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AGORA PROJECT: THE EFFECTS  
OF AGENCY, IDENTITY,  
INFORMATION, AND  
DELIBERATION ON POLITICAL  
KNOWLEDGE

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# LESSONS FROM THE VIRTUAL AGORA PROJECT: THE EFFECTS OF AGENCY, IDENTITY, INFORMATION, AND DELIBERATION ON POLITICAL KNOWLEDGE\*

Peter Muhlberger and Lori M. Weber

## Abstract

A key impetus toward increasingly widespread use of deliberation has been the claim that deliberation helps educate citizens about political issues. Past research has confirmed that people learn in deliberative contexts. This research, however, has not been careful to separate the effects of informative readings or other information sources from the effects of discussion. Knowledge of the exact mechanism of learning is key to determining how best to design for learning. In addition, past research has not examined what individual-level factors affect deliberative learning. These factors must be examined to address concerns about possible inequality in deliberation and may suggest ways to increase equality. This paper introduces a theory of political agency that suggests possible factors for explaining learning in deliberative contexts, including political reflectiveness and conceptions of citizen identity. The paper tests a statistical model that explains learning with the agency variables, socioeconomic factors, and experimental conditions—including a no-discussion condition. The model is tested with data from pre- and post- surveys of a representative sample of 568 Pittsburgh residents who came to a one-day deliberation experiment. Analysis proceeds with exploratory and confirmatory factor analyses, HLM, and OLS with group-robust p-values. We find, overall, that discussion has no effect on knowledge above the effect of reading and contemplating—a finding with important deliberative design implications. Deliberation remains crucial as a motivator. Discussions do prompt learning in people with certain citizen identities, though not on average more than those merely contemplating the topic. Finally, results show that socioeconomic characteristics play an important role in learning, but one that is partly counteracted by the agency variables. Interventions to reduce inequality are suggested. Agency theory may be a valuable theoretical framework for deliberation research generally.

**KEYWORDS:** human agency, deliberation, political knowledge, identity, online discussion, deliberative polling

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## INTRODUCTION

Recently, democracies have experienced a flourishing of interest in citizen deliberation, and scholars have begun to investigate the deliberative practices that have thereby emerged. Citizen deliberation endeavors to place citizens in special political discussions involving a collective search for agreement based on good argument. One of the most notable examples is the "Deliberative Poll" (Fishkin 1995, Fishkin and Luskin 1999). Other research on citizen deliberation examines a variety of practices, including Chicago Local School Councils (Fung 2003, Macedo 2005), citizen juries (Crosby 1995, Smith and Wales 2000), "town" meetings and race deliberation (Mendelberg and Oleske 2000, Polletta and Wood 2003, Quell 1998), deliberative forums, conventions, and organizations (Barabas 2004, Button and Mattson 1999, Gastil 2000, Ryfe 2002), and policy analysis (Pelletier et al. 1999). This rise of deliberative practices immediately followed the emergence of deliberative democratic theory on the forefront of democratic theory. In his recent book, a leading political theorist, John S. Dryzek, writes that democratic theory has taken a "strong deliberative turn" (2002, 1). The burgeoning literature on deliberative democratic theory illustrates this deliberative turn (see, for example, Benhabib 1996; Bessette 1994; Chambers 1996; Cohen 1989; Dryzek 1990; Fishkin 1995; Fraser 1992; Gutmann and Thompson 1996; Habermas 1981, 1989; Rawls 1993; Young 1996).

An important impetus behind the growing interest in citizen deliberation has been the claim that immersing citizens in deliberative contexts can help educate them about political issues, countering the low levels of political knowledge and sophistication in the mass public (Fishkin 1995). Much research indicates that the mass public is uniformed, misinformed, and neither very knowledgeable nor sophisticated about politics (Converse 1964, Delli Carpini and Keeter 1996, Kuklinski et al. 2000). Low levels of knowledge need to be addressed because knowledge matters. Delli Carpini and Keeter (1996) find that general political knowledge, measured as a series of factual items, has positive and significant effects on political tolerance, electoral participation, and whether citizens hold opinions in the first place. Similarly, Feldman (1989) and Erikson and Knight (1993) have found that in panel studies, political knowledge significantly influences response variability, suggesting that those with greater knowledge are less likely to hold "nonattitudes" (Converse 1964). Given the value of political knowledge and low levels of knowledge among much of the public, inequality becomes an important concern. Delli Carpini and Keeter (1996) find that political knowledge tends to be quite inequitably distributed across socioeconomic status. They conclude that, "...the maldistribution of political knowledge...threatens the basic democratic principle of political equality among citizens" (265).

Even if deliberation can enhance citizens' political knowledge and sophistication, it also faces important equality concerns. The knowledge benefits of deliberation might accrue inequitably, much as in traditional political participation (Rosenstone and Hansen 1993, Verba et al. 1995). Of course deliberative democratic theorists recognize this problem. Yet, although some advocate for economic and institutional reforms to accompany the expansion of deliberative practices (e.g., Benhabib 1996, Young 1996), deliberative practices have expanded absent such reforms. In addition, inequality presents a challenge because deliberation would ideally proceed with all citizens equally able to represent their viewpoints (Sanders 1997, 349).

The following questions guide this paper: (1) Can citizens' involvement in deliberative contexts improve their knowledge of political decisions? (2) If it does, what aspect of these contexts leads to learning—discussion, informative readings, or both? (3) What implications does the mechanism of learning have for the design of deliberative contexts? (4) What factors enhance or hinder learning in deliberative contexts? (5) What do these factors indicate about the degree of learning inequality in deliberative contexts? (6) Do these factors suggest interventions to reduce learning inequality?

Research on deliberation has found that people who participate in deliberative contexts do learn. However, this research has not adequately determined what aspects of these contexts lead to learning. Knowledge of the exact mechanism of learning in deliberative contexts is crucial to determine how best to design these contexts to foster learning. In addition, prior research has not carefully examined the individual-level factors that can affect deliberative learning. Knowledge of these factors may help address concerns about possible inequitable results of deliberation. This paper introduces a theory of political agency that suggests factors for explaining learning in deliberative contexts, including political reflectiveness and conceptions of citizen identity. The paper tests a statistical model, involving these agency variables, demographic factors, and experimental conditions—including discussion and information-only conditions. The model is tested with data from pre- and post-test surveys of a representative sample of 568 Pittsburgh residents who came to a one-day deliberation experiment. We find no evidence that post-discussion knowledge grew more with discussion than with readings and contemplation. The paper discusses deliberative design implications. We also find that socioeconomic factors do predict inequality in learning, but are partly counteracted by agency. The agency variables suggest points of intervention to mitigate inequality. Agency theory may prove valuable for deliberation research more generally.

### DELIBERATIVE LEARNING

According to theorists, deliberation approximates an ideal speech environment (Habermas 1989) whereby one of the main procedural conditions is the cooperative search for agreement. Deliberation changes opinions because participants give each other persuasive reasons (see Chambers 1996). As participants learn each other's reasons, they should themselves become better at providing reasons and recognizing the reasons of others. Even if participants in a deliberation do not actually change their opinions, most deliberative theorists would agree they should gain knowledge. Young (1996, 128, cited in Barabas 2004, 688) says that deliberation, "...adds to the social knowledge of all the participants." Gutmann and Thompson (1996) write, "The moral promise of deliberative democracy depends on the political learning that reiterated deliberation makes possible."

Recent research has provided consistent evidence for an increase in participants' knowledge and sophistication during deliberative experiences, but this research does not clarify the exact source of these improvements. Most of these studies were not suited to untangling the effects of deliberative discussion from the effects of information acquired through reading materials and other sources. In studies by Barabas (2004), Gastil and Dillard (1999), and Luskin et al. (2002), participants were, respectively, administered pre-tests, provided with reading materials, engaged in deliberation, and administered post-tests. Participants in the renowned Deliberative Poll™ receive policy briefings by experts as well as readings (Luskin et al. 2002). Given research designs with information and discussion sandwiched between pre- and post-tests, it is impossible to determine whether learning occurred because of discussion, because of reading materials or other information exposure, or some combination of these factors.

Price and Cappella's (2002) Electronic Dialogue Project, in which participants spent months discussing election-related issues in the 2000 Presidential run, constitutes an experimental study that could determine whether discussions increased knowledge. Participants in the discussion condition could be rigorously compared with control group members who could not participate in these discussions. We are unaware of any published findings from this study that employed the experimental findings to determine whether discussion led to knowledge gains. One paper from the project (Price, Cappella, and Nir 2002) shows that those who discuss more frequently and with people who disagree with them are also able to generate more extended argument repertoires—that is, they are better able to recall pro and con arguments regarding a policy. This finding was not about discussions in the experiment but from surveys in which people were asked about their everyday discussion habits with acquaintances, family, and friends. While suggestive, these results face certain limitations. They do not establish direction of causality—greater argument repertoire might have led people to more discussions. This is especially plausible in light of another

finding—those with greater political knowledge and interest were more likely to come to the experimental discussions (Price and Cappella 2002). Also, argument repertoire is a recall measure that may be an imperfect indicator of political knowledge. As for factual knowledge gains, an overview of study findings (Price and Cappella 2002) states there were few "large" knowledge gains and reports on significant gains exclusively on one knowledge item. It is unclear whether these reports concerned the knowledge gains due to experimental discussions or correlated with self-reports of everyday discussions.

A study of an Australian citizens jury found jurors' opinions changed in the information rather than in the discussion phase of the jury proceedings (Goodin and Niemeyer 2003). Questionnaires indicated knowledge gains after the 12 jurors received background briefings and questioned experts, but not after the subsequent discussion. The sample size was very small, so these changes were not statistically reliable. But perhaps information alone could provoke what Goodin (2005) calls an "internal reflective deliberation" that enhances knowledge.

More rigorous studies that separate the effects of informative readings from discussion *can* successfully demonstrate the value of deliberative discussion. Morrell (2005), for example, shows that internal political efficacy rises in response to discussion, not readings. This research compared people who read information with those who both read information and participated in discussion.

Overall, while the empirical literature on deliberation has built a case for learning in deliberative contexts, the findings have been unclear about the mechanism—discussion or information sources. Establishing a mechanism has important implications for inequality as well. If the "informative readings" matter most, this finding could suggest reforms that will more equitably distribute political knowledge. Also important for addressing inequality is a better understanding of what individual-level factors contribute to this inequality. We next motivate and sketch a theory of human agency that suggests factors that help explain inequality. The theory may prove to be a beneficial framework for deliberation research more broadly.

### **HUMAN AGENCY AND DELIBERATION RESEARCH**

Human agency—loosely, the skills and inclinations that make people good decision makers and actors—should play a role in how readily and thoroughly people learn in deliberative contexts. This section and the next will explore the relationship between agency and deliberation research, sketch a theory of human agency, and use that theory to identify novel variables that could be helpful in explaining learning in deliberative contexts.

Deliberation research generally proceeds informed by one of two broad theoretical tapestries with crucially different understandings of agency—liberal democratic political theory and deliberative democratic political theory. In the archetypal core of liberal democratic theory, people are agents with respect to

their means, but not their ends, which are assumed given (Warren 1992). Natural outgrowths of liberal democratic theory are economic and rational choice theory (Elster 1986; Smith 1990). A standard and important assumption of liberal democratic theory is that people come to the political arena knowing their ends and thus have the exclusive objective of maximizing their achievement of these ends, making politics a strategic game (Warren 1992). With such a reading of politics, liberal democratic thinkers can only imagine a quite limited role for deliberation: the passing of information useful for maximizing preferences. Much mainstream political science research on deliberation focuses on its capacity to convey information (Gastil and Dillard 1999; Lupia 2005; Lupia and McCubbins 1998; Luskin, Fishkin, and Jowell 2002; McLean et al. 2000).

Deliberative democratic theory, in contrast, maintains that people can be agents not only over their means, but also their preferences and values (Benhabib 1986; Bowles and Gintis 1986; Warren 1992; Warren 1995). In the course of democratic deliberation, for example, criticism from others might problematize a person's values and lead to introspection and change. Reflective evaluation of personal values and preferences, many absorbed unthinkingly from the social milieu, is expected to lead to greater personal autonomy—an important value in deliberative theory. Deliberation could also occasion reconsideration of people's relationship with the community—creating responsibilities, improving conceptions of the common good, and strengthening collective identification (Muhlberger 2005a). And, politics can lead to self-development—challenging personal assumptions with consequent growth in autonomy or agency. Research findings such as the effects of deliberation on social trust (Price and Cappella 2002) and citizen identity (Muhlberger 2005a) involve topics pertinent to a deliberative democratic approach. Research in this vein is comparatively rare.

Liberal democratic theory puts deliberation researchers in a difficult position. This theory is at odds with deliberative political theory. The liberal democratic approach also has difficulty explaining political engagement or sophistication, issues highly pertinent to understanding deliberation. The liberal democratic view of people as strategic agents suggests they will be rationally ignorant and apathetic about politics (Downs 1957). Strategic actors should not be politically engaged because the odds that their individual actions will change political outcomes at the state or national level are vanishingly small. This theory suggests that almost no one should be willing to deliberate. Indeed many people are ignorant and apathetic (Converse 1964; Delli Carpini and Keeter 1996; Kinder 1983; Kinder 2002; Neuman 1986), though this does not show that strategic considerations make them so. Non-trivial numbers of people do, in fact, seem to act contrary to "rational" apathy and ignorance. Millions vote and join public interest groups. Substantial percentages of representative samples (often 15%-30%) do participate in well-organized citizen deliberations. Moreover, political

knowledge and engagement is substantially higher among the educated—precisely the intelligent and goal-oriented public that should be rationally ignorant and apathetic. While rational choice proponents are adept at explaining problematic empirical findings, sophisticated observers such as Green and Shapiro (1994) suggest rational choice approaches have simply accumulated ad hoc explanations that do not amount to a fruitful theory.

On the other hand, researchers who take a deliberative democratic approach to studying deliberation encounter two other difficulties. First, with its assumption that people are socially constituted, deliberative theory may have difficulty explaining widespread apathy. Second, it is not apparent what research tradition might be brought to bear to pursue a deliberative democratic approach. Often, researchers have tapped mainstream social and cognitive psychology. Regrettably, as Bandura (2001) observes, much of the psychological research tradition does not afford space for human agency. This research typically assumes that behavior and attitudes can be explained by a variety of non-rational and deterministic psychological factors such as social conformity or cognitive dissonance. Deliberation research conducted through a lens that sees primarily non-rational processes, not surprisingly, finds manifold problems with deliberation and little systematic grounds to hope for better (Mendelberg 2002). Deliberation researchers need an approach that allows for human agency, but one that does not assume it as a given—as does rational choice theory. Bandura (2001) suggests that new approaches in psychology do create elbow room for agency. Such approaches will be integrated below into a sketch of a theory of agency. The paper will show that agency theory proves valuable even for understanding a mainstay of liberal democratic research—learning effects in deliberation.

#### **AGENCY THEORY AND DELIBERATIVE LEARNING**

This section will sketch some important aspects of a theory of agency and apply these aspects to learning in deliberative contexts. An exposition of other aspects of agency theory can be found in Muhlberger (2005b). This agency theory is indebted to Mead's (1962) philosophical psychology, Carver and Scheier's (1981; 1999) self-regulation theory, Vallacher and Wegner's (2000) action identification theory, Koestner's (1996) and Ryan's (1989) work on self-determination and internalization, and Rosenberg's (2002) developmental psychology.

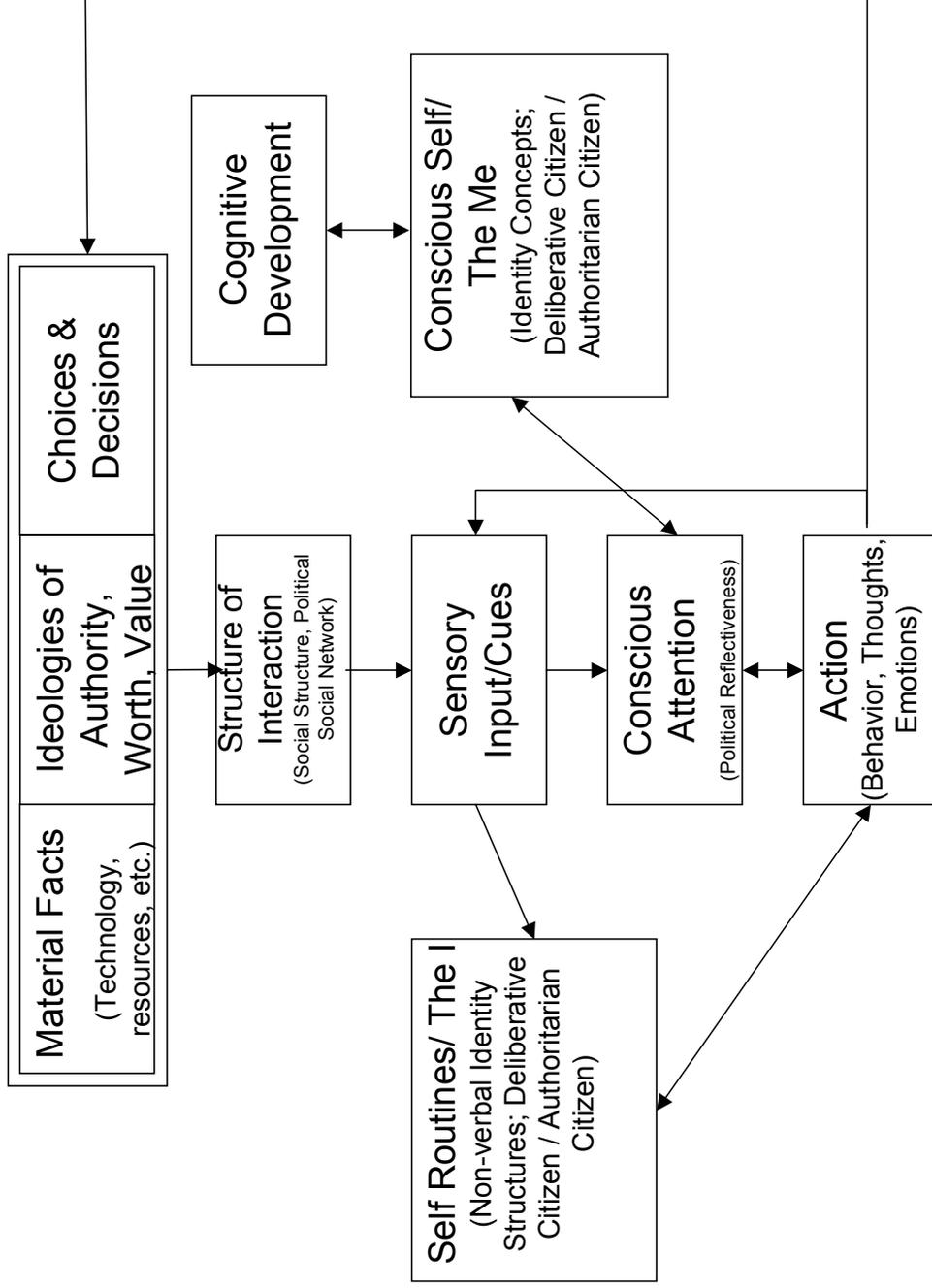
In a nutshell, agency theory suggests that political reflectiveness and citizen identity should influence learning in deliberative contexts. Agency theory contends that genuine agency is difficult to create and maintain, requiring a difficult and complex performance. Conscious mental resources are highly limited. To become an agent in a given domain, such as politics, a person must focus attention in that domain, making the content of that domain a target of

willful reflection. Only some people may consider politics a pertinent domain for reflection. Those who possess such "political reflectiveness" should be more likely to pay attention and learn in deliberative contexts. Conscious attention furthermore builds both conscious and unconscious structures that help people process information in a given domain and that direct and motivate engagement. The highest level of mental structure regulating action in a given domain is identity—conceptions of who a person is and structures relevant to such conceptions. Thus, this paper will also explore whether measures of citizen identity—people's perceptions of the responsibilities and duties of a good citizen—help explain learning in a deliberative context. These notions of citizenship role prove to be potent explanations of learning.

Most mental processes are parallel, unconscious, and "self-organizing" (Carver and Scheier 1999). For instance, when people learn to dance, they do not consciously learn which muscle groups to fire and when—something that could not be mastered by the slow, serial processes of consciousness. Rather, they practice until they have built a non-verbal, self-organized mental structure that can execute the necessary responses. Self-organizing processes do not, however, possess high-level unity of purpose or the capacity for reasoned correction. Conscious attention directs the dancer to practice, and it builds verbal structures that model the dancing. These verbal structures are accessible to conscious, symbolic manipulation, which allows correcting problems. Correction involves consciously intervening at points in action execution, thereby slowly reprogramming the inaccessible self-organized structure. Similar processes affect political engagement and learning. When people focus attention on a political discussion or political information, they develop self-organized mental schema that help improve their actions and understandings. Conscious intervention reprograms these schemas through modeling and symbolic manipulation.

Objectives and identity play crucial roles in agency. A key way in which overburdened conscious attention can direct behavior is by posing objectives for behavior to meet and then activating pertinent non-verbal routines to meet these objectives. Objectives can be at varying levels of abstraction, such as: keep the car between those white lines on the road, drive to the Sierra Club meeting, and be an environmentalist. At the precipice of this nested hierarchy rest conceptions of identity that broadly steer a person's activity. The coherence of a person's activities will depend critically on the continuity and unity of the self—a composite of both conscious concepts and unconscious routines captured by the "I" and the "Me", respectively, in Figure 1. The self helps create coherent behavior despite varying activities and contexts. The self consists of a multitude of identities, unified in some people by a general umbrella identity.

Figure 1: Agency Theory



People find themselves enmeshed in a structure of interaction—patterns of input, routines, rituals, and demands shaped by social structure—that can limit or enhance their agency. Environments that engage a person in routines or focus attention on some matters and not others "program" self-organized routines in the person that can hem in their choices. In contrast, rich social environments with conflicting demands can stimulate conscious reflection that challenges content passively absorbed from the social order (Habermas 1984). Democratic deliberation in particular may be a context in which people have an incentive to question the fundamental values and beliefs of others, stimulating critical thought and thereby self-development (Warren 1995).

The notion of agency derived from this theory meets the desiderata of a theory of agency that is both consistent with deliberative democratic theory and potentially useful to deliberative researchers. Broadly speaking, even the act of willfully moving an arm is an act of agency. But deliberation theorists have sought a notion of agency with a more critical edge, one that stresses real autonomy—conscious choice rather than uncritically absorbed routines. In agency theory, *agency is the capacity to choose and successfully execute actions consistent with a coherent and reflexively determined self*. This conception of agency makes sense of the claim in deliberative theory that people can have agency over their preferences or values. It is only by reflexively considering their values and preferences that people exercise agency—that is, only by subjecting uncritically absorbed values and preferences to conscious and thoughtful reflection. This notion of agency should also meet the desiderata of deliberative researchers—it allows for agency but also suggests that such agency is not a given. Rather than the rational choice depiction of people as always rational calculators or standard psychological depictions of people as products of social and psychological forces, agency theory views people as "*burdened executives*"—struggling leaders of an often too complex mental life. The inspirations of this agency theory involve a number of tested research programs that should prove fruitful for deliberation research.

Importantly, the proposed notion of agency allows us to speak of agency with respect to a given domain—such as politics—and suggests factors that may matter for agency within a domain. Someone who is a political agent would take politics as a target of conscious reflection. Researchers should not assume that even the politically engaged reflect on their beliefs. For example, the Dutch Election Study of 1970-1973 found that 68% of respondents reported never or rarely giving their own opinions or listening during political discussions (Brady 1999, p. 772). In past decades, voting was heavily determined by ethnic, religious and other group memberships (Dalton and Wattenberg 1993), while today voting may be less group-based but nevertheless unthoughtful. To capture whether a

person views politics as a domain for attention and reflection, this paper will introduce a measure of "political reflectiveness"—whether people feel personally responsible for deciding their own political views. We expect that political reflectiveness, as well as the other agency variables described below, should prove to better predict political learning than standard political attitudes such as political interest or internal or external political efficacy. Political reflectiveness appears in Figure 1 as an aspect of how people focus their conscious attention. Such reflectiveness may arise out of various identities, but it is broader than one identity and manifests in how conscious attention is used.

Agency theory, furthermore, indicates that identities serve crucial self-regulative roles. A key identity with respect to political engagement is seeing oneself as a "citizen" (Muhlberger 2005a). Identification by itself does not indicate whether an identity stimulates engagement, but the content of an identity—the responsibilities associated with it—should bear on engagement. Two types of citizen responsibility may matter for political learning—active and authoritarian conceptions of citizen responsibilities. Active conceptions involve believing that a citizen should be actively engaged. We find that active conceptions of citizenship fall into two types: non-deliberative forms of responsibilities like contacting officials and deliberative forms such as engaging people who disagree on the issues. The deliberative notion should be most pertinent to learning about politics. Authoritarian conceptions of citizenship involve believing that good citizens have a responsibility to be obedient and reverent toward political authorities and punitive toward those who are not. Authoritarian beliefs may be deeply related to a particular conception of human agency (Muhlberger 2006). Authoritarians should be less attentive to political information because they believe they should count on authorities and not usurp their role. In Figure 1, authoritarian and deliberative citizen identities appear under both the I and the Me. Given the measures used here, only the consciously accessible aspect of these identities will be the subject of this paper.

We will also include false consensus beliefs (Hibbing and Theiss-Morse 2002) as an explanation of political learning. This is the false belief that there is a broad consensus regarding the most important problem facing the country and what to do about it. False consensus beliefs are related to authoritarian thinking about government and, thereby, conceptions of agency (Muhlberger 2006). Believing in a broad consensus should leave people unmotivated to learn new political information.

A fifth variable suggested by agency theory captures whether a person's structure of interaction encourages political learning. We stipulate that someone who has a political social network—close friends with whom they discuss politics—will be more motivated and perhaps better at picking up political information that might become grist for conversation. A final variable that might

be housed under the rubric of agency is a norm of social cooperativeness—believing that people should contribute to society. Someone who believes they should contribute to society should be more motivated to learn political information, especially in a deliberative context. Such a norm might emerge from various identities, but whatever its origin, it should affect political learning.

## **METHOD**

### **PARTICIPANTS**

Knowledge Networks, a survey research firm noted for its sampling work on academic deliberation projects, conducted the recruitment for this Virtual Agora Project (VAProject). Of a sample of 6,935 Pittsburgh city residents (defined by zip code area) who could be reached via random digit dialing (RDD), 22% agreed to participate in this research and took a phone survey. Sampling differed from the typical methodology on other substantial deliberation projects conducted by Knowledge Networks in that it did not utilize quota sampling to make demographic statistics more representative of the population as a whole. This has two advantages. First, the sample better reflects what it would be if deliberations were a more widely used process in government because in this case quota sampling would likely be too expensive and contrary to legal equality requirements. Also, although quota sampling may result in demographics matching the population in certain crude categories, those who come to a deliberation after extensive oversampling of their demographic are most likely not typical of their demographic.

Of recruits who agreed to participate, 37% or 568 people showed for the Phase 1 on-campus deliberation. This is the only part of the study pertinent to this paper and will be termed "the experiment." A modest response rate was expected because recruits were asked to participate in a series of online deliberations that would take most participants eight-months to complete and which they could join only by coming to an initial on-campus, all-day deliberation experiment. The final participation percentages are not, however, incomparable to that of another substantial long-term deliberation study, Vincent Price's Electronic Dialogue Project (EDP) at the Annenberg School of Communication (Price and Cappella 2002; Price and David 2005). This EDP project started with an effective sample of the population from which its discussants were drawn of about 3,686 (Price and David 2005). The number of people who ever participated in any discussion over the course of the year is 543, and the average number of people who participated in a given discussion was 305 (Price and Cappella 2002). Ultimately, the response rates for both the EDP and VAProject are modest. For the VAProject, comfort can be drawn from several considerations: a fair similarity to population demographics, the fact that the sample represents people who might be expected to participate in longer-term deliberations, and the

objective of this research which is experimental and focused on psychological processes that should be universal.

Despite a strict RDD sample and modest response rate, the participants in this project reasonably matched the Pittsburgh city population on most demographic criteria. The sample was 77% Caucasian and 18% African-American, compared with CPS population benchmarks for the relevant zip codes of 75% and 20%, respectively. Fifty-six percent of the sample was female, compared with 53% for the population. Twelve percent of the sample was 18-29 years old, 22% 30-44 years old, 26% 45-59, and 27% 60+. This compares with population values of 26%, 20%, 26%, and 27%. The elderly and thirty year olds are accurately represented; the young are underrepresented, while mid-life adults are overrepresented. Average age, however, is the same as for the population. Perhaps the greatest departure from population values is for education, which, as expected, is greater than for the population. Median education is "Some College" for both the sample and the population. Lower educational categories, however, are underrepresented, with 10% of the sample having less than a high school education and 14% having just a high school education, compared with 16% and 31% for the population. Nevertheless, the sample does contain the full range of educational levels.

Pittsburgh is an ethnically and class diverse community with a city population of 334,583 and over one million including surrounding areas, according to the 2000 Census. Neighborhoods range from suburb-like residential areas to areas of urban poverty. Although Pittsburgh is known to have a moderately high quality of life for a city its size, people intimately involved with public life in the city do not believe this leads to either an especially high level of political involvement or non-contentious public dialogue.

#### **MATERIALS AND PROCEDURES**

Knowledge Networks obtained phone numbers for households in the City of Pittsburgh from a random digit dial (RDD) sample. Where numbers appeared in a reverse directory, the household was sent an advance letter on Carnegie Mellon University stationery describing the study and indicating that the household would be contacted shortly. A Knowledge Networks phone center called households in the RDD sample and requested the household member with the most recent birth date. Both the letter and the call center indicated that in exchange for participation in the study, participants would have a four out of five chance of receiving a Windows computer and eight months of ISP service. The remainder would receive \$100. Those who received a computer would be expected to participate in a longer-term online deliberation from home. People who agreed to participate in the VAProject were given a short phone-based survey including questions about their pre-deliberation policy attitudes, and they were scheduled

for a one-day, eight-hour on-campus deliberation. Participants were asked to come to a randomly chosen day from the deliberation schedule, which spanned three weeks in July 2004, including many weekends and weekdays.

Deliberations were held with up to 60 participants daily. After informed consent and a brief training session, participants took a web-based pre-survey. Next, they were given a 40-minute "library session" to learn more about the four policy topics, a break, 90 minutes for deliberation or contemplation (face-to-face, online, or individual contemplation, depending on condition), and lunch. Trained moderators guided the deliberations. The library session, break, and deliberation / contemplation (same condition as before) were repeated in the afternoon, and this was followed by the post-survey. In addition to the experiment with type of deliberation, another experimental condition involved either receiving or not receiving reminders of citizenship. In the citizenship condition, participants were reminded to think like citizens in a brief "talking-head" ahead of their deliberations (the non-citizen condition involved a different talking-head), their rooms had an American flag, and they were given name tags with American flags and the word "Citizen" preceding their names.

Reading materials consisted of five "core" documents, each three single-spaced pages and each introducing carefully balanced information on one of the policy questions under discussion: the status quo, school closings, small learning communities, K-8 system, and regional choice. In addition to the core documents, 13 "raw" documents were provided that included reports of the School District of Pittsburgh, policy journal articles, public interest group materials, and an interview with a policy analyst. The readings were presented in a computer-based format in which the participants could open an introduction that explained the contents, folders labeled "core materials" and "raw materials," and the documents under these two folders. Paper-based documents were available for those who had trouble reading the computer screen. Importantly, participants were informed immediately *before* their first reading session whether they were going to be in a discussion condition or would spend the day reading and contemplating.

### MEASURES

All question responses were measured on 7-point Likert scales, unless otherwise noted. Generally, one or two sample questions per scale are provided below. Please contact the author for full question scale items.

*Deliberative Citizenship:* Part of a series of 70 True / False reaction time questions measuring conceptions of citizenship. This includes such questions as: "A good citizen should discuss politics with those who disagree with them." and "A good citizen should be willing to justify their political views." *Authoritarian Citizenship:* "A good citizen should respect the President." and "A good citizen should condemn people who are un-American." *Political Reflexivity:* "I feel

personally responsible for my own political views." and "It is ultimately up to me to make up my mind about political issues." (Scale of: Not True / Moderately True / Very True) *Social Cooperativeness Norm*: "People should care less about their own success and more about the needs of society." Social cooperativeness questions are Likert versions of the forced-choice question in the American National Election Study, 1990. *False Consensus*: "What is the most important problem facing the country?" and "What portion of Americans do you believe agree with you on what should be done about [most important problem response]? [No Americans / Half of All Americans / All Americans]." False Consensus questions include and build on questions presented in Hibbing and Theiss-Morse (2002). *General Political Knowledge*: Twelve updated multiple-choice questions based on the Delli Carpini and Keeter Political Knowledge Scale (Price 1999). *Political Social Network*: Questions from Lake et al. (1998), described in introductory section. *Political Interest*: Questions from the American Citizen Participation Study, 1990 (ICPSR 6635). *Internal and External Political Efficacy*: Questions from the American National Election Study, 2000. *Demographic Questions*: Generally, questions from the American Citizen Participation Study, 1990 (ICPSR 6635). *Internalized and Introjected Motivation* (Koestner et al. 1996): respectively, such questions as "I follow politics because I think it's important." and "I follow politics because I will feel bad about myself if I don't."

## RESULTS

The results are divided into several sections. Their logic is summarized here in recognition that some readers may not have the statistical background to interpret the findings. These readers can also view a summary of the findings in the conclusion. The first section presents factor analysis results that provide confidence in the variables analyzed in subsequent sections. The section firmly establishes that such variables as political reflection, conceptions of citizen identity, and political interest indeed measure distinct things. These analyses also provide guidance that helped identify some subsets of questions as measuring an unexpected construct—such as a specifically deliberative notion of citizenship. The second section examines an issue that affects the scientific strength of some findings. The findings on the impact of discussion or readings on deliberative learning are experimentally firm. Findings regarding the effects of individual-level variables, such as the agency variables, however, are not experimentally firm. They are, however, firmer than the typical correlational findings of the social sciences—provided that post-discussion knowledge is largely the result of learning during the experiment. This section provides reasons to believe it is.

The third section considers whether decision knowledge matters by examining whether knowledge affects policy attitudes or makes knowledgeable

persons more persuasive to others. It also presents key evidence that learning took place during the experiment, which provides reassurance regarding the scientific strength of the individual-level agency findings. The fourth section examines what factors affect decision knowledge, including the agency variables, political attitudes, and demographics. The fifth section explores the degree of demographic inequality in learning revealed in the data. The final section presents some results that indicate the malleability of various factors—indicating which might be targeted to improve learning in deliberative contexts.

#### **EXAMINATION OF FACTORS IN THE DATA**

The surveys conducted for this study contain multiple questions for each of several conceptual factors, including such novel constructs as political reflection. This raises the issue of whether the questions we believe go together as a factor do. Exploratory and confirmatory factor analyses were conducted to address this issue. In addition, confirmatory analyses help establish that different factors do not measure the same thing. The results firmly establish that the separate concepts identified in this paper are statistically distinct—for instance, political reflectiveness is not the same as political interest. We have put most details of the confirmatory and other results in Appendix A for the technically inclined reader. Here, we will survey some key findings.

Confirmatory analysis indicates that decision knowledge consists of two factors. The two factors identified appear to be policy knowledge, tapping such questions as what various policy options entail, and statistical knowledge, tapping such questions as the percentage of excess capacity in Pittsburgh public schools. The presence of two knowledge dimensions suggests that research on deliberative learning should be more sensitive to the possibility of different types of learning—past studies have assumed unidimensionality. Such sensitivity, however, will be only partially feasible here. Only two dichotomous variables are related to the statistical knowledge dimension. Even combined, these are insufficiently reliable to be analyzed. We choose to focus mostly on a single 12-variable decision knowledge scale that collapses the different dimensions of learning, though we will report any apparently robust results from separate analyses of the two dimensions. The decision to focus on a single all-encompassing decision knowledge scale follows from a couple considerations. There is a strong presumption in favor of the view that anyone who can correctly answer a factual question about the topic of deliberation has in some general sense learned something. Also, the .61 estimated correlation between the policy and statistical knowledge factors indicates that the two types of learning are moderately related and are reflections of an underlying second-order learning factor.

A two-factor confirmatory model fits the active notions of citizenship variables well. One factor appears to be a non-deliberative notion of active citizenship that includes such activities as joining public interest groups, writing letters to Congress, and following the news. The second factor was deliberative: justifying personal views in discussion and discussing politics with those who disagree. Two additional variables, which could not be added to the confirmatory analysis because of very low variation, prove to correlate cleanly with the deliberative citizenship variables and not with the non-deliberative citizenship variables and were added to the scale. The cognitive and deliberative foci of these variables suggest they will be especially pertinent to deliberative learning.

A final combined confirmatory model was constructed with variables measuring political reflectiveness, deliberative citizenship, political interest, internal political efficacy, and external political efficacy. The combined model can be used to test whether the scales under consideration are statistically distinct. Sophisticated tests indicate that the probability that different scales measure the same thing is vanishingly small (these are  $\chi^2$  tests of the difference of fit between the full model and models in which pairs of factors are collapsed as one factor). The probability that political interest measures the same thing as either political reflection or deliberative citizenship is less than .0001 for both ( $\chi^2=118.7$  and  $146.3$  with 1 d.f., respectively). Similar results hold for internal efficacy and the two agency variables ( $\chi^2=130.4$  and  $256.5$ ), or between the agency variables ( $\chi^2=146.3$ ). Factor correlations between the novel variables and external efficacy are so low they do not warrant further examination.

#### **KNOWLEDGE OR LEARNING?**

The scientific strength of some findings here is affected by whether learning took place during the day of deliberation. The findings on the impact of discussion or readings on deliberative learning are experimentally firm. If discussions had an effect, it should clearly register as differences between experimental groups that discussed an issue versus those that did not. Findings regarding the effects of individual-level variables, such as the agency variables, are not experimentally firm. Because we were concerned that asking the knowledge questions before discussion would affect learning outcomes, we did not ask such pre-discussion questions. So, these data do not definitively show how much learning, if any, took place during the experiment. If people learned nothing during the experiment, then a relationship between the agency variables and post-discussion knowledge is only a correlation, not evidence that the agency variables caused learning during the experiment. Such a correlation is no weaker than a majority of findings in the social sciences, which typically involve correlations from cross-sectional data. There is, however, reason to believe that the agency findings here

are somewhat stronger than correlational results because much learning probably did take place during the day of deliberation.

Prior research on methods of deliberation similar to that employed here find substantial learning (Luskin et al. 2002). Strong evidence of learning in the present experiment will be presented in the next section, which shows that *post-experiment decision knowledge* has a substantial effect on opinion change from pre- to post- experiment. Without learning, it seems unlikely that decision knowledge could influence opinion change. Also, findings in a subsequent section indicate that deliberative citizenship has a significantly larger effect on decision knowledge when the participant actually deliberates with others. Again, this finding seems hard to explain if there was no learning during the deliberation. Finally, it can be rigorously established that some learning took place during the experiment: The number of reading materials whose URLs were clicked by participants is significantly correlated with post-experiment knowledge ( $\rho=.24$ , cluster-robust  $p<.001$ ,  $N=563$ ). The effect is not large, but the measure is crude.

More generally, it is well known that most of the public has little or no policy knowledge, making the high levels of decision-relevant knowledge recorded post-experiment unlikely without learning—the average percentage correct was 73%. Admittedly, participants had somewhat higher levels of political interest than the general public, but even those below the median political interest for the sample had high decision-relevant knowledge by the end of the study (72% correct). Almost none of the policy questions we asked had answers in the mainstream news media. The questions and answers were derived from government and think tank reports and expert testimony which the public would have difficulty accessing. Several participants commented that they were astonished by how poor and incomplete the information they received from the media was, compared with the policy briefs available in the experiment.

### CONSEQUENCES OF DECISION KNOWLEDGE

Table 1 shows that post-experiment factual knowledge (Decision Knowledge) is related to key outcomes of deliberation, including attitude change and the effect of participants' opinions on other participants. The table indicates that those with high levels of decision knowledge after the experiment—those who presumably learned the most—also showed significantly greater policy attitude change on three of the five policies under consideration, with a trend for a fourth policy. These changes are among the most substantial effects found. Decision knowledge and other continuous variables in Table 1 are on a seven-point scale to insure comparability of raw coefficients. The finding that post-experiment decision knowledge substantially changed opinions on three of the five policies suggests that appreciable learning took place during the study. (The smaller sample size of the regressions in Table 1 is due to the fact that Knowledge Networks was unable

to interview 105 participants prior to their being in the experiment. Analysis indicates no significant differences in demographics or opinion among those who were interviewed prior to the experiment and those who were not.)

**Table 1: Effects of Decision Knowledge on Policy Attitude Change and on Other's Opinions**

Dep. Vars:	Closing Schools Change Raw Coef (s.e.)	Eliminating 4500 Seats Change Raw Coef (s.e.)	Elim. Middle Schools Change Raw Coef (s.e.)	Regional Choice Plan Change Raw Coef (s.e.)	Small Learn. Communities Change Raw Coef (s.e.)
Indep. Vars.:					
Converge to High Know.	.39** (.15)	.27* (.12)	.23** (.09)	.17† (.11)	.39*** (.10)
Converge to Low Know.	.07 (.12)	.20* (.10)	.04 (.11)	.14 (.11)	.16 (.11)
Decision Knowledge	.32*** (.09)	.16* (.08)	.17† (.11)	-.30** (.10)	.10 (.11)
Pre-Opinion	-.22 (.14)	-.26* (.13)	-.52*** (.13)	-.45** (.16)	-.28 (.15)
General Pol. Knowledge	.04 (.06)	.20** (.08)	.13† (.09)	.04 (.09)	-.002 (.09)
Education	-.05 (.08)	-.16 (.09)	-.22*** (.07)	-.17* (.09)	.10 (.09)
Income	.08† (.05)	.13* (.06)	-.05 (.05)	.05 (.07)	-.06 (.05)
Age	.02 (.06)	.07 (.06)	.03 (.08)	-.02 (.08)	.02 (.08)
African-American	.22 (.23)	.17 (.27)	-.25 (.22)	.63* (.27)	-.004 (.22)
Male	.07 (.14)	.22 (.17)	.01 (.17)	.05 (.19)	.10 (.17)
Cons.	1.10* (.43)	1.26* (.52)	3.57*** (.61)	3.78*** (.53)	2.64*** (.61)
Each regression also includes controls for experimental condition.					
N; R <sup>2</sup> ; s.e.	450; .43; 1.6	447; .40; 1.7	446; .51; 1.6	446; .33; 1.9	446; .39; 1.7

Notes: To promote comparability of coefficients, continuous variables were put on 7-point scales. "Change" is post- minus pre-deliberation attitudes. \*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$ ; †  $p < .10$ ; p-values are reported as one-sided for directional hypotheses. All others are two-sided. p-values are cluster robust and take into account possible error covariation between discussion group members and heteroskedasticity.

Table 1 also hints that a participant's decision knowledge may be related to greater influence over other participants' views, though this is not statistically firm. The row labeled "Converge to High Know." indicates the opinion change effect of the gap between a respondent's pre-deliberation opinion and the *mean* post-deliberation opinion of highly knowledgeable participant's in the respondent's discussion group, omitting the participant. A coefficient of .40, for example, indicates that participants closed 40% of the gap between themselves and the mean post-deliberation opinion of highly knowledgeable others in their group. The row labeled "Converge to Low Know." indicates convergence to the mean opinion of low-knowledge others in each respondent's group. High and low

knowledge were defined by a median split on decision knowledge. Table 1 shows that in three of five policy attitudes, this "gap-closing" coefficient appears appreciably larger and more significant for the high knowledge group than for the low knowledge group. While this is suggestive, post-hoc tests to determine the significance of the difference between the low and high gap coefficients show trends but no significant differences.

### EXPLAINING DECISION KNOWLEDGE

Table 2 shows a regression<sup>1</sup> of decision knowledge, measured on a 0 to 100 scale, on a variety of explanatory variables. The first batch of variables incorporates a complete analysis of the effects of experimental conditions. **Neither face-to-face nor online deliberation significantly influences factual decision knowledge. Reminders of citizenship during the deliberation did lead to a significant, though modest, three point increase in decision knowledge.** By comparison, a move from lowest (0) to highest (6) value of general political knowledge results in a 18-point change in decision knowledge ( $6 \times 3.03$ ). The significant negative effect of the F2F X citizen condition simply negates the positive main effects. Variables were scaled to a seven-point scale (0 to 6) for comparability of raw coefficients, with the exception of dichotomous variables such as those measuring the experimental conditions, which are 0 and 1. Readers can divide dichotomous variable coefficients by six to get a sense of their relative effect sizes.

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<sup>1</sup> Technical Note on Groups, Independence, and HLM: One concern in this analysis is that discussion groups may help explain some of the variation in participants' decision knowledge. In cases of such non-independence, hierarchical linear modeling ("mixed effects" or "multilevel" modeling) would be ideal. The data here were tested to determine whether such a modeling effort would be desirable. One measure is the Intraclass Correlation Coefficient (ICC)—the percentage of dependent variable variation explicable by a random-effects intercept only model. The ICC here is  $5 \times 10^{-4}$ , or much less than 1% of variation, suggesting that there is no group-level variation that needs to be taken into account by HLM. Adding the full model in Table 2 and allowing random effects for powerful values does not change the picture. In short, an HLM approach is not warranted. To take into account the possibility of some covariation of error terms within group, as well as possible heteroskedasticity, the analyses presented here will be OLS with cluster-robust standard errors.

**Table 2: Decision Knowledge Regressed on Experimental Conditions, Agency Variables, Political Attitudes, and Demographics**

Indep. Vars.:	Decision Knowledge Regression Raw Coef. (s.e., Beta Coef.)	Decision Knowledge Regression w/ Deliberative Citizenship Split Raw Coef. (s.e., Beta Coef.)
<b>Experimental Conditions</b>		
Online	-.42 (1.94, -.01)	-.45 (1.91, -.01)
Face-to-face	1.36 (1.71, .03)	1.34 (1.68, .03)
Citizen Reminders	3.06* (1.53, .08)	2.92* (1.51, .08)
Online X Citizen Reminders	-2.96 (2.65, -.06)	-2.73 (2.62, -.05)
F2F X Citizen Reminders	-4.99* (2.46, -.10)	-5.01* (2.91, -.10)
<b>Agency Variables</b>		
Deliberative Citizenship	2.79*** (.51, .15)	
Delib. Citizen. X Discussion		3.60*** (.58, .16)
Delib. Citizen. X Control		1.47† (.81, .05)
Authoritarian Citizenship	-.83* (.47, -.07)	-.85* (.46, -.07)
Political Reflectiveness	1.49* (.67, .08)	1.60** (.66, .09)
Has Political Social Network	7.14** (2.52, .12)	7.18** (2.52, .12)
False Consensus	-1.01* (.52, -.06)	-.99* (.52, -.06)
Social Cooperativeness Norm	.75* (.44, .06)	.75* (.44, .06)
<b>Political Attitudes, etc.</b>		
General Political Knowledge	3.03*** (.69, .21)	3.04*** (.69, .21)
Political Interest	-1.47* (.67, -.09)	-1.49* (.67, -.09)
Internal Efficacy	-.74 (.54, -.05)	-.77 (.54, -.05)
External Efficacy	-.29 (.37, -.03)	-.30 (.37, -.03)
<b>Demographics</b>		
Education	3.92*** (.51, .25)	3.89*** (.51, .25)
Age	-2.87*** (.73, -.17)	-2.86*** (.73, -.17)
Income	1.45*** (.40, .12)	1.41*** (.39, .11)
African-American	-8.64*** (1.74, -.17)	-8.50*** (1.74, -.17)
Male	-.41 (1.12, -.01)	-.57 (1.12, -.01)
Has Children	2.91* (1.33, .07)	2.98* (1.33, .07)
Cons.	35.58*** (5.83, NA)	50.36*** (5.45, NA)
N; R <sup>2</sup> ; s.e.	554; .49; 13.8	554; .50; 13.8

*Notes:* To promote comparability of coefficients, continuous variables were put on 7-point scales. Deliberative citizenship in the 2nd regression has been centered to avoid confusion regarding experimental effects, which otherwise become large and negative to compensate for the large citizenship X discussion coefficient for a variable, citizenship, that has most of its values at the upper extreme.

\*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$ ; †  $p < .10$ ; p-values are reported as one-sided for directional hypotheses. All others are two-sided. p-values are cluster robust and take into account possible error covariation between discussion group members and heteroskedasticity.

Education has the most substantial effect on decision knowledge, followed by general political knowledge and then age in years, which has a negative effect. The deliberative conception of citizenship has nearly the effect of age or general

political knowledge, with a coefficient of 2.79. Deliberative citizenship is not merely a proxy for need for cognition (NFC). When NFC is added to the analysis, it proves highly non-significant ( $p=.79$ ), while deliberative citizenship's coefficient is unaffected and t-value grows. Political reflection is also significant and has about half the effect of deliberative citizenship, while authoritarian citizenship has a significant negative effect, as predicted. The absolute sum of the coefficients of the three core agency variables (political reflection and conceptions of citizenship) is 5.1, which appreciably outstrips even the effects of education. The beta coefficients of the variables provide another way of viewing their relative effects. Having a political talk network (close friends with whom the respondent talks about politics) and strong social cooperativeness norm also help to a degree, while falsely believing in a political consensus reduces decision knowledge. Income, being black, and having children also affect knowledge.

Standard political attitudes—political interest and internal and external efficacy—do not significantly and positively contribute to decision knowledge. Oddly, political interest does have a significant *negative* effect. Regressing decision knowledge on just political interest reveals a highly significant positive effect ( $t=3.74$ ). Controlling for just education, however, makes political interest insignificant ( $t=1.33$ ), which suggests that the effect of political interest could be spurious. The negative coefficient in Table 2 may reflect people who exaggerate their political interest. If the more specific motivational variables are harder to exaggerate, then controlling for these will leave behind a residue of exaggerators, resulting in negative coefficients.

A number of possibilities suggest themselves to explain away the finding of no overall effect of deliberation on decision knowledge, but these possibilities do not stand up to scrutiny. The reader might imagine that no effects were found because people in the information-only condition expected to speak in a group later. But, people in the information-only condition were told they would not be in a discussion before they began their readings. Perhaps no effects were found for discussion because only discussion in particular groups succeeded in educating their members. This possibility was tested in two ways, but no evidence for such effects were found. The two possibilities tested were: Perhaps discussion groups in which members other than the respondent had high levels of decision knowledge succeeded in raising respondents' knowledge. Alternatively, perhaps a group-level effect might be seen by examining a variable that indicates how other members of a group scored in decision knowledge relative to what would be expected from the first regression in Table 2—that is, if their knowledge gain outstripped model expectations, suggesting that much learning occurred in the group. These tests should be sensitive to any possibility that certain groups educate better. Variables were constructed to test both possibilities and inserted in the full regression of Table 2, but no evidence was found for group-specific

effects ( $p=.99$  and  $p=.89$ , respectively). Alternatively, perhaps no effects were found for discussion because decision knowledge hit a ceiling from just reading alone. This seems unlikely because only 43 of 554 participants in the Table 2 regression had a perfect decision knowledge score.

An examination of the two components of decision knowledge—policy knowledge and statistical knowledge—indicates that there may be differences in which factors contribute most to each of these types of knowledge. Regressions for these two types of knowledge (not depicted in Table 2) naturally have weaker standard errors because the dependent variables are means of fewer dichotomous variables than decision knowledge. In particular, statistical knowledge consists of only two such variables, while policy knowledge consists of eight. Remarkably, however, several factors have larger and more significant coefficients for statistical knowledge than for policy knowledge. The citizenship reminder experimental condition appreciably affects statistical knowledge ( $\beta=9.66$ ,  $p=.01$ ), but not policy knowledge ( $\beta=1.54$ ,  $p=.21$ ). Apparently, then, the citizenship reminder results in a careful attention to detail that helps with learning statistical facts. Political reflection also seems to matter more for statistical than policy knowledge ( $\beta=2.77$ ,  $p=.05$  vs.  $\beta=1.1$ ,  $p=.08$ ). There are also signs that authoritarian citizenship may have a larger negative effect on statistical knowledge ( $\beta=-1.60$ ,  $p=.08$  vs.  $\beta=-.79$ ,  $p=.06$ ), while deliberative citizenship concepts may have a larger positive effect on policy knowledge ( $\beta=2.71$ ,  $p<.001$  vs.  $\beta=.89$ ,  $p=.22$ ). These differences make sense in light of the greater effort involved in learning statistical details.

A key result is depicted in the second regression reported in Table 2. The coefficient of deliberative citizenship has a larger and more significant effect on decision knowledge in the discussion conditions than in the control conditions. Indeed, a post-hoc contrast indicates that the discussion and control condition coefficients are indeed significantly different ( $p=.03$ ). The coefficient for deliberative conceptions of citizenship is 2.5 times larger in the discussion conditions than in the control condition. (Discussion conditions were collapsed because there was no significant difference between them.) This suggests that for certain people deliberation promotes learning, despite an absence of main effects of deliberation for the sample as a whole. More specifically, given the coefficient differences and the distribution of deliberative citizenship in the sample, the deliberation conditions would yield 11.7-point higher decision knowledge (s.d.=21) than the control condition, all other things equal. Note, however, that deliberative citizenship has been centered at its mean value in the second regression of Table 2. If it were not, the main effect coefficients of Online and Face-to-face would be -12.0 and -10.2, respectively. This does not mean that discussion reduced knowledge. Rather, deliberative citizenship proves to be a powerful predictor of who learns in the discussion condition. Because its effect is

substantial and positive, the coefficients of the main effects have to move negative to counterbalance deliberative citizenship because there is no overall difference between discussion and control. The significantly greater impact of deliberative citizenship on learning in the discussion condition shows that *discussion does indeed promote learning, but the absence of main effects means that this learning is matched by the control group's learning*—learning that is not as mediated by deliberative citizenship. It is possible the anticipation of deliberation promoted learning while reading.

Some hints in the data suggest that for a few people, deliberative citizenship might have yielded higher overall learning. With main effects factored in, one contrast approaches significance: those with the highest level of deliberative citizenship in the f2f, no citizen reminder condition prove to have almost significantly greater decision knowledge than those with the highest level of deliberative citizenship in the control, no citizen reminder condition ( $p=.059$ ).

### INEQUALITY

Inequality in political knowledge after a deliberation must be considered relative to inequality in such knowledge in the broader population that does not get invited to a deliberation. Typically, at most a few percent of the population are sufficiently involved in a particular policy issue to be able to answer specific questions about the issue, resulting in extreme inequality in decision-pertinent knowledge. Sometimes only leaders have policy knowledge, itself an extreme type of inequality. The observed mean value of decision knowledge for this project is 73 (73% correct answers), suggesting that considerable learning took place and that the participants may well be far more equal after this deliberative experience and more equal with leaders and decision makers. The Gini coefficient for decision knowledge is .14, which indicates low overall inequality. This compares favorably, for example, with the U.S. income Gini of .41—also a politically pertinent number, as well as the Gini of income for the sample, .36.

Of course, the first regression of Table 2 also indicates disparities among participants. To get a better grasp of these disparities, expected decision knowledge was calculated for four high and low combinations of demographics and agency variables. High demographics or agency was defined as the mean value of each variable plus one standard deviation for positive coefficients (or minus one s.d. for negative coefficients). Low values were defined as the mean minus one standard deviation (or plus for negative coefficients). The expected decision knowledge values were: 41 for low demographics, low agency; 62 for low demographics, high agency; 73 for high demographics, low agency; and 94 for high demographics, high agency. Real learning took place even among those with poor demographics and agency. These people have a projected score of 41 on the decision knowledge test, while the expected value for random guessing on

the test was 25. Only 7% of participants actually scored 41 or less on the test. On the other hand, there is a considerable expected discrepancy between those with poor demographics and agency and those with good demographics and agency—53 points. Again, the number of participants with scores of 41 or less was small, suggesting that it is rare to have the worst combination of demographics and agency. On the other hand, low decision knowledge scores for disadvantaged groups is not merely a hypothetical: the 20 African-Americans in the sample with income and education one standard deviation below the mean or worse had an actual mean score of 42. There were 104 African-Americans in the sample. Also, the 42 people of any ethnicity with income and education a standard deviation below the mean or worse had an actual mean score of 44. The effects of demographics and agency are moderately comparable—with low demographics, high agency giving a score of 62 with the reverse giving a score of 73. This opens the hope that the agency variables, which should be more susceptible to change than demographics, could help reduce inequality.

#### **POSSIBLE AVENUES FOR INFLUENCING DECISION KNOWLEDGE**

Table 2 shows that demographics clearly play an important role in deliberative decision knowledge. It suggests that some people will benefit more from deliberation and may be more likely to adjust their views as a consequence of deliberation. The cumulative absolute raw coefficient for demographics in Table 2 is 10.2, while the value for non-demographic factors is 11.08 (excluding experimental condition terms, non-significant variables and political interest). Cumulative absolute beta coefficients are .58 and .65, respectively. While demographics play an important role, the overall impact of non-demographic factors is somewhat greater. Unequal capacities for learning in deliberative contexts might perhaps be addressable if various factors that affect learning could be influenced. Demographic variables cannot be readily changed, but it may be worth examining the extent to which various non-demographic factors are contextually modifiable.

**Table 3: Demographic and Motivational Underpinnings of Factors Influencing Decision Knowledge**

Dependent Variable:	R <sup>2</sup> of Regression of Demographics on Dependent Variable	R <sup>2</sup> of Regression of Introjected and Internalized Motivation on Dependent Variable
Deliberative Citizenship	.001	.060
Authoritarian Citizenship	.142	.028
Political Reflectiveness	.047	.225
Has Political Social Network	.062	.036
False Consensus	.109	.012
Social Cooperativeness Norm	.059	.051
General Political Knowledge	.328	.126

Two indicators may provide some insight into how contextually modifiable determinants of deliberative learning could be. First, if a non-demographic variable is appreciably explained by demographic variables, it is not likely to be a useful lever for addressing inequalities in deliberative learning. Second, variables that are significantly related to underlying motivational factors that have been shown in psychological research to be contextually changeable should be more promising as useful levers. Table 3 shows the proportion of explained variance ( $R^2$ ) obtained from regressing each of the non-demographic variables on demographics and on two underlying motivational factors that have been successfully experimentally manipulated by psychologists using instructions to subjects about how they should approach an activity—introjected and internalized motivation (Koestner et al. 1996; Plant and Ryan 1985).

With the exception of general political knowledge, the variables are minimally influenced by demographics. These variables have an appreciable effect on the outcome—with a cumulative absolute raw coefficient of 8.06, or 79% of the total raw effect of all demographics. The cumulative absolute beta coefficient is .44, or 77% of the total cumulative absolute coefficients of demographics. One of the variables, political reflectiveness, is appreciably influenced by the two motivational factors, introjected and internalized motivation. Political reflection plays an especially large role in learning statistical facts. Generalized political knowledge is also modestly affected. With the exception of false consensus, all the variables are significantly related to the combination of introjected and identified motivation (regression F-statistics  $p < .001$ ). Of course, a relationship with introjected and identified motivation is not the only avenue by which these variables could be malleable. Indeed, online deliberation directly ameliorates false consensus beliefs (Muhlberger 2006), which should help improve decision knowledge in the long-term.

## DISCUSSION AND CONCLUSION

This paper examines the sources of gains in decision-relevant knowledge during a deliberation experiment. Prior research has not generally been adequate to settle the question of whether learning (or, for that matter, attitude change) in deliberative contexts is due to discussion or information sources such as readings. The current study separates discussion and information by having an information-only control group. It also explores whether decision knowledge matters by testing its effect on attitude change. Finally, the paper investigates what individual-level factors account for learning in deliberative contexts. To do so, it introduces a theory of agency that suggests novel factors and may be beneficial to deliberation research generally.

Findings indicate that decision knowledge matters substantially for attitude change during the experiment (Table 1), and findings hint that more knowledgeable participants may have more of an effect on the policy attitudes of others (Table 1). **The study, however, finds no evidence that online or face-to-face discussion significantly increased overall decision knowledge over just reading and contemplating informative materials** (Table 2, first regression). A counter-explanation that growth in knowledge may have encountered a ceiling with the study's measure of knowledge does not stand up to scrutiny. Likewise, two tests to determine whether *some* discussion groups and not others might have succeeded in better educating their participants find no support for this counterhypothesis. A critic might maintain that we have not established that participants "really" deliberated. Our approach to insuring deliberation, however, is typical for many studies, including those that purportedly show the learning effects of deliberation—we created good, moderated conditions for discussion with a diverse sample of the public. Under such conditions, it seems plausible that at least a few discussion groups would have deliberated—yet sensitive statistical tests show no evidence that learning, above that in the control group, took place in even a few groups.

The findings do *not* show that deliberation does not affect decision knowledge, only that there is no evidence of an effect above that of readings and individual contemplation. There was a moderate 11 point overall decision knowledge gain attributable to the interaction of discussion and deliberative citizenship, which was matched by gains in the control condition, probably from contemplation. **Thus, the data do show that deliberation helps people learn, albeit no more than from contemplation.** Nevertheless, this 11-point gain due to deliberation was likely dwarfed by the growth of knowledge during the experiment. For reasons explained earlier, we believe that much of the 73-point average of decision knowledge was the result of learning during the experiment. Much of this growth would likely be due to reading. This would be the case if the total gain from deliberation is indeed on the order of 11 points or if, as seems plausible, factual knowledge gains from contemplating readings would be appreciably less than from doing the readings themselves.

The findings here do not address whether discussion led to forms of learning other than factual knowledge. Perhaps discussion cements factual knowledge better in memory, helps build conceptual sophistication, or builds awareness of countervailing viewpoints. These possibilities should be considered in future research, though they must also be considered in light of an additional finding—that discussion adds almost nothing to the substantial policy attitude changes in the current deliberation (Muhlberger 2005d). Thus, while there may be other types of deliberative learning present, these types of learning did not for the most part add to policy attitude changes by the end of the deliberation.

Whatever the impact of such alternative forms of learning or alternative test conditions, the findings in the current paper dispute the often-cited conclusion that deliberation has a special capacity to promote factual knowledge. It also suggests that those who wish to establish claims about deliberative learning should pay greater attention to methodology than has past research.

Given the importance of readings and contemplation for learning and the real possibility that most learning here was due to readings, how might those interested in advancing public political knowledge best do so? An important issue is how to motivate people to read the materials in the first place, and indeed deliberation may prove to be an important carrot, even if it is not the best treatment. The current study does suggest the value of deliberation as a motivational tool. Anecdotal evidence and open-ended survey comments by a number of control condition participants, who read and contemplated but did not discuss, indicated that they were very disappointed and bored. A disgruntled control participant asked one of the authors why she had been "punished." Far fewer control participants would likely have come to the experiment had they known in advance they would not be discussing. In contrast to control participants, discussion participants in the on-campus portion of this study indicated significantly greater motivation ( $p=.046$ ) to participate in online discussions in the next phase of the study, the at-home phase.

The findings here yield some advice for practitioners focused on enhancing the public's political knowledge. Deliberations should come with readings and there should be a strong expectation that people will in fact read them. If participants are brought to a central location to deliberate, time should be set aside for reading during the deliberation experience—unlike the design of the Deliberative Poll, which allows no time for reading. Not everyone will take the time to do the readings at home, perhaps especially those who are economically stressed or are poorly educated. The amount of time set aside for reading during the deliberative meeting should be sufficient to do the readings—the present study had 44% as much reading as discussion time. Making time for reading should maximize the learning effects of the deliberative experience and might reduce inequalities.

On the other hand, the value of readings (and contemplation) in deliberative learning suggests that alternative engagement methods might be used. Deliberation at a central physical meeting space is expensive, and if the main goal is to engage and inform as much of the public as possible, then finding ways to get large number of people to read may have a broader effect than big-meeting deliberations. One such method is the Televote (Becker and Slaton 2000; Slaton 1992), in which carefully constructed information materials are sent to a broad and representative sample of the public. Participants are asked to read the materials by a given date, discuss the materials with friends and family, and be

prepared to take a phone call to register their votes on a set of policy questions. With current technology, much of this process could be automated and placed on the Internet. Prior research on televoting provides evidence that large numbers of participants did in fact do the readings—the number of "Don't Know" responses is much lower than control samples, voters adopt sophisticated policy positions, and 65%-77% of participants report having read all the materials (Slaton 1992, p. 170). To enhance motivation, Televoters could be invited to online discussions or promised a chance of appearing in televised discussions if they prove especially knowledgeable. As with the Deliberative Poll, participants are extremely pleased with the Televote experience, and the Televote can be arranged to reach large numbers of people.

The liberal democratic underpinnings of much deliberation research, such as research on Deliberative Polling™, focuses this research on the pedagogical effects of deliberation in an effort to address a key problem of liberal democracy—the apathetic public. But with such a focus, deliberation should be considered relative to other pedagogical methods, including simply reading and contemplating. The current study finds that reading and contemplating do as well as discussion. Prior research does not dispute this result because it was not designed to separate the effects of readings and discussion. That reading begets learning should hardly astonish. Perhaps the liberal democratic focus on the pedagogical effects of deliberation has been excessive and researchers should consider a wider range of effects—deliberation may have value beyond addressing problems of liberal democracy. Agency theory may begin to suggest some avenues by which deliberation may affect deeper changes in people. Research in an agency theory vein has revealed that deliberation enhances citizen identity (Muhlberger 2005a) and makes people less susceptible to authoritarian attitudes (Muhlberger 2006). Researchers and practitioners should examine the value of deliberation in creating a sense of community, of interacting with like-minded people and of creating new kinds of solutions to problems, solutions that emerge from a renewed relation to the community.

**The agency theory approach in the current paper correctly suggested that political reflectiveness and conceptions of citizenship would matter for deliberative learning. Moreover, these agency variables prove significant while standard political attitudes either are insignificant or in the wrong direction (Table 2).** Indeed, were it not for one of the agency variables, this data would have yielded no evidence that people learn during deliberation. The fact that the agency variables affect not merely other attitudes but the accuracy of answers to knowledge questions provides a powerful demonstration of the validity of the agency variables. Deliberative conceptions of the responsibilities of good citizens proved particularly powerful in explaining decision knowledge. Also, deliberative citizenship is not merely a proxy for need for cognition (NFC).

Deliberative citizenship deserves more exploration in future research. The measure of deliberative citizenship in this paper is based on four dichotomous variables. Using continuous measures, deliberative citizenship may yield even more powerful effects. Future research can also examine indicators of unconscious mental structures regarding citizenship—such as speed of response to the citizenship questions, which was collected in this study.

The overall inequality of decision knowledge of study participants was quite low. The Gini coefficient of decision knowledge was small and compared very favorably with the U.S. income distribution. Of course, the comparison must be put in perspective because income is an essentially unbounded number and different knowledge questions would likely yield different Gini values. Nevertheless, we believe the knowledge test was a good one, tapping the core understandings necessary to making the policy decisions. The low Gini probably does indicate that decision knowledge was reasonably well distributed, particularly in comparison with other inequalities pertinent to politics, such as income. In addition, inequality in decision knowledge after the experiment should be compared with inequality before the experiment. For reasons discussed in the paper, it is likely that very few participants would have been able to correctly answer the knowledge questions prior to the experiment. If so, there were considerable gains in factual knowledge by almost all study participants. Such gains should have brought participants closer to equality with anyone who was knowledgeable about these issues prior to the experiment—whether other participants or policy makers.

Nevertheless, the findings in Table 2 indicate that socioeconomic characteristics significantly affect decision knowledge and thereby do create real inequality in knowledge among participants, albeit the agency variables serve as a countervailing force. In practice, at least some smaller subgroups did poorly with respect to acquiring knowledge—such as the 42 people in the study with low levels of income and education, of which 20 were African-American. These 42 people constitute 7.4% of the sample. While socioeconomic characteristics have the most powerful effect, agency variables also have substantial effects that help counterbalance socioeconomic disadvantages. Importantly, the agency variables are largely unrelated to socioeconomic characteristics (Table 3), and the political reflectiveness agency variable is strongly related to motivational variables that psychologists have successfully altered through participant instructions (Table 3). Reflectiveness powerfully affects statistical learning.

The findings suggest a number of bits of advice for increasing factual learning and reducing factual learning inequality in deliberative contexts. First, in online deliberations participants will learn more if they are reminded of their citizen role, as in the current study. This effect does not work in face-to-face discussion, but does work online or in no-discussion conditions. False consensus

beliefs, which suppress learning, are closely related to beliefs that are also ameliorated by online discussions (Muhlberger 2006), perhaps enhancing learning. Challenging participants' false consensus beliefs prior to discussion may also promote learning. Participants can be provided with information on just how diverse views are about a policy, and they can be encouraged to adopt norms of attending to the views of others. Political reflectiveness, which matters especially for statistical learning, might be enhanced by instructions to participants about how they should learn. Psychologists have altered variables important for reflectiveness by instructing participants to focus on the informative quality of their readings, not on whether they are personally right or wrong about the issue. More generally, it may be possible to enhance learning and reduce inequality by suggesting norms to participants that bolster deliberative conceptions of citizenship, the desirability of reflectiveness, and norms of social cooperativeness while challenging authoritarian notions of citizenship. In longer-run deliberative efforts, learning could be enhanced by assigning participants political discussion partners outside formal discussions (creating a political social network) and encouraging and facilitating the acquisition of general political knowledge—which has one of the most powerful effects on factual learning.

This paper has provided some initial evidence for the utility of agency theory. The theory suggests variables that greatly outperform standard political attitudes in explaining political learning, help ameliorate the appearance of socioeconomic inequality in learning, and suggest avenues by which learning can be improved—empowering deliberation participants as political agents. One agency theory variable, deliberative conceptions of citizenship, has nearly the impact of general political knowledge and more of an effect than income. We hope that agency theory will prove to be a fruitful framework for research based in deliberative democratic concerns rather than the liberal democratic ones that guide much of today's research.

## **APPENDIX A—CONFIRMATORY FACTOR RESULTS**

A two-factor model for decision knowledge has good indicators of model fit: Goodness of Fit Index, GFI=.98 (above .95 considered very good); Adjusted Goodness of Fit Index, AGFI=.95; Root Mean Square Error of Approximation, RMSEA=.06 (.05 and below considered good) with 90% confidence interval (CI) of .04 to .08; Bayes Information Criteria (BIC) of -89.8 (below zero indicates a model better than the saturation model); Hoelter's N of 292 (indicates the N at which the  $\chi^2$  test is significant; values above 200 considered good); and N=562. All confirmatory and exploratory analyses were conducted in the R statistical package. The questions measuring knowledge are multiple choice and therefore have two values, correct and incorrect. Analyses of all such dichotomous variables were conducted using tetrachoric correlations. Tetrachoric correlations

create some difficulties for model estimation, particularly for dichotomous variables that have very low variance. In the two-factor model estimated here, four of the 12 knowledge variables were removed to permit estimation.

An exploratory factor analysis suggests that 70 dichotomous citizen responsibility questions can be roughly divided into four categories: authoritarian notions of citizenship, active citizenship, inclusive citizenship, and nonsense questions. Only the first two of these are pertinent here. Confirmatory analyses of the authoritarian citizenship variables suggest a three-variable model. The fit of the three-variable authoritarian citizenship model is less than ideal, though perhaps not unexpected for tetrachoric correlations with low variation variables (GFI=.95; AGFI=.88; RMSEA=.11, CI of .9 to .13; BIC=-12.4; Hoelter's N=126; N=557). The fit for the same model with a standard covariance matrix is superb (GFI=.99; AGFI=.99; RMSEA=.001; BIC=-105.0; Hoelter's N=1040). The actual fit of continuous variables would likely lie between these extremes. The three-factor authoritarian citizenship model parallels findings in research on Right-Wing Authoritarianism (RWA). The three-factors appear to be: obedience to and respect for national symbols and leaders, condemnation of those who are not similarly respectful (e.g., flag desecrators), and religiousness. These parallel the three dimensions of Right-Wing Authoritarianism (Altemeyer 1981): obedience to authority, punitiveness toward out-groups, and traditionalism. Altemeyer combines all three of these correlated components into a single RWA scale. In prior research in the data underlying this paper, it was found that only the obedience and punitiveness dimensions of RWA correlated with authoritarian conceptions of government, suggesting that these dimensions are politically relevant (Muhlberger 2005c). Consequently, for purposes of this paper, the average of the variables composing the obedience and punitiveness notions of citizenship were used to construct a single authoritarian citizenship variable.

A two-factor confirmatory model fits the active notions of citizenship variables well (GFI=.97; AGFI=.94; RMSEA=.07, CI of .057 to .088; BIC=-106.47; Hoelter's N=219; N=558).

A final combined confirmatory model was constructed with variables measuring political reflectiveness (two questions), deliberative citizenship, political interest, internal political efficacy, and external political efficacy. It fits reasonably well (GFI=.95; AGFI=.92; RMSEA=.06, CI of .055 to .074; BIC=-362.55; Hoelter's N=221; N=558). Factor loadings are all in the expected directions and highly significant ( $z > 8.2$  for all).

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