	0.08*
	(0.06)	(0.06)	(0.06)	(0.06)	(0.03)	(0.05)
Moderate	-0.03	0.13**	0.08	-0.10*	0.16**	0.12*
	(0.06)	(0.07)	(0.06)	(0.06)	(0.07)	(0.07)
Conservative	0.06	0.12**	0.08**	0.03	0.03	0.07
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)

*$p < 0.05$

Dependent variables are the individual-level random effect point estimates taken from the corresponding equation in the statistical model described in figure 1. Cell entries are standardized coefficients from a single-equation random effect model in which the clusters are defined by small group discussion tables (OLS estimates give substantively identical results), identical to the previous except adding main and interactive effects of ideological ideal point categories.

N = 1610, number of tables = 329

example, race in the U.S. context), or even by the personal characteristics of individuals such as whether co-discussants are pleasant or charismatic. If the dependence we observe is driven by these interpersonal, non-rational dynamics we would not want to label the exchange "deliberative."

We can gain a sense of the nature of the persuasion by examining the correlates of the residual preference shifts, both in their direction and in their magnitude. To do this we computed the expected value for the marginal posterior distribution of the residual for each participant for each item (i.e., the point estimate for each individual's residual on each item), and used these expected values as dependent variables in supplemental regressions as a means to assess the descriptive correlation between these residuals and some scales that measure participants' own perception of the nature of the discussion.

We construct three scales that measure each participant's own perception of the nature of the quality of the discussion at the event.[17] First, we have a set of indicators on the post-test survey that measure how *Informative* each perceived the discussion to be. These items ask if the participants "Strongly agree," "Somewhat agree," "Neither," "Somewhat disagree," or "Strongly disagree" to the following questions: "I am more informed about the challenges and options for cutting the federal budget deficit;" "The meeting today was fair and unbiased. No particular view was favored;" "I personally changed my views on the budget deficit as a result of what I learned today;" "I personally agree with the voting results at the conclusion of today's meeting;" and "Decision makers should incorporate the conclusions of this town meeting into federal budget policy."

Second, we have a set of post-test indicators that measure how *Civil* each perceived the discussion to be. These questions were, "People at this meeting listed to one another respectfully and courteously;" "Other participants seemed to hear and understand my views;" "Even when I disagreed, most people made reasonable points and tried to make serious arguments;" and "Everyone had a real opportunity to speak today. No one was

[17] We use principal components factor analysis and the full set of discussion-quality items to construct these three scales. The factor model produces this three factor solution (results not reported).

shut out and no one dominated the discussions."

Third, we have post-test indicators of how *Enjoyable* each found the discussion. These questions were, "I had fun today. Politics should be like this more often;" "I would participate in an event like this one again;" and "Participating today was part of my civic duty as an American to speak out and be heard on this issue."[18]

These scales measure participants' own perceptions of the nature of the discussion at the event, and so are useful in assessing the kinds of discussion where non-ideological persuasion is most prevalent. For example, if participants changed their minds simply because they were intrigued by the charismatic personalities of their co-discussants, we would likely find that preference changes are most likely to occur when participants simply enjoyed the discussion or found the discussion to be civil. In contrast, if participants are most likely to be persuaded when they perceive the session to be informative, this would suggest that persuasion occurs in a more rational, evidence-based discourse, and hence, in the presence of deliberation. Note that these correlations are in no way causal, in that these measures of the nature of the discussion and the outcomes are all taken from the post-test.

In these regressions we also include a number of control variables to hold constant participants' own attributes. We include scales for both internal[19] and external[20] efficacy, as well as indicators for race and education.

We regress the direction of the residuals on these variables and report these results in table 1. Table 2 shows the results for the magnitude of the residuals (which is the absolute value of the residual). The cells in each table indicate standardized regression coefficients, which show the association between dependent and independent variables in

[18] While the duty item may not fit an enjoyableness factor on its face, the item loads very highly on this scale empirically.

[19] "I consider myself well-qualified to participate in politics." "I think I am as well-informed about politics and government as most people."

[20] "Elected officials in Washington, DC don't care about what people like me think." "People like me don't have any say about what the government does." "We can trust the government in Washington to do what is right."

standard deviation units.

Note that for both direction and magnitude, the only consistent correlate with the residuals is the informative discussion scale. Some of the items show correlations with the efficacy scales and with race indicators, but these results are not consistently significant (with the exception that African Americans seem to be less persuaded to agree with most of the items, for both liberal and conservative proposals).[21]

Instead, rerceived informativeness of the discussion is the only variable that is consistently associated with non-ideological preference change. The magnitudes of these correlations, pooled across liberals, independents, and conservatives, are quite small however. Pooling across ideological categories assumes that participants' are equally susceptible to opinion change on all of the items, but this might not be sensible in that liberals and conservatives are likely to have different responsiveness to a deliberative exchange depending on the nature of the policy option under consideration.

Table 3 examines the size of the correlation when disaggregating by ideological category, for both direction and magnitude. We note two findings in this table. First, the size of the correlations increase over the pooled model. Second, a very interesting pattern emerges in terms of which ideological category is most susceptible to non-ideological preference change across the full set of policies. In considering correlation between informativeness and the direction of preference change, notice that liberals are most likely to be persuaded to agree with conservative policies (cut programs and cut entitlements), conservatives are most persuaded to agree with a liberal policy (tax rich) and liberals and conservatives are equally persuaded on the two policies that are orthogonal to the ideology scale (tax middle class and rich, and the federal sales tax). This table strongly indicates that the dynamics at these events are consistent with deliberative expectations, in that 1) non-ideological persuasion was most likely to occur when participants perceived

[21]We do not have evidence that this effect from this race indicator might be due to an unobserved race ideological dimension structuring the discussion, since interacting the black indicator with the three discussion quality scales yields results indistinguishable from zero.

the discussion to be informative, and 2) liberals and conservatives were each persuaded to moderate on, and accept the merits in, policies that are favored by the other side.

6 Conclusion

This paper evaluates the extent to which persuasion occurs within small groups at a large scale deliberative townhall. We find that participants are responsive to their co-discussants' ideological appeals, but within the deliberative setting we do not observe a tendency toward ideological polarization (in contrast to Sunstein, 2008). In addition, we find that liberals and conservatives tend to be responsive to non-ideological appeals, which we label "deliberative persuasion," and that the extent of deliberative persuasion covaries with the participant's perception that the discussion was informative. In addition, the correlation between informativeness and persuasion was most evident for liberals on conservative policies and conservatives on liberal policies. In general, the dynamics of small group persuasion are likely to be responsive to the institutional context within which discussion occurs, and it is likely that deliberation is more constructive when the the institutional setting is well designed in a way that induces deliberative exchanges.

A Appendix

Formally, the statistical model is:

Likelihood:

$$
\left.
\begin{aligned}
O_i &\sim \text{Categorical}(p_{i,1\ldots5}) \\
p_{i,1} &= 1 - q_{i,1} \\
p_{i,2} &= q_{i,1} - q_{i,2} \\
p_{i,3} &= q_{i,2} - q_{i,3} \\
p_{i,4} &= q_{i,3} - q_{i,4} \\
p_{i,5} &= q_{i,4} \\
\text{logit}(q_{i,j}) &= \text{Direction}(O) \cdot b_1 \cdot Ideal_i + \text{Direction}(O) \cdot u_i + e_i + \\
&\quad \vec{b_2} \cdot \mathbf{Site_i} + \vec{b_3} \cdot \mathbf{O_{t-1,i}} - \kappa_j, 1 \leq j \leq 4 \\
RaiseTaxes &= \text{Ordered Logit}(1 \cdot Ideal_i, \text{thresholds}) \\
CutPrograms &= \text{Ordered Logit}(\lambda_2 \cdot Ideal_i, \text{thresholds}) \\
CutEntitlements &= \text{Ordered Logit}(\lambda_3 \cdot Ideal_i, \text{thresholds}) \\
CutDefense &= \text{Ordered Logit}(\lambda_4 \cdot Ideal_i, \text{thresholds}) \\
\overline{I}_i^{(*)} &= \textstyle\sum_{k=1}^{N_{it}} (\mathrm{I}_{ik}^{(*)}) / (N_{it}) \\
\sigma^2_{I^{(*)}} &= \text{mean}(\mathrm{I}_{ik}^{(*)2}) - \text{mean}(\mathrm{I}_{ik}^{(*)})^2 \\
\mathrm{I}_{ik}^{(*)} &\in \{Ideal_j : j \text{ is seated at } i\text{'s table, not including } i\} \\
N_{it} &= \#\{\text{participants sitting at } i\text{'s table, not including } i\} \\
u_i &\sim \phi(\overline{u}_i, 1) \\
\overline{u}_i &= \alpha_1 \cdot \overline{I}_i^{(*)} + (\beta_1 \cdot Liberal_i + \beta_2 \cdot Conservative_i) \cdot \overline{I}_i^{(*)2} \\
&\quad + (\gamma_1 + \gamma_2 \cdot Liberal_i + \gamma_3 \cdot Conservative_i) \cdot \sigma^2_{I^*} \\
e_i &\sim \phi(\overline{e}_i, 1) \\
\overline{e}_i &= (\rho_1 \cdot Liberal_i + \rho_2 + \rho_3 \cdot Conservative_i) \cdot \textstyle\sum_{k=1}^{N_{it}} (\mathrm{E}_{ik}) / (N_{it}) \\
\mathrm{E}_{ik} &\in \{e_j : j \text{ is seated at } i\text{'s table, not including } i\} \\
N_{it} &= \#\{\text{participants sitting at } i\text{'s table, not including } i\}
\end{aligned}
\right\} 1 \leq i \leq N
$$

Priors:
The prior distributions for $\alpha_\cdot$, $\beta_\cdot$, and $\gamma_\cdot$ are each Uniform(-0.25, 1) due to a constraint in the model, where the sum of each parameter type is bounded by the min/max eigenvalue of the normalized adjacency matrix formed by the table assignments for each observation. The priors for $\rho_\cdot$ are distributed Uniform(-1, 1) to ensure bounds for the correlations. The factor coefficients in the *Ideal* scale are distributed Uniform(0, 100) in order to ensure the correct direction labeling in the factor model. All other priors are unrestricted and flat.

Notes:
The *Direction* function is 1 if agreeing with the item is conservative, and -1 if agreeing with the item is liberal, as found in a preliminary factor analysis. The *Ideal* factor is estimated from the pretest responses to the *Tax rich*, *Cut programs*, *Cut entitlements*, and *Cut defense* items, where the factor is estimated dynamically within the model (summarized in the likelihood above for simplicity of presentation). We estimate $\rho_\cdot$ separately for each of the six policy preference items. For identification we constrain $\{\alpha_\cdot, \beta_\cdot, \gamma_\cdot\}$ to be equal across all six items.

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