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Examining Mechanisms of Political Disagreement

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Abstract

This research seeks to develop and test hypotheses about how political disagreement in social networks affects political behavior. We conduct experimental research to test whether subjects' acquaintances act as independent sources of information, and examine two different models of how such social stimuli may produce effects—either via information seeking, or information shortcuts. These tests are important because prior research is ambiguous on whether causal effects come from networks, and on potential mechanisms of influence. Our results back aspects of both models, but more strongly support the notion of disagreement as a heuristic—subjects primed to consider disagreement before a mock election exhibited a less-orderly information search process; those primed to consider disagreement after the election (but before voting) displayed lower rates of ambivalence, and evidence that such information helped clarify their decisions.

1 Introduction

Disagreement and conflict lie at the center of politics. Without differing viewpoints, there would be no need for political processes to make decisions, and even less appeal for democratic forms of governance that balance different interests. But even while disagreement between people is central

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to democratic processes, it is this aspect of politics that many people do not like. For this reason, it is essential to understand the manner in which people of all political stripes interact with each other, and to consider what consequences this holds for the engagement in the political process.

When we consider political disagreement among average voters, prior research consistently shows it to be correlated with a variety of behavioral outcomes. Huckfeldt and Sprague (1995) provide evidence that disagreement in interpersonal networks can increase the probability of voting against your partisan predilections. They follow this with evidence from another study showing similar effects on evaluations of presidential candidates, though the strength of that effect is contingent on the remainder of the network.(Huckfeldt, Johnson & Sprague 2004) Taking a different approach to measurement and outcomes, Mutz (2006) shows that people engaged in what she labels "cross-cutting political talk"—another version of disagreement—are more likely to tolerate different points of view, but are considerably less likely to participate in politics. McClurg (2006) demonstrates that disagreement about politics can influence political participation at multiple levels of analysis, including both within the network and in social groups such as the neighborhood. This latter finding is consistent with a body of research on a dangerous spiral of silence that may emerge when people feel that their views place them in the minority.(Noell-Neuman 1993) Other research has addressed related questions concerning the potential of different measures of disagreement to attitudinal and behavioral outcomes (Klofstad, Sokhey & McClurg 2010, Nir 2005, Nir Forthcoming, Wojcieszak & Mutz 2009, Jang 2009), in different political contexts (McClurg 2006*b*, Wojcieszak 2011, Ben-Nun-Bloom & Levitan Forthcoming).

Underlying research on the *social supply of disagreeable opinions* are two questions about the nature of networks and behavior. First, to what degree does prior research establish causality? Some scholars argue that the relationship between networks and politics is likely causal, providing evidence that political networks help people learn about politics through opinion-leadership and information-provision (Roch 2005, Huckfeldt 2001, Mutz 2002*a*, Sokhey & McClurg Forthcoming, McClurg 2003). Likewise, there is evidence of a link between social networks and political participation that revolves around both levels of network political disagreement and expertise (Mutz 2002*a*, Mutz 2002*b*, Mutz 2006, McClurg 2003, McClurg 2004, McClurg 2006*a*, McClurg 2006*b*).

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Yet the reliance on observational data has made it difficult to rule out other possible explanations, such as reciprocal causality or selection bias (Klofstad 2007). And, even with a series of careful statistical studies (Kenny 1992, Huckfeldt & Mendez 2008) and field experiments (Gerber, Green & Larimer 2008, Klofstad 2001, Klofstad 2007, Nickerson 2008) pointing towards causality, more evidence in different empirical venues is both needed and welcome.

Second, what is the mechanism by which information received from social contacts is processed and used by citizens to update their political views? Most research in this vein is (loosely) based on the model offered by McPhee (1963), where political disagreement spurs a more extensive search for political information. The intuition of "information search" as a mechanism of influence is that the experience of disagreement should make voters feel less certain and more likely to change how they approach a decision. But this is only one possible model, and different approaches would have different empirical and theoretical implications.

We begin to address these question with experiments designed to prime disagreement from subjects' self-identified social networks, measuring participant reactions in a mock election environment. Although there are some nuances to our findings, they support the contention that disagreement in social networks affects elements of political behavior. At the same time, the evidence points away from the information-search hypothesis and towards an information-shortcut hypothesis. We are hesitant to conclude that the evidence unambiguously establishes that social networks *cause* changes in behavior, noting some of the limits of our experimental design. However, the results do support previous and growing research pointing toward networks as causal agents, while pointing toward new directions for understanding how such effects may occur.

The debates we have highlighted are important. American conceptions of liberal democracy rest on the assumption that the choices voters make in elections—particularly with respect to which candidate to support—reflect their interests, thereby keeping officials accountable to voters. Although decades of research show that voters' cognitive limits leave them falling short of the standards envisioned by democratic theorists, it also implies that they are able to "make do" by relying on information shortcuts (e.g., social networks); these allow them to make "good" decisions in the absence of complete information (Lau, Andersen & Redlawsk 2008). Nevertheless, this poses

the question of how open to manipulation and coercion these voters are when it comes to external information flows. Indeed, it is often assumed that social influence is a coercive force. Yet at least some indications exist to suggest that social networks facilitate good decisions (Sokhey & McClurg Forthcoming), and even potentially enable a more sophisticated electorate than we would see in the absence of interpersonal influence (Ahn, Huckfeldt & Ryan 2007).

2   Models of Disagreement

Our series of experiments is designed to explore hypotheses about how political disagreement influences voting behavior. The goal here is not to provide a full list of theoretical models and hypotheses, but to consider the distinct implications from models that that have been alluded to in previous studies. To the extent possible, we want to outline implications that allow us sort evidence towards different models, but recognize that these models are not necessarily mutually exclusive.

2.1   The No Effect Model

The null hypotheses for this research is that social networks generally—and political disagreement specifically—have *no causal consequences* for voting behavior. Underlying this approach is the assumption that network disagreement and voting behavior are not *casually* linked, largely because networks reflect the characteristics of the people in them (selection bias), because interdependence among people makes it difficult to establish the direction of influence (reciprocal causation), or because what appears to be disagreement effects are driven by other variables (omitted variable bias) (Klofstad 2001). From this perspective, citizens who are exposed to interpersonal disagreement will not make different choices in elections, and whatever differences they exhibit in terms of information search will be a function of other characteristics.

Although observational evidence indicates that the political composition of social networks is related to variation in political behavior, this question remains open. Importantly, such correlations may either be a function of how people select networks, or evidence of endogeneity (i.e., the respondent affects the network, rather than vice versa). If this is the case, then correlations seen in observational and quasi-experimental research would disappear in an experiment (Hypoth-

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esis 1). A related—but less stringent—version of this null model is that social networks influence decision-making, but *not* by exposing voters to either agreement or disagreement. This would imply that there is a "network effect," but that it is not contingent on the political content of social interactions.

2.2 The Information Search Model

Our second model assumes that social networks have effects that stem from how political disagreement influences the search for information during campaigns or in political environments (Huckfeldt & Sprague 1995, Huckfeldt 2001, McClurg 2003). Underlying this model is McPhee's (1963) model of social influence, where citizens form initial opinions about issues and candidates, and then check them against their network. If they experience agreement they stop searching for information; if they experience disagreement the information search continues, and they again consult their network once they have updated their beliefs. This suggests that social networks are an informational guide that is used to update beliefs rather than develop them.

Based on this model, political disagreement should be causal (Hypothesis 2) in the sense that voters with different networks will exhibit distinct behaviors. Since our focus here is on the presence or absence of interpersonal disagreement, we would expect that voters exposed to disagreement will exhibit different voting behavior than those subjects in the non-network condition. Specifically, we expect 1) the level of certainty about the vote choice, and 2) the consistency between preferences and vote choice to be *lower* when respondents are are exposed to political disagreement.

In addition to predicting these changes in voting behavior, this model has implications for how individuals search for information. Most clearly, voters confronted by disagreement should gather different types of information than voters who are situated in agreeable interactions (Hypothesis 3). As suggested by McPhee (and consistent with the logic of motivated reasoning (Lodge & Taber 2000)), disagreement should lead to an information search that is more extensive and self-confirmatory. In other words, information should *not* be balanced across alternatives. Second, to the degree that disagreement stimulates such an information search, the consequence should be make it harder for voters to make decisions, even as they search for biased information (Hypothesis

4). Although this process should lead citizens to both clarify their political interests and gather more information, it should lead to confusion when citizens do encounter different points of view in their network. For example, Diana Mutz demonstrates that voters who are exposed to "cross-cutting" political talk are more likely to see the pros and cons of positions they do not hold, and are subsequently more likely to become ambivalent about candidates (Mutz 2002*a*, Mutz 2002*b*).

2.3 The Information Shortcut Model

Like the information search model, our final model also sees social networks as a causal force. The principal difference is that networks are treated as an information shortcut rather than a factor driving the search for information. Traditionally, the literature on information shortcuts—or, heuristics—focuses on social psychological variables such as group identity and partisanship (Lau & Redlawsk 2001, Brady & Sniderman 1985, Rahn 1993). The basic behind such shortcuts is that citizens do not have the time (nor the desire) to be fully informed about their electoral choices. As a consequence, voters look for ways to make *effective* decisions under circumstances of incomplete information (Lupia 1994, Popkin 1994).

Can social networks be heuristics? Martin (2009) has suggested that while people cannot possibly understand complex networks, that the repetition of relational structures around people can affect how people think about forming their own reputation. Other research implies that people will look to others' opinions in forming their own, often in the form of polls (Boudreau & McCubbins 2010, Boudreau 2010) and other media representations of public opinion (Mutz 1998). But most directly, Popkin (1994) suggests that voting behavior is strongly shaped by networks because they are a relevant and trusted source. The idea is that significant similarity of your network friends to yourself is a good representation of your own interests, and that they have no reason to not be honest with you.[1]

As with the information search model, this model also predicts causal effects from networks (Hypothesis 2). However, it suggests that there is value in political disagreement above and beyond

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[1]Although they do not have direct evidence that voters use heuristics, Sokhey and McClurg (*Forthcoming*) show that interest-based voting cannot be clearly explained by variables from the information search model. They suggest that this possibly points to the use of networks as heuristics.(Sokhey & McClurg Forthcoming)

any effects it may have on the information search. Because there is no *a priori* reason to believe that the information search and information shortcut models are mutually exclusive, we have to anticipate what outcomes would be consistent with this model *whether or not the information search model* is supported. Here we leverage the fact that the search model has dynamic implications, whereas the shortcut model does not. In other words, the shortcut model does not predict any differences in information seeking, just a change in voting behavior (Hypothesis 5). However, if networks *also* influence information seeking, then then there should be an impact on voting behavior even after controlling for aspects of the information search. Because in this case the subjects are only being asked about disagreement with a single person in their network, we expect that this will *clarify* their position (Hypothesis 6); thinking about disagreement with a particular discussant should help bring a subject's interests into sharper focus.[2]

3   Design and Methods

To test these hypotheses, we designed an experiment with the following structure: 1) a pre-stimulus questionnaire measuring demographics (5 minutes), 2) a simulated campaign with incomplete access to campaign information (15 minutes), and 3) a voting period where subjects report perceptions of candidates and cast a ballot (5 minutes). This basic structure mimics state-of-the-art designs for studying information search and quality decision-making (Lau & Redlawsk 1997, Lau & Redlawsk 2006).

The campaign environments are simulated with a dynamic information board that exposes subjects to a campaign information via a series of continuously scrolling tabs (see Figure 1). Each tab is labeled according to the the type of information it contains (e.g., issue position or background), and color-coded by candidate (e.g., red for the Republican candidate). Subjects search for information by clicking on one of the tabs, and visiting a separate screen with information about a candidate (adopted from actual campaigns). Because the tabs continue to scroll in the background, when a voter returns to the main screen they are (randomly) exposed to a different set of information tabs.

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[2]However, we might expect that if disagreement were repeated/widespread across the broader network, that the effect would be to make voting decisions less rather than more clear (Sokhey & McClurg Forthcoming). We discuss this possibility in greater detail in the discussion/conclusion section.

This set-up mimics real campaign conditions—voters must make choices, and paying attention to some things necessitates "skipping out" on others.

3.1 Experimental Stimulus

The experimental stimuli are designed to prime the respondent to consider disagreement in the context of her own social network. The basic prime is to give respondents a "name generator," asking them who they talk to about important matters, and then asking them to identify which of the named people they disagree with the most. The salience of disagreement is assured by asking subjects to report how much they disagree with that person on five different political issues.[3] There are two basic variations in the manipulations across experiments: 1) the absence or delivery of the interpersonal disagreement prime to the subject, and 2) the delivery of it either before or after the dynamic information board.

The first condition is a control group consisting of subjects that participate in the process outlined above, but without any stimulus that priming their social network. It is most valuable for testing the possibility that political disagreement has causal effects, primarily by comparing the voting behavior of the subjects. To the degree that voters exhibit different behaviors, we can be confident the difference is caused by the stimulus.

The second and third conditions prime subjects to think about their disagreeable political interactions, but as noted, at different points in the process. Subjects in the second condition are primed before searching for information, and those in the third condition receive the prime afterwards; this gives us leverage over the the impact of disagreement on the information search. While these comparisons do not resolve all of our questions about the different models of political disagreement (we discuss this further in the sections that follow), they do give us at least some additional leverage over the questions motivating this research.

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[3]A pilot test of this procedure with SIU students showed that subjects in different conditions reported significantly different levels of disagreement or agreement on these issues, based upon the manipulation. This provided us confidence in the validity of this method.

3.2 Dependent Variables

Our dependent variables measure how subjects search for information and make decisions. Following other scholars in this vein (Lau & Redlawsk 2006, Redlawsk 2004, Jacoby, Chestnut, Weigl & Fisher 1976, Huang & Price 2001), we use four indicators of how voters search for information. The first measure is the *depth of the search*, which is measured as the total number of items that a subject accessed on the information board. The second measure is the *comparability of the search*; this is measured a the number of unique attributes (issue positions, candidate characteristics, and endorsements) that were accessed for both the Democratic and Republican candidates. The third measure is the *content of search*. Here, we are interested in how much information subjects relied on concerning economic or social issues; we concern ourselves with this given that one treatment group was primed prior to the campaign to think about interpersonal disagreement on economic and social issues. To create these two variables, each issue in the mock campaign was coded as economic or social. Then, just as with depth of search, we summed up the number of items that were accessed for social and economic issues—this gives us the total number of times that economic issues were accessed, and the total number of times that social issues were accessed.

The final measure of information seeking is the *sequence of search*, which refers to how subjects transition from one piece of information to another. There are four possible transitions: 1) A subject can transition from one candidate to another but stay on the same attribute (inter candidate, intra attribute transitions); 2) A subject could transition from one attribute to another on the same candidate (intra candidate, inter attribute). These first two transitions are characteristic of ordered searches, much like one would expect via rational choice models. The remaining two transitions are considered random transitions: 3) A subject can either transition from one attribute to another, and one candidate to another (inter candidate, inter attribute search), 4) or the subject can re-examine a piece of information (intra candidate, intra attribute).

With the sequence of search, we are most interested in the ratio or random to ordered transitions, or in other words, the proportion of the search that was ordered vs. random. To create this variable we divided the number of ordered transitions by the number of random transitions. Numbers greater than one indicate that a majority of a subject's search was ordered, while numbers less than one

indicate that most of a subject's search was random.

There are several dependent variables we consider with regards to decision-making. First, we consider how the subjects cast their *vote*. Votes for the Democratic candidate are coded as 0, and votes for the Republican candidate are coded as 1. We also consider how *ambivalent* subjects were about the candidates. We asked subjects to name up to five things that they liked and disliked about each of the candidates. We compute three measures of ambivalence using the Thompson et al. (1995) formula:

$$\frac{positive\ mentions + negative\ mentions}{2} - |positive\ mentions - negative\ mentions|$$

Ambivalence ranges from -2.5 (most unambivalent) to 5 (most ambivalent). The three measures of ambivalence are (1) ambivalence toward the Democratic candidate, (2) ambivalence toward the Republican candidate, and (3) combined ambivalence towards the two candidates.

3.3   Subject Recruitment

Consistent with other research in the field (e.g., Lau and Redlawsk 1997), we recruited experimental subjects from the adult population of a small Midwestern town. To do this effectively, we offered respondents a $10 incentive to participate in return for roughly 30-40 minutes of their time. Pretests of this experimental design suggest that students are a convenient, but still distinctive population. Given that the experiment is fairly involved, we find that adult volunteers take the task more seriously and yield more reliable results.

4   Data Analysis

4.1   Subjects

4.1.1   Randomization Check

In all, one hundred subjects participated in the experiment. Table 1 presents the average character-
istics of our subject pool, separated by experimental condition. While we can make no statements
about how the subject pool matches the broader community, these data show that we succeeded in
recruiting a relatively diverse group. The average subject was 35 years old (the standard deviation
was 16 years, and the oldest subject was 87), and women made up over 60% of the sample. The
respondents reported household incomes that on average ranged between $40,000-$50,000 (with
a standard deviation that covers a significant range of incomes).[4] Education was someone more
constrained, with 64% of the respondents reporting having at least some college. Race was fairly
homogeneous, with 79% self-identifying as Caucasian.

We also asked subjects to provide self-reports on a variety of standard political items. On
average—and perhaps not unexpectedly— our subjects report a high level of political interest,
with 64% of them saying that they were either "moderately" or "very interested' in politics. In
terms of political knowledge, subjects also averaged nearly four correct questions out of a possible
five, signaling a high degree of sophistication about politics. The pool had a Democratic lean to
it, with 52% saying they were Democrats, 17% identifying themselves as Republicans, and 29%
claiming to be Independents (this included leaners); ideology had a similar distribution. Finally,
subjects were not optimistic about current affairs: on a scale from 1 (excellent) to 4 (poor), all but
8% said that the economy was poor or "not so good." However, 70% approved of the president's
current performance, reflecting their Democratic leanings.

Table 1 also provides evidence of the effectiveness of our attempts to randomize subjects. We
checked balance across our experimental conditions for a full range of demographic and political
characteristics (using a series of analysis of variance models). The only factor that emerges as
significant–age–does not have any discernible impact on the dependent variables that we examine

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[4]Coding for these variables is available from the authors.

Table 1: Select Respondent Characteristics by Experimental Condition

Subject Characteristics	Experimental Condition			Significance
	Control	Disagreement Before	Disagreement After	
Age	40	36	30	*
Gender	60%	63%	63%	
Income	10.6	8.2	8.9	
Interest	3.8	3.7	3.6	
Political Knowledge	3.5	3.6	3.9	
Partisan Identification	2.6	3.1	3.1	
Ideology	3.0	3.1	3.3	
Economic Approval	1.7	1.8	1.9	
Presidential Approval	1.3	1.3	1.3	

$*p < .05$, F-test.

below.

4.1.2 Manipulation Check and Measurement

Table 2 provides a check on our experimental stimulus—i.e., priming people to think about disagreement. When subjects were asked to think about the person they most disagree with before the mock election, they experienced significantly higher amounts of disagreement, both in terms of economic issues, social issues, and a combined index of disagreement and frequency (we discuss this measure in greater detail in the section below). That being said, subjects in both treatment conditions experienced substantial disagreement (average scores of over 7), so we are satisfied that our manipulation was effective.

Given that our stimulus relies on subjects' self-reported network, there is a great deal of natural heterogeneity in the extent to which subjects thought about interpersonal disagreement. A subject who reports not disagreeing with the most disagreeable person in their network (and reports having similar views to this person) has *not* been primed to think about disagreement, much like a person in the control condition who is never asked to consider this. To account for this, we create an indexed measure of the two treatment conditions.

To create these indexes, we use three measures from the network battery. First, we consider the frequency with which the subject and the person they report to disagree with most disagree. Responses ranged from never to often on a four point scale. Second, we ask subjects to read a

Table 2: Respondent Exposure to Disagreement by Experimental Condition

Subject Characteristics	Experimental Condition		
	Disagreement Before	Disagreement After	Significance
Discussion Frequency	2.9	3.0	
Disagree on Economy Issues	2.4	2.0	*
Disagree on Social Issues	2.6	2.0	*
Disagreement Index	7.9	7.1	*

$*p < .10$, F-test.

passage about an economic policy and a social policy, and for each rate how much the subject and this named person would disagree. Responses ranged from "not at all" to "a lot" on a four point scale. We then summed each of these variables. Since the index is meant to capture the extent to which subjects were primed to think about disagreement in their network, subjects in the control group were coded as 0, signifying that they were not primed. Finally we multiply this index by dummy variables that indicate whether the subject was assigned to receive the network battery prior to the campaign, or after the campaign (with the control group serving as the comparison).

4.2 Disagreement and Information Search

Results for the effect of network disagreement on the information search variables are presented in Tables 3 and 4. The models presented are OLS regressions, clustering the standard errors around the experimental condition. In Table 3 we regress the indices of network disagreement for both treatment conditions on each of the information search variables . Starting with the depth of search, we we have two variables that we consider: the total number of items accessed on the information board, and the average amount of time subjects spent reading about each accessed item. Time turns out to be inconsequential in this model. However, the total number of items accessed is affected by the network stimulus. Looting at the first row of Table 3, subjects who received the network battery prior to the campaign (and were primed about disagreement) searched for more information than those in the control condition. This finding is supports Hypothesis 3 (under the information search model), and is consistent with how McPhee (1963) suggests social networks should influence decision-making.

Interestingly, the results also indicate that subjects who received the network battery after the

campaign searched for more information that subjects in the control condition. Since subjects in this treatment condition received the network battery after the campaign, it is not logical to conclude that the disagreement prime affected the information search. Rather, the effect likely demonstrates that there was something distinct about the subjects who received the network battery after the campaign (when compared to the control group). By the information search model, we also would expect disagreement in a person's network to lead to voters comparing less information (Hypothesis 3). However, in our study we find that subjects in the relevant treatment condition were no more likely to compare information than subjects in the control condition.

Turning to the sequence of search, subjects who were primed to think about disagreement within their network prior to the campaign searched for information in a more random manner than those in the control condition. Though the coefficient is quite small, the negative sign indicates that there there were more random transitions than ordered transitions; this is also consistent with Hypothesis 3. In part, this finding supports the notion that exposure to disagreement in one's network leads to confusion. The fact that subjects who were exposed to the network battery prior to the campaign had a more random search indicates that they might be unsure of how to conduct themselves.

Finally, in the last rows of the table we consider the content of the subject's search. Here the findings are mixed. Subjects who received the network battery prior to the campaign were less likely (than subjects in the control group) to search for information on social issues; this is indicated by the negative coefficient. This finding supports the expectations provided under Hypothesis 3. However, the same is not true for economic issues. There were no statistical differences in the search patters for subjects who received the network battery prior to the campaign. However, we do find significant differences between subjects who were primed to think about disagreement within their network after the campaign. Like depth of search, this cannot logically be indicative of a network effect, but rather, perhaps that there is something different about the subjects in these two groups.

As a check on our findings, we present a second model that contains additional possible explanations for differences in how subjects search for information. Here we focus on the three information search variables that were significant in 3. In Table 4 we regress depth, sequence, and content of search on the treatment group, the strength of a subject's party affiliation, her level of education,

Table 3: Regression of Information Search Variables (Basic Model)

Dependent Variable	Constant	Before	After
Depth	40.81**	0.22*	0.47**
	(0.61)	(0.07)	(0.08)
Time	9.88**	-0.15	0.11
	(0.61)	(0.07)	(0.07)
Comparability	13.88**	-0.04	0.08
	(0.61)	(0.07)	(0.08)
Sequence	1.01**	-0.01*	-0.01
	(0.3)	(0.00)	(0.00)
Social Content	9.29**	-0.16*	0.03
	(0.38)	(0.04)	(0.05)
Economic Content	4.65**	0.01	0.12**
	0.21	(0.03)	(0.03)

Note: Coefficients are OLS estimates with clustered standard errors in parentheses.
** $p < 0.05$
* $p < 0.1$

age, and stock of political knowledge. Only one finding holds up to this scrutiny—receiving the network treatment before the campaign affects how subjects transition from one piece of information to another. Just like in Table 3, subjects who received the network battery prior to the campaign engaged in more of a random search for information than subjects in the control group. This consistency across models demonstrates the robustness of this result. This finding supports Hypothesis 3—i.e., the idea that exposure to network disagreement affects how people search for information.

4.3 Disagreement and Voting Behavior

The second part of our analysis focuses on the relationship between disagreement and voter decision-making. Here we examine two post-election indicators of decision-making. The first of these is the clarity of the voter's choices, judged by their level of ambivalence. The second is vote choice, where we focus on whether or not disagreement affects the relationship between the voter's partisan predilections (measured by party identification) and their vote. The information search model predicts that disagreement should significantly influence these variables (Hypothesis 2) by making

Table 4: Regression of Information Search Variables

	Depth	Sequence	Social Content
Constant	24.38**	1.38	3.64*
	(2.04)	(0.51)	(1.38)
Treat Before Index	0.14	-0.01**	-0.16
	(0.20)	(0.00)	(0.04)
Party Strength	2.11**	-0.01	0.33
	(0.16)	(0.05)	(0.17)
Education	4.22**	-0.06	0.61**
	(0.30)	(0.09)	(0.03)
Age	-0.05	0.001	0.02
	(0.07)	(0.001)	(0.03)
Knowledge	0.10	-0.04	0.58
	(1.52)	(0.06)	(0.19)

Note: Coefficients are OLS estimates with clustered standard errors in parentheses.
** $p < 0.05$
* $p < 0.1$

Table 5: Disagreement, Political Knowledge, and Ambivalence

	Candidate Ambivalence			
	β	s.e.	β	s.e.
Disagreement Before Campaign	0.08	0.02**	0.07	0.01**
Disagreement After Campaign	-0.06	0.02*	-0.10	0.01**
Political Knowledge			0.61	0.14**
Constant	2.07	0.13	-0.04	0.57
Observations	100		100	
R^2	0.03		0.12	

$*p < .05$, $**p < .10$, two-tailed t-test.

voters more ambivalent and less clear about their decisions (Hypothesis 4). And, while the heuristic model also implies that disagreement will influence voting behavior, it implies that it should actually clarify the choice (Hypothesis 6).

The analysis begins in table 5, where we present two OLS models, again using clustered standard errors. The first model is a straightforward test of our hypotheses; the second includes our political knowledge index to test the robustness of our results.[5] The results provide strong evidence for all three hypotheses. In the first results (left column), we see that priming subjects to thinking about

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[5]In results not shown here, we also control for ideology and partisanship—they do not significantly affect the results.

Table 6: Disagreement, Partisanship, and Vote Choice

Probability of Voting Republican		
	β	s.e.
Partisan Identification	1.37	0.32**
Disagreement Before Campaign	0.17	0.22
Disagreement After Campaign	-9.43	0.93**
PID x Before	-0.02	0.03
PID x After	2.39	0.22**
Constant	-7.07	1.97
Observations	98	
Log Likelihood	-20.63	

$*p < .05$, $**p < .10$, two-tailed t-test.

their most disagreeable interaction affects ambivalence. Prior to the campaign, the coefficient is positive and significant, meaning that subjects exposed to disagreement before starting the campaign are *more* ambivalent about the candidates. The opposite effect obtains when the prime comes after the election, making subjects *less* ambivalent. Even controlling for political knowledge (which makes our subjects more ambivalent here, likely because the experiment is designed to have similar candidates), these effects hold.

The logit coefficients in table 6 represent a different test of our hypotheses, and somewhat different results. First, note that we measure certainty here indirectly, using the standard seven-point partisanship scale and interaction terms to examine how disagreement influences eventual voting behavior. Regarding the information search model, we find no support for either Hypothesis 2 or Hypothesis 4. Although the interaction coefficient between experiencing disagreement before and "PID" points in the correct direction—reducing the size of the party identification coeffient—it is statistically insignificant. In results not shown here, this conclusion does not change when we control for ambivalence and its interaction with partisanship. *This suggests that while there is evidence that disagreement may affect impressions of candidates through the information search process, it does not seem to be driving the choice itself.* Of course, this does not mean that those effects do not matter for behaviors such as political involvement (Mutz 2006). Indeed, the results suggest that disagreement can potentially have different consequences based on the specific behavioral process under consideration (Klofstad, Sokhey & McClurg 2010).

The evidence for the heuristic model is much stronger in this test of our hypotheses. To get a substantive handle on this, compare the impact of partisanship on the probability the respondent reported voting for the Republican candidate (25% across all conditions) in our simulated campaign. For subjects not exposed to disagreement before or after the campaign, the coefficient for party identification is 1.37. For the respondent exposed to disagreement after the campaign, the coefficient is 3.76.[6] This is nearly triple the effect for people not exposed to disagreement. While we would be remiss not to point (again) to the fact that the direction of this effect would be different if the amount of disgreement in the broader network were to increase, this is strong evidence of the potential heuristic value of interpersonal disagreement (Hypothesis 6).

5 Discussion

The experimental results represent progress in understanding the questions that motivate this paper: does social disagreement causally affect voting behavior, and if so, how? To the degree that we introduce political disagreement as a consideration to our experimental subjects, we find that they manifest different ways of searching for information, of forming likes and dislikes about potential candidates, and in linking their partisan views to their eventual votes. Although there are still many questions left to answer, at this point our evidence suggests that political disagreement can have causal effects on citizens. Here our results join a growing number of (field) experimental studies validating generations of empirical studies(Gerber, Green & Larimer 2008, Klofstad 2001, Klofstad 2007, Nickerson 2008).

While such results are significant in themselves, we also break new ground by exploring the potential mechanisms connecting political disagreement to changes in voting behavior. We examine two different—but potentially complimentary—models of how disagreement with our social contacts influence us (the results address the "no results" model). With respect to the information search model, we find evidence that being primed to think about disagreement before a campaign can lead to a less orderly search process. Similar evidence exists suggesting that disagreement affects

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[6]Of course, we are aware that this is the not the total effect since the direct effect of disagreement after the campaign needs to be included.

the sequence of the search, and the desire to seek out information on social issues (though here our finds are less robust). In terms of post-election evaluations, there seems to an effect on candidate ambivalence, but not on the link between vote choice and partisan preferences. All in all, there is thin evidence that this is the principal mechanism connecting disagreement and voting behavior. As we noted previously, this is not to say that the effects we do find (regarding ambivalence) are not more strongly related to the decision participate in politics, a possibility supported by the observational studies cited earlier.

There is stronger evidence in support of the information use, or heuristic, model. In our examination of both post-campaign variables, we find a statistically, sizable relationship with disagreement primed after the campaign; this suggests that it helps *clarify* the subjects' decisions. Being primed to consider disagreement not only makes subjects less ambivalent, but it makes the impact of partisanship on eventual vote choice much more substantively strong. The theoretical process believed to be at play here is simple–by contrasting yourself with a social contact with which you disagree, your own preferences come into clearer focus. We have alluded to the fact that the value of this simple heuristic might change in the context of the larger network, as suggested by Sokhey and McClurg (*Forthcoming*), but have no evidence on this point in these results.

Though these results help address the questions that were the starting point for this experiment, ambiguity remains and there is much left to do. In particular, two limitations of our experiment provide the most promising way to proceed. Both of these limitations stem from potential skepticism over whether/how these results relate to what can reasonably be called a *social network effect*. One such possibility is that what our results have uncovered is evidence of a partial network/dyad effect, rather than a broader network effect. Indeed, such a possibility has been raised in previous research that tries to understand how networks relate to participatory behavior (Mutz 2006, McClurg 2006*a*, McClurg 2006*b*). This raises the question of whether we have primed thinking about the *network*, or primed a different kind of *disagreement* via asking people to think about a particular discussant. While our use of an index within experimental conditions suggests to us that we have at least tapped aspects of the broader network, other network primes–including a comparison between agreement and disagreement–are needed before we can be more certain.

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From a different perspective, our results may seen through the lens of information effects more generally, rather than as social network effects. While have not approached questions concerning the roles of intimacy, credibility, and trust in underlying social network effects, few would argue that disagreements with our friends and family are substantively different from the disagreement experienced elsewhere in the world (e.g., a pundit on television). Before we can truly understand social networks and political behavior, it is important to clarify whether networks merely provide a type of stimulus to harried voters, or if they provide something different. To that end, comparing our socially-oriented stimulus with others–e.g., newspaper reports–in the same experimental context, would help shed light on these issues.

While these limitations (and others not listed here) clearly point to ways that our analysis can be improved, they should not make us overlook or discount the results. Of significant importance is the contrast between the two mechanisms. While we find some evidence on behalf of both, the evidence here points to the heuristics-model as being more consequential for these particular variables. While it may be tempting to discount the information search model (given the weaker evidence), we are not yet convinced of this. First, and most importantly, we are aware that we have only primed one part of a complex set of interdependent social relationships. As by our own admission incorporating more information from the network would change the direction of the heuristic effect, it is possible that its impact on information seeking would look different when examined in this broader context; it is in this regard that we believe observational studies are still advantaged over studies like ours. Finally, we would note that the results also raise the possibility that networks effects cannot be thought of in simple terms such as "disagreement does this," or "expertise affects that." Rather, just as the effects of disagreement and expertise may vary based on the behavior (dependent variable) in question, so the model of social influence at play may vary as well.

6 Appendix: Codebook

1. **respondent_id**: an index, which will also provide the original order of subjects

2. **condition**:

   (a) Control

   (b) Subjects received the network battery before the campaign

   (c) Subjects received the network battery after the campaign, but before the vote

3. **unix**: The unix time when the subject began the study.

4. **ip**: ip address of the computer that the subject used.

5. **party_id**: Generally speaking, do you usually think of yourself as a

   (a) Strong Democrat

   (b) Democrat

   (c) Weak Democrat

   (d) Moderate or Inbetween

   (e) Weak Republican

   (f) Republican

   (g) Strong Republican

6. **ideology**: We hear a lot of talk these days about liberals and conservatives. When it comes to politics, do you usually think of yourself as extremely liberal, liberal, slightly liberal, moderate or middle of the road, slightly conservative, or extremely conservative?

   (a) Extremely Liberal

   (b) Liberal

   (c) Slightly Liberal

   (d) Moderate or Middle of the Road

(e) Slightly Conservative

(f) Conservative

(g) Extremely Conservative

7. **age**: How many years old are you?

8. **gender**: What gender are you?

   (a) Female

   (b) Male

9. **race**: What racial or ethnic group best describes you?

   (a) White

   (b) Black

   (c) Asian

   (d) Native American

   (e) Hispanic

   (f) Other

10. **registered**: Are you registered and eligible to vote so that you could vote in the next election if you wanted to?

    (a) No

    (b) Yes

11. **vote_last**: In talking to people about elections, we often find that a lot of people were not able to vote because they weren't registered, they were sick, or they just didn't have time. Which of the following statements best describes you in the November 2008 election:

    (a) I did not vote

    (b) I thought about voting this time, but didn't

(c) I usually vote, but didn't this time

(d) I am sure I voted

12. **education**: What is the highest degree that you have earned?¡

    (a) Grade school or less (0-8 grades

    (b) High school (12 grades or fewer, incl. non-college training if applicable)

    (c) Some college (13 grades or more but no degree)

    (d) College or advanced degree

13. **employed**: We would like to know a little bit about your employment status. Which of the follow best describes your employment status?

    (a) I have a full-time job

    (b) I have a part-time job

    (c) Unemployed/I do not work

14. **income**: What was your total HOUSEHOLD income in the past 12 months? Please include your income PLUS income of all members living in your household (including cohabiting partners and armed forces members living at home). Please count income BEFORE TAXES, including income from all sources (such as wages, salaries, tips, net income from a business, interest, dividends, child support, alimony, and Social Security, public assistance, pensions, or retirement benefits).

    (a) Less than $5,000

    (b) $5,000 to $7,499

    (c) $7,500 to $9,999

    (d) $10,000 to $12,499

    (e) $12,500 to $14,999

    (f) $15,000 to $19,999

(g) $20,000 to $24,999

(h) $25,000 to $29,999

(i) $30,000 to $34,999

(j) $35,000 to $39,999

(k) $40,000 to $49,999

(l) $50,000 to $59,999

(m) $60,000 to $74,999

(n) $75,000 to $84,999

(o) $85,000 to $99,999

(p) $100,000 to $124,999

(q) $125,000 to $149,999

(r) $150,000 to $174,999

(s) $175,000 or more

15. **interest**: How interested are you in information about what's going on in government and politics?

(a) Not interested at all

(b) Slightly interested

(c) Moderately interested

(d) Very interested

(e) Extremely interested

16. **tv_news**: During a typical week, how many days do you watch news on TV, not including sports?

() 0 days

(a) 1 day

(b) 2 days

(c) 3 days

(d) 4 days

(e) 5 days

(f) 6 days

(g) 7 days

17. **radio_news**: During a typical week, how many days do you listen to news on the radio, not including sports?

    () 0 days

    (a) 1 day

    (b) 2 days

    (c) 3 days

    (d) 4 days

    (e) 5 days

    (f) 6 days

    (g) 7 days

18. **internet_news**: During a typical week, how many days do you watch or read news on the Internet, not including sports?

    () 0 days

    (a) 1 day

    (b) 2 days

    (c) 3 days

    (d) 4 days

    (e) 5 days

   (f) 6 days

   (g) 7 days

19. **print_news**: During a typical week, how many days do you read news in a printed newspaper, not including sports?

   () 0 days

   (a) 1 day

   (b) 2 days

   (c) 3 days

   (d) 4 days

   (e) 5 days

   (f) 6 days

   (g) 7 days

20. **veto**: How much of a majority is required for the U.S. Senate and House to override a presidential veto?

   () Incorrect Response

   (a) Correct Response

21. **majority**: Do you happen to know which party has the most members in the House of Representatives in Washington?

   () Incorrect Response

   (a) Correct Response

22. **constitutional**: Whose responsibility is it to determine if a law is constitutional or not?

   () Incorrect Response

   (a) Correct Response

23. **vp**: Do you happen to know what job or political office is now held by Joe Biden?

    () Incorrect Response

    (a) Correct Response

24. **conservative**: Would you say that one of the parties is more conservative than the other at the national level?

    () Incorrect Response

    (a) Correct Response

25. **knowledge**: An index of the five item political knowledge questions (veto, majority, constitutional, vp, and conservative).

26. **vote**: Designates whether the subject cast their ballot for the Democrat or Republican candidate.

    () Democrat

    (a) Republican

27. **economy**: Would you describe the state of the nation's economy these days as–excellent, good, not so good, or poor?

    (a) Excellent

    (b) Good

    (c) Not So Good

    (d) Poor

28. **pres_approv**: Do you approve or disapprove of the way Barack Obama is handling his job as president?

    (a) Approve

    (b) Disapprove

Personality Questions: Here are a number of personality traits that may or may not apply to you. Please indicate the extent to which you agree or disagree with each of the following traits. You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other.

29. **extroverted**: Extroverted, enthusiastic

    (a) Strongly Disagree

    (b) Disagree

    (c) Somewhat Disagree

    (d) Neither Agree or Disagree

    (e) Somewhat Agree

    (f) Agree

    (g) Strongly Agree

30. **reserved**: Reserved, quiet

    (a) Strongly Disagree

    (b) Disagree

    (c) Somewhat Disagree

    (d) Neither Agree or Disagree

    (e) Somewhat Agree

    (f) Agree

    (g) Strongly Agree

31. **sympathetic**: Sympathetic, warm

    (a) Strongly Disagree

    (b) Disagree

    (c) Somewhat Disagree

(d) Neither Agree or Disagree

(e) Somewhat Agree

(f) Agree

(g) Strongly Agree

32. **critical**: Critical, quarrelsome

(a) Strongly Disagree

(b) Disagree

(c) Somewhat Disagree

(d) Neither Agree or Disagree

(e) Somewhat Agree

(f) Agree

(g) Strongly Agree

33. **dependable**: Dependable, self-disciplined

(a) Strongly Disagree

(b) Disagree

(c) Somewhat Disagree

(d) Neither Agree or Disagree

(e) Somewhat Agree

(f) Agree

(g) Strongly Agree

34. **disorganized**: Disorganized, careless

(a) Strongly Disagree

(b) Disagree

(c) Somewhat Disagree

(d) Neither Agree or Disagree

(e) Somewhat Agree

(f) Agree

(g) Strongly Agree

35. **calm**: Calm, emotionally stable

(a) Strongly Disagree

(b) Disagree

(c) Somewhat Disagree

(d) Neither Agree or Disagree

(e) Somewhat Agree

(f) Agree

(g) Strongly Agree

36. **anxious**: Anxious, easily upset

(a) Strongly Disagree

(b) Disagree

(c) Somewhat Disagree

(d) Neither Agree or Disagree

(e) Somewhat Agree

(f) Agree

(g) Strongly Agree

37. **open**: Open to new experiences, complex

(a) Strongly Disagree

(b) Disagree

(c) Somewhat Disagree

(d) Neither Agree or Disagree

(e) Somewhat Agree

(f) Agree

(g) Strongly Agree

38. **convention**: Conventional, uncreative

(a) Strongly Disagree

(b) Disagree

(c) Somewhat Disagree

(d) Neither Agree or Disagree

(e) Somewhat Agree

(f) Agree

(g) Strongly Agree

39. From time to time, people discuss important matters with other people. we'd like to get the names of three people with whom you talk on a regular basis about these sorts of things. All we need is their first name.

> **discussant1**:(first name)
>
> **discussant2**:(first name)
>
> **discussant3**:(first name)

40. **disagree_most**: Of the three people you just named, which one do you tend to DISAGREE with the most?

> Discussant 1Name
>
> Discussant 2 Name

Discussant 3 Name

41. **disc_freq**: When you talk to (insert answer from disagree_most), do you discuss political matters often, sometimes, rarely or never?

    (a) Never

    (b) Rarely

    (c) Sometimes

    (d) Often

42. **disagree_freq**: How often would you say that you and (insert answer from disagree_most) disagree? Often, sometimes, rarely or never

    (a) Never

    (b) Rarely

    (c) Sometimes

    (d) Often

43. **disagree_econ**: Please read the following passage:

    When I am elected president, I will fight for a trade policy that opens up foreign markets to support good American jobs. I will use trade agreements to spread good labor and environmental standards around the world and stand firm against agreements like the Central American Free Trade Agreement that fail to live up to those important benchmarks. I will also pressure the World Trade Organization to enforce trade agreements and stop countries from continuing unfair government subsidies to foreign exporters and non tariff barriers on U.S. exports.

    If (insert answer from disagree_most) and you were talking about the statement you just read, how much do you think you would disagree? Would you disagree a lot, some, a little, or not at all?

(a) Not at all

(b) A Little

(c) Some

(d) A Lot

44. **disagree_soc**: Please read the following passage:

Roe v. Wade is a flawed decision that must be overturned and as president I will nominate judges who understand that courts should not be in the business of legislating from the bench. Constitutional balance would be restored by the reversal of Roe v. Wade, returning the abortion question to the individual states. The difficult issue of abortion should not be decided by judicial fiat. However, the reversal of Roe v. Wade represents only one step in the long path toward ending abortion. I am pro-life. With the exception of a doctor's determination that the mother's life would end if the pregnancy continued. I believe that no matter what mistakes we make as a society, we cannot condone ending another life.

If (insert answer from disagree_most) and you were talking about the statement you just read, how much do you think you would disagree? Would you disagree a lot, some, a little, or not at all?

(a) Not at all

(b) A Little

(c) Some

(d) A Lot

45. **ambiv_dem**: Level of ambivalence toward the Democratic candidate using the Lavine (2001) formula: $(number positive mentions + number negative mentions)/2 - |number positive mentions - number negative mentions|$. Ambivalence ranges from -2.5 (most unambivalent) to 5 (most ambivalent).

46. **ambiv_rep**: Level of ambivalence toward the Republican candidate using the Lavine (2001) formula: $(numberpositivementions + numbernegativementions)/2 - |numberpositivementions - numbernegativementions|$. Ambivalence ranges from -2.5 (most unambivalent) to 5 (most ambivalent).

47. **ambiv**: Overall level of ambivalence towards both candidates using the Lavine (2001) formula: $(numberpositivementions + numbernevativementions)/2 - |numberpositivementions - numbernegativemen$ Ambivalence ranges from -5 (most unambivalent) to 10 (most ambivalent).

48. **depth**: Total number of campaign items accessed during the mock campaign.

49. **comparability**: Total number of unique items compared between the Democratic and Republican candidate.

50. **transition1**: Count of the number of inter-candidate, inter-attribute (Examine a different candidate and different attribute from the one just examined.).

51. **transition2**: Count of the number of inter-candidate, intra-attribute transitions (Examine the same attribute as the one just examined, but for a different candidate)

52. **transition3**: Count of the number of intra-candidate, inter-attribute transitions (Transitions from one attribute to another for the same candidate that was just examined).

53. **transition4**: Count of the number of intra-candidate, intra-attribute transitions (Reexamine the same piece of information two times in a row).

54. **postran1**: Count of the number of possible inter-candidate, inter-attribute (Examine a different candidate and different attribute from the one just examined.).

55. **posttran2**: Count of the number of possible inter-candidate, intra-attribute transitions (Examine the same attribute as the one just examined, but for a different candidate)

56. **postran3**: Count of the number of possible intra-candidate, inter-attribute transitions (Transitions from one attribute to another for the same candidate that was just examined).

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57. **postran4**: Count of the number of possible intra-candidate, intra-attribute transitions (Re-examine the same piece of information two times in a row).

58. **ordered** The percent of the search that is ordered. It is the number of intra-candidate, inter-attribute transitions (transition3) and inter-candidate, intra-attribute transition (transition2) divided by the total number of transitions available $(depth - 1)$.

59. **time** The average amount of time subject spent reading content.

60. **content_soc**: Amount of information on social issues that was examined.

61. **content_econ**: Amount of information on economic issues that was examined.

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