INTERNET USES AND POLITICAL PARTICIPATION IN THE US: A RESOURCES MODEL OVER TIMES

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ABSTRACT

A growing body of literature finds a positive relationship between Internet use and political participation. These studies, however, produce conflicting results. Furthermore, few studies, examine how uses of the Internet influence different forms of political participation over multiple elections. In response, this article argues the Internet is a medium allowing for the development of civic skills through virtual-group membership. We argue not all Internet uses will have the same, if any, effect on specific forms of political participation. After providing findings that Internet use itself does not influence political participation, we develop a resource model to explain how uses of the Internet influence forms of political participation. Following the Civic Voluntarism Model (CVM), and using nationally representative post-election data, we find social uses of the Internet increase the likelihood of individuals to engage in time-based political acts during the 2008 and 2010 elections. These particular uses of the Internet, however, have minimal effects on the likelihood of voting. These findings support the theory that particular uses of the Internet produce a specific set of skills.

Key Words: Political participation, Internet, social media, voting, volunteering, Civic Voluntarism Model

INTRODUCTION

Did social networking sites (SNSs) influence the outcome of the 2016 U.S. presidential election? While fake news on SNSs influenced voting, SNSs did not affect voter turnout (Curry 2018; Gunther et al. 2018). This research produces a strange picture of SNSs influencing whom we vote for but not influencing if we show up to the polls (c.f. Bond et al. 2012).

Puzzles regarding the influence of SNSs – and the Internet in general – on political behavior are not new. In general, studies find a positive relationship between Internet use and political behaviors (Boulianne 2009; 2015). Research, however, produces inconsistent findings concerning how the Internet influences political behavior over time (Bimber and Copeland 2013; Copeland and Bimber 2015). The puzzle regarding the 2016 election is not a new one. It only adds to an important question: What leads to inconsistent findings concerning internet use and political participation?

This article theorizes that the Internet is a medium where individuals can develop resources that influence their civic and political behaviors. Resource models find that participation in groups produces civic skills (Brady et al. 1995; Verba et al. 1995). These civic skills, however, only increase participation in time-based political acts. Civic skills do not influence other forms of political participation. Following this literature, this article hypothesizes that participation in virtual groups will positively influence engagement in time-based acts while lacking this influence on voting.

To examine the Civic Voluntarism Model (CVM), I use data from the 2008 and 2010 Pew Internet and American Life Post-Election surveys. After showing that Internet use itself does not consistently influence forms of political participation, the article analyzes specific uses of the Internet. The analysis finds that those using SNSs, where virtual groups exist and civic skills develop, are more likely to volunteer but not vote. Over 30 robustness checks, including models with specific SNS actions akin to civic skills, support this finding.

These findings are significant for three reasons. First, this article develops a theory with empirical support that explains inconsistent findings within the literature. While not entirely novel, the theory advances the literature. Second, the Internet and how individuals interact with it are dynamic. To my knowledge, this is one of the few articles using large-N and RDD post-election data from 2008 and 2010 (Bimber and Copeland 2013; Copeland and Bimber 2015; Feezell, Conroy, and Guerrero 2016; Steinberg 2015).[1] This type of data is best to analyze hypotheses concerning internet use and political participation. Furthermore, these years are important to study because they include the social network and smartphone revolutions (Kellogg 2011; Quick 2009; Pew Research Center 2014).[2] These drastic changes provide a fruitful ground

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[1] Large-N and RDD data studies from the 2008 election (Hoffman 2012; Nam and Stromger-Galley 2012) and 2010 elections exist (Feezell 2016). Furthermore, large-N and RDD data from periods before these elections, such as August 2008, exist to study civic and political behaviors (Oser, Hooghe, and Marien 2013; Schlozman, Verba, and Brady 2010; Smith, Schlozman, Verba, and Brady 2009). These studies are valuable, but the latter cannot analyze the proposed theory thoroughly, as they lack data from the complete election cycle. Most importantly, these latter studies cannot compare voting to other political and civic behaviors.

[2] While data in this study are from 2008 and 2010, these data are still appropriate to test the theory. First, the data represent the best source of large-N RDD samples. Boulianne (2009) finds that internet use is less likely to be a significant explanatory variable in RDD samples. Furthermore, few RDD samples exist across elections. Examining multiple elections produces a more demanding test for the hypotheses, as general trends are being questioned instead of election-specific events. The data in this study provides a more challenging test of the hypotheses despite the age of the data. Second, smartphone and SNS use were increasing within the U.S. adult population by 2010. While use is more prevalent today, the data capture a period of acceleration in adopting these technologies. From 2008 to 2010,

for researchers to examine theories that explain the contemporary moment. Finally, the analysis is limited because Pew did not collect data on these questions after 2010. This article provides support for new data collection to examine these topics.

In the following two sections, the article examines the literature. It develops a theory that Internet uses that are analogous to physical behaviors will have similar influences on political behaviors. Two testable hypotheses arise. First, the frequency of Internet use does not have a consistent influence on political behaviors. Second, virtual-group membership increases the likelihood of participating in time-based acts. In the fourth section, I explain the data, variables, and methods utilized in the analysis. The main analysis follows, with a sixth section examining the results of 32 robustness checks. These robustness checks provide evidence that how an individual uses SNSs – not the use alone – fosters engagement in time-based political activity. Finally, the article concludes by discussing the relevance of the findings and directions for future research.

TIME IS NOT OF THE ESSENCE

Initial studies concerning Internet use argue it negatively influences the social bonds necessary for civic and political life by decreasing an individual's time/will to engage in face-to-face interaction (Anderson 2003; Davis 1999; Kraut et al. 1998; Nie and Erbring 2002; Putnam 2000; Winner 2003). These studies theorize that all Internet use has the same influence on behavior. Operationalized as either a binary measure of use/not use or as an ordinal/continuous measure of how much time an individual uses the Internet, these studies find the Internet has a

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smartphone users in the United States increased from 10.3% to 31% of all mobile subscribers, representing about a 200% increase in just two years (Kellogg 2011; Quick 2009). The percentage of U.S. adults with smartphones has increased from about 35% in 2011 to 85% in 2021 (Pew Research Center 2021a). The change in SNS use is even more minor during this period. The percentage of adults using SNSs grew from just under 30% to 60% from 2008 to 2010, according to one study (Pew Research Center 2014). Another study finds the percentage of U.S. adults using SNSs in 2010 was around 46% and is 72% in 2021 (Pew Recent Center 2021b). Growth in the use of Facebook and Twitter is even less dramatic. In 2012, 54% of American adults had used Facebook; this increased to 69% in 2021 (Pew Research Center 2021b). Twitter has seen a slower increase, as 13% of U.S. adults used the platform in 2012 compared to 23% in 2021 (Pew Research Center 2021b). Finally, the time spent on smartphones and social media per day has grown, but the data of this study still capture meaningful engagement with these technologies. In 2014, the average time spent on a smartphone in the U.S. was just over 2.5 hours a day; by 2019, the same population was nearing 4 hours a day on these devices (Wurmser 2019). In 2015, the average U.S. adult spent 66 minutes daily on SNSs, whereas they spend 82 minutes daily on these platforms in April 2020 (Williamson 2020). While smartphones and SNS use have increased in both prevalence and use, the data for this study captures when these technologies were becoming part of everyday life. Finally, the theory and hypotheses in this article test if SNSs affect political behaviors. Due to access and use of SNSs in 2008 and 2010, the hypotheses face a more challenging test from this data. If SNSs influence political behaviors, then data post-2010 evaluate the hypotheses in a more favorable environment as access and use increase. Steger, Williams, and Andolina (2010) find that younger Americans were more likely to engage with politics on SNSs in the 2008 election. Older Americans are more likely to be politically involved. Thus, as these older Americans increased their use of SNSs during the 2010s, the environment for testing the hypotheses becomes friendlier. Indeed, candidates, parties, and organizations are now more likely to use SNSs to engage citizens. For example, Steger, Williams, and Andolina (2010) find that Democrats were more likely to engage in online political activity in 2008. By 2010, Republicans were also using SNSs in a similar method to engage with potential voters (Quintanilla 2011). Throughout the past decade, the politicization of SNSs has increased in numerous manners (see Owen 2019 for a summary). The theory and hypotheses argue that SNSs are a tool that develops skills necessary for time-based political activities. The growth of access, use, and platforms during the 2010s only produces a friendlier environment for the development of civic skills. Thus, the data from 2008 and 2010 produces a demanding test of the hypotheses and theory.

negative influence on civic and political behaviors (Davis 1999; Davis, Elin and Reeher 2002; Kraut et al. 1998; Nie and Erbring 2002; Winner 2003).

The Internet, however, is not a singular force acting on individuals. It is a tool for communication. Why individuals use that tool influences its effect on their political and civic behaviors. That information and communication technologies lack a singular effect on these behaviors is not an old argument. Putnam (1995) provides evidence that watching television reduces them. Norris (1996), however, finds, depending on the content the individual watches, watching television has different influences on behavior. While most television is for entertainment, those using the television for news and current affairs programs are more likely to engage in political and civic behaviors (Norris 1996).

As the relationship between television use and civic engagement is complex, so is the relationship between Internet use and civic engagement. In the 1990s and early 2000s, most Internet users obtained static information focused on entertainment (Littau 2009; Pew 1999). Since most Internet users shared the same experience, early studies using binary or time-based measures of Internet use failed to capture the complex relationship between Internet use and civic engagement. For example, studies that examined those using the Internet to get political information (Tolbert and McNeal 2003) or who developed Internet skills (Weber et al. 2003) find these Internet uses have a positive relationship with civic engagement.

Hypothesis 1: Time spent on the Internet does not consistently and significantly predict civic and political participation.

This hypothesis is not novel, as researchers do examine how specific Internet uses affect civic and political behavior (Bimber and Copeland 2013; Bode 2012; Bode, Vraga, Borah, and Shah 2014; Copeland and Bimber 2015; Feezell 2016; Feezell et al. 2016; Gibson and McAllister 2013; Gil de Zuniga et al. 2010; Hoffman 2012; Kahne et al. 2013; Kittilson and Dalton 2011; Nam and Stromer-Galley 2012; Oser, Hooghe, and Marien 2013; Pasek et al. 2009; Popa et al. 2016; Quintelier and Vissers 2008; Shah et al. 2001; Steinberg 2015; Strandberg 2014; Vissers and Stolle 2014b; Vraga et al. 2015; Yang and DeHart 2016). It is, however, essential to test. The next section argues that some Internet uses develop resources and skills to engage in political behaviors. The theory, therefore, suggests Internet use, as a general experience, does not influence political participation. In order to support this theory, the analysis must first show that time spent on the Internet lacks a consistent relationship with forms of political participation.

CIVIC SKILLS FROM THE DIGITAL TRAINING GROUND

Group membership increases the likelihood of civic and political participation (Ayala 2000; Brady et al. 1995; Hausknecht 1962; Kwak et al. 2004; Lane 1959; Putnam 2000; Teorell 2003; Theiss-Morse and Hibbing 2005; Verba et al. 1995). *Voice and Equality* finds this relationship is due to the resources of civic skills. The CVM argues that active group membership develops civic skills (Verba et al. 1995). Civic skills then increase the likelihood of an individual participating in political acts requiring time and effort while not affecting their likelihood of voting, contributing to political campaigns, or having political discussions (Verba et al. 1995, 358).

Civic skills develop in physical and virtual groups. Virtual groups are groups that primarily exist, communicate, and meet through the Internet. All groups exist to achieve a common goal of their members. Those goals can be to watch the neighborhood for security purposes, perform a religious celebration, or share thoughts about the newest movie. In order for groups to achieve their goals, they require active members. Any active membership in a group leads to the development of civic skills.

For example, a virtual group may want its members to write emails, a civic skill, to save their favorite Netflix show. Some members will need to post messages to communicate their goals and motivate others to act. Posting a message in a virtual group is analogous to the civic skill of giving a speech in a physical group. Both require an individual to express information in a manner to achieve a goal. Even though one may be performed on a keyboard and the other by voice, both members develop civic skills.

As the construction of a community center provides a space for physical groups to meet, platforms allowing individuals to form and join virtual groups, such as SNSs, assist in developing virtual groups.

Hypothesis 2: SNS use increases an individual's likelihood of participating in time-based political activities, such as volunteering for a campaign.

Past studies find a positive and significant relationship between SNS use and time-based acts in online and offline environments (Bod, 2012; Bode et al. 2014; Kahne et al. 2013; Pasek et al. 2009; Vissers and Stolle 2014a; Yang and DeHart 2016). These studies argue that the relationship between SNS use and time-based acts is due to creating norms, developing trust in others, generating social capital, improving political self-efficacy, or group participation in general. The theory of this article argues SNSs increase participation in time-based political acts because SNSs users are more likely to be members of virtual groups, which develops their civic skills.

Although recent studies do not make the theoretical connection between virtual groups and civic skills, their results support this theory (Gil de Zuniga et al. 2010; Ito et al. 2009; Jenkins et al. 2007; Ostman 2012; Strandberg 2014). For example, Gil de Zuniga et al. (2010) defines online expressive participation through an index of those emailing a newspaper or magazine editor, emailing a politician, or signing an online petition. Writing an email to a periodical or politician is analogous to writing a letter, which is a civic skill. The authors define online political messaging through an index of sending a political email to friends or a news story to friends. This measure is similar to Verba et al.'s (1995) operationalization of having political discussions with friends. Finally, Gil de Zuniga et al. (2010) operationalize offline political participation as an index of those who attended a political meeting, rally, or speech; worked for a political candidate or party; or contributed money to a political campaign. Offline political participation, therefore, is mostly measuring time-based acts. The article finds that online expressive participation (i.e., civic skills) increases the likelihood of offline political participation (i.e., time-based acts) while online political messaging (i.e., non-civic skills) has no influence. The resource model theory of this article is consistent with these findings.

Thus, this theory differs from recent literature that examines Internet use and political participation in two important ways (Bimber and Copeland 2013; Bode 2012; Bode et al. 2014; Copeland and Bimber 2015; Feezell et al. 2016; Gibson and McAllister 2013; Gil de Zuniga et al. 2010; Hoffman 2012; Kahne et al. 2013; Pasek et al. 2009; Popa et al. 2016; Steinberg 2015;

Strandberg 2014; Vissers and Stolle 2014a; Vraga et al. 2015; Yang and DeHart 2016). First, some studies create a measure of online political behavior through an index of multiple activities. While these indexes sometimes have high-reliability coefficients, the CVM shows researchers should not combine political behaviors explained by different resources. For example, Hoffman (2012) creates an index measure of online political behavior to test the CVM explicitly. This dependent variable combines the online behaviors of donating money, signing up to volunteer, joining a political group on a SNS, "friending" a candidate on a SNS, and customizing a web page to display political information. The KR-20 reliability score for the variable is 0.58. This score captures the internal consistency of a measure. A score above 0.70 is acceptable; one above 0.80 is preferred, and a score above 0.90 is considered excellent (Wombacher 2018). The theory of this article suggests the reliability score in Hoffman (2012) is below acceptable measures for internal consistency because the index combines political behaviors requiring different resources. Thus, this article offers, at the very least, an accurate test of the CVM.

Second, few studies use large-N RDD data over multiple elections (Bimber and Copeland 2013; Copeland and Bimber 2015; Feezell et al. 2016; Steinberg 2015). While these studies examine if consistent relationships exist across time, there are limitations. Using ANES data, Bimber and Copeland (2013) and Copeland and Bimber (2015) can only test if Internet use to gain information about the election influences forms of political behavior. Steinberg (2015) and Feezell et al. (2016) can produce multiple measures of Internet use but only test if these measures influence voting. Thus, this study differs from these four well-research articles, as it tests if multiple uses of the Internet influences multiple forms of political behavior over time.

METHODOLOGY AND DATA

Pew's 2008 and 2010 Internet & American Life Post-Election Surveys provide the best data to test the hypotheses. The surveys use an RDD process to capture a representative sample of over 2,250 adults across the continental U.S. in both elections (Smith, 2008; Smith and Rainie, 2010). This data allows for a stricter test of the hypotheses, as RDD samples are less likely to find a significant relationship between Internet use and political participation (Boulianne 2009). Data limitations restrict this analysis to 2008 and 2010. Data from 2012-2020 lacks the necessary questions to perform this analysis. This analysis, therefore, serves as a foundation for why data collection on these crucial variables needs to be resumed.

Dependent Variables

Following Verba et al.'s (1995) operationalization, I code political participation into three forms: voting, time-based acts, and political contributions. The dependent variables are dichotomous. I code respondents saying they did not participate as 0 and those who did as 1.

There are important notes about the questions forming the measures of the latter two variables. First, the surveys capture a time-based act by asking if individuals signed up for volunteer activities related to the campaign through the Internet. Individuals that volunteered but did not use the Internet to sign up are not part of this variable. This question is beneficial to test the hypotheses. If an individual develops civic skills in a virtual group, he/she should sign up to volunteer through his/her virtual group on the Internet – not through a physical source. Thus, this dependent variable helps to reduce the endogeneity problem, as it only includes individuals that signed up through the Internet to volunteer. While it does not remove the endogeneity issue of physical-group membership and civic skills developed in physical groups, this does its best to recognize and address the issue. Second, and similarly, the surveys capture political contributions by asking if they donated online for a candidate.

Explanatory Variables

This article uses the frequency of Internet use at home to test the first hypothesis. This variable exists on a seven-point ordinal scale. It exists from 0 (those who never use the Internet at home) to 6 (those who use the Internet several times a day at home).

Virtual-group membership is operationalized through SNS use to test the second hypothesis. Pew asks respondents if they "…ever use the Internet to use a social networking site like MySpace, Facebook or LinkedIn.com." Respondents who never use SNSs are coded as 0. Those who used SNSs but not yesterday are coded as 1. Respondents who used SNSs yesterday are coded as 2.

SNS use is a weak measure of virtual-group membership – and civic skills – for multiple reasons. First, while SNSs host virtual groups, not all users of SNSs engage with virtual groups. Second, the measure does not capture what type of activity and the amount of time an individual engages with their virtual group. The measure cannot separate the virtual group member who is just a member from the organizer of an event. The measure, therefore, cannot distinguish those who have higher levels of civic skills from those with lower levels of civic skills, let alone if SNS use is for virtual groups or other reasons. A weak measure is a strength of this article. If the explanatory variable supports the alternative hypothesis, it suggests an accurate measure of virtual-group membership and civic skills should produce more substantial support of the hypothesis.

While the surveys ask if respondents engage in specific online activities analogous to civic skills, this article uses these measures for robustness checks for three reasons. First, Pew did not ask the question with the same wording in 2008 and 2010. While similar questions exist in both surveys,[3] the change in wording could influence the reliability of the measure. Second, and more importantly, these questions concern individuals engaging in a civic skill for explicitly political reasons. The CVM finds that political interest is a crucial variable in explaining participation. Without a direct control for political interest, using these measures of civic skills could be capturing the effect of political interest instead of civic skills. Finally, the CVM theorizes that all types of groups develop civic skills. While most studies examine if political uses of the Internet influence behavior, results suggest that actions in non-political groups on the Internet promote civic engagement (Kahne et al. 2013). Thus, by operationalizing civic skills through SNS use the explanatory variable tests a weak measure, void of explicit political interest, which the theory argues should support the alternative hypothesis generated by the theory.

Control Variables

The CVM controls for a respondent's level of education, income, age, partisan strength, voter registration, employment status, and religious attendance. The data allows for these controls to be coded and included in the same manner in this analysis. In addition, the analysis incorporates other control variables as proxy measures for missing CVM variables or other possible resources.

The level of trust in government is used as a proxy for political efficacy, which is significant in the CVM. If an individual is a parent is included because a measure of free time does not exist in the Pew data. The CVM finds free time is significant in explaining some behaviors. Parents should have less free time than non-parents. Newspaper reading habits are part of the models because Putnam (1995; 2000) finds reading the newspaper is significant in predicting physical-group membership. Physical groups are an alternative source for the development of civic skills. Since the Pew data does not include a measure of physical-group

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[3] These two similar questions are question 26a in the 2008 Pew survey and question 18i in the 2010 Pew survey.

membership, newspaper reading habits are a proxy to help address the endogeneity problem resulting from membership in these groups. Furthermore, newspaper readers are likely to have more political information and interest, other necessary controls lacking in the Pew data (Lee and Wei 2008).

Sex and race are included in the models because the 2008 and 2010 elections made these demographics salient. While the Pew data does not contain questions to measure political interest, past studies utilizing this data use partisan strength to capture political interest (Steinberg 2015). Verba et al. (1995) also find a statistically significant correlation between partisan strength and political interest (348). Finally, the models control for those who use the Internet to get news about the election. Studies find that using the Internet for information can influence political behavior, although these findings are inconsistent over time (Bimber and Copeland 2013; Boulianne 2009; Copeland and Bimber 2015).[4]

Table 1 – Expected Relationship Between Dependent, Explanatory, and Robustness Variables

Variables	*Voting*	*Volunteering*	*Donating*
Internet Use Frequency	Not Significant	Not Significant	Not Significant
SNS Use	Not Significant	Positive	Not Significant
Internet News Use	Positive	Positive	Positive
Political Comment in Online Group (Actualized Internet Use)	Not Significant	Positive	Not Significant
Election Information from SNS	Positive	Positive	Positive
Posted Comment about Election on SNS	Not Significant	Positive	Not Significant
Started or Joined Political Group on SNS	Not Significant	Positive	Not Significant
Dutiful Internet Use	Positive	Not Significant	Positive

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[4] See Table S.4 in the Supplemental Appendix shows the results of the probit model with the six-point measure of using the Internet to get news and information about the election. Of the 51 coefficients in the three regressions, there are only four differences between the models. None of these differences influence the explanatory variable. In the model using the three-point measure, a respondent's education level and being an African American are significant at the 95%-level regarding those who used the Internet to volunteer. In the six-point measure model, a respondent's education level does not reach traditional levels of significance; a respondent being an African American reaches the 90%-level of significance with a P-value of 0.067. Full-time employment is also significant at the 90%-level significance in the model concerning donating that uses a three-measure of Internet news, while it reaches the 95%-level of significance in the model for donating that uses a six-point measure. Finally, the coefficient for trust with regards to donating is not significant in either regression, but it is positive in the model using a six-point measure and negative in the model using a three-point measure. With most of the coefficients retaining the same direction and statistical significance across the models, I move forward in the analysis using the three-point measure to produce equivalent models between 2008 and 2010.

Appendix A in the Supplemental Appendix explains the coding of the control variables. Furthermore, Tables S.1 and S.2 in the Supplemental Appendix provide descriptive statistics for all control, explanatory, and robustness check variables. Table 1 provides the expected relationship between the explanatory/robustness check and dependent variables.

Methodology

The analysis uses probit regressions since the dependent variables are dichotomous. As Long (1997) demonstrates, "The choice between the logit and probit models is largely one of convenience and convention, since the substantive results are generally indistinguishable" (83). Logit and probit analyses rest on three assumptions. The only difference between the assumptions of these binary response models is the conditional variance of the error term. Logit models assume the Var $(\varepsilon \mid x) = 1$, whereas probit models assume Var $(\varepsilon \mid x) = \pi^2/3$ (Long 1997, 47). These assumptions are arbitrary, cannot be tested, and are necessary for the models (Long 1997, 47). Logit and probit statistical methods do not produce different results with regards to statistical testing. Thus, researchers are free to use either logit or probit methodologies when studying models with a dichotomous dependent variable, as the choice between these statistical methods is a matter of preference.

Three tables of probit regressions form the main analysis. The regressions examine the three dependent variables in two different elections. The first table replicates the CVM using only variables within the Pew data and Verba et al.'s (1995) analysis. This replication shows that the Pew data is appropriate to test the CVM. The second table utilizes the frequency of Internet use to test the first hypothesis. The third table tests the second hypothesis.

The analysis runs five robustness checks concerning the third table. These robustness checks provide additional tests of the hypotheses. The explanatory variables in these checks capture civic skills or were explanatory variables in other studies. However, these explanatory variables provide a more favorable test of the hypotheses as they all concern political activities. Since the Pew data is missing a variable to control for political interest, the explanatory variables in the robustness check are likely to correlate with this attribute. Unable to control for political interest, the main analysis tests the hypotheses in the more demanding setting before proceeding to additional analyses with variables more likely to support the hypotheses.

The value of probit coefficients only provides a variable's directionality and statistical significance (Long, 1997). The analysis uses graphs of the predicted probabilities to provide substantive interpretations of the results.

ANALYSIS

Table 2 - Replication of *Voice and Equality* Table 12.7

Variables	*Voting in 2008*	*Voting in 2010*	*Volunteering in 2008*	*Volunteering in 2010*	*Donating in 2008*	*Donating in 2010*
Education	0.049	0.137***	0.107*	0.096*	0.119**	0.172***
	(0. 038)	(0.028)	(0.047)	(0.049)	(0.041)	(0.053)
Family Income	0.086**	0.068***	-0.013	-0.005	0.061*	0.017
	(0.028)	(0.019)	(0.032)	(0.030)	(0.023)	(0.032)
Religious Attendance	0.041		-0.005		-0.065*	
	(0.032)		(0.036)		(0.032)	
Partisan Strength	0.335***	0.159**	0.131	0.136	0.166	0.265*
	(0.072)	(0.055)	(0.108)	(0.098)	(0.094)	(0.112)
Registered to Vote	2.884***	2.935***	0.724	0.311	0.509	0.490
	(0.163)	(0.243)	(0.430)	(0.217)	(0.336)	(0.298)
Age	0.008*	0.022***	-0.011*	-0.005	-0.000	0.004
	(0.004)	(0.003)	(0.005)	(0.005)	(0.004)	(0.005)
Full-Time Employment	0.047	0.081	-0.106	-0.344	-0.252	-0.261
	(0.163)	(0.118)	(0.190)	(0.184)	(0.161)	(0.184)
Part-Time Employment	0.083	-0.044	0.019	-0.097	-0.246	-0.251
	(0.209)	(0.150)	(0.234)	(0.226)	(0.206)	(0.249)
Unemployed	-0.016	-0.031	-0.178	0.099	-0.337	-0.107
	(0.207)	(0.145)	(0.265)	(0.217)	(0.234)	(0.243)
Constant	-3.248***	-4.635***	-2.315***	-2.397***	-2.677***	-3.844***
	(0.376)	(0.359)	(0.601)	(0.448)	(0.507)	(0.557)
N	1686	1686	986	1276	986	1276
Pseudo R²	0.5298	0.3963	0.0289	0.0332	0.0429	0.0748

*** = p-value of 0.001 or less (two tail)

** = p-value of 0.01 or less (two tail)

* = p-value of 0.05 or less (two tail)

In general, the replication of the CVM using Pew data produces similar findings to those of Verba et al. (1995). Voting and time-based acts overwhelmingly have the same relationships between explanatory and dependent variables.

Intriguingly, the replication of the CVM for donations deviates from expectations. Income and partisan strength are not statistically significant in explaining donations while education is. This finding could be evidence that political campaigns court physical and online donations differently. Smith et al. (2009b) finds that income has a greater influence on offline

donations than online donations. This article does not investigate this difference. It only notes that the replication of the CVM for online donating deviates from expectations. This article focuses on the political behaviors of voting and volunteering. It reports the results of the regressions for donating, however, for transparency and as a potential source for future research.

The findings from Table 3 support the first hypothesis; frequency of Internet use lacks a consistent relationship with participation. Regarding voting, the frequency of Internet use weakly increases the behavior in 2008 but is insignificant in 2010. While the frequency of Internet use significantly increases the likelihood of volunteering in 2008, it had no significant effect in 2010. General Internet use, therefore, lacks a consistent and significant relationship with participation over time.

Table 4 examines hypothesis 2. The regressions include two types of Internet uses; the primacy of using the Internet to get news about the election and the frequency of SNS use. The results show mixed support regarding political participation and those using the Internet to get information. While Internet news use increases the statistical likelihood of individuals volunteering in 2008 and 2010, it lacks this relationship with voting in both elections. Table 4, therefore, provides mixed support for Boulianne's (2009) findings that using the Internet for information has a positive influence on political participation. Instead, the findings support Bimber and Copeland's (2013) and Copeland and Bimber's (2015) results that show an inconsistent relationship between using the Internet to get information and political participation.

Hypothesis 2, however, tests if virtual groups increase the likelihood of engaging in time-based acts. Remember, as described above, SNS use is a weak measure of membership in virtual groups and an even weaker measure of civic skills. Despite the weakness of the measure, Table 4 supports hypothesis 2, as SNS use significantly increases the likelihood of volunteering in the 2008 and 2010 elections, even when controlling for using the Internet to get information. Furthermore, Table 4 supports hypothesis 2 and the expectations of the CVM, as SNS use does not reach traditional levels of statistical significance as an explanation for voting.

Table 3 - Frequency of Home Internet Use as Poor Measure

Variables	Voting in 2008	Voting in 2010	Volunteering in 2008	Volunteering in 2010	Donating in 2008	Donating in 2010
Frequency of Internet Use	0.070 (0.040)	0.038 (0.030)	0.193*** (0.058)	0.033 (0.045)	0.063 (0.044)	0.090 (0.050)
Education	0.015 (0.052)	0.126*** (0.036)	0.101* (0.051)	0.064 (0.053)	0.124** (0.044)	0.146** (0.057)
Family Income	0.052 (0.037)	0.032 (0.024)	-0.022 (0.035)	-0.007 (0.033)	0.072* (0.032)	0.004 (0.034)
Religious Attendance	0.046 (0.043)		-0.005 (0.039)		-0.053 (0.034)	
Partisan Strength	0.389*** (0.098)	0.189** (0.067)	0.176 (0.118)	0.103 (0.106)	0.162 (0.100)	0.237* (0.117)
Registered to Vote	2.960*** (0.211)	3.121*** (0.380)	0.678 (0.467)	0.269 (0.234)	0.462 (0.351)	0.448 (0.307)
Age	0.013* (0.006)	0.027*** (0.004)	-0.013* (0.005)	-0.004 (0.005)	-0.001 (0.005)	0.006 (0.005)

Full-Time Employment	-0.025 (0.228)	0.000 (0.150)	-0.035 (0.207)	-0.383 (0.199)	-0.279 (0.174)	-0.203 (0.192)
Part-Time Employment	-0.113 (0.286)	-0.112 (0.186)	0.180 (0.253)	-0.037 (0.244)	-0.161 (0.223)	-0.283 (0.267)
Unemployed	-0.136 (0.295)	-0.101 (0.183)	-0.073 (0.285)	0.141 (0.231)	-0.260 (0.247)	-0.069 (0.251)
African American	0.363 (0.316)	0.111 (0.154)	0.394 (0.207)	0.398* (0.192)	0.310 (0.198)	-0.119 (0.248)
Hispanic	-0.101 (0.248)	-0.010 (0.184)	0.425 (0.228)	-0.332 (0.323)	0.220 (0.224)	-0.189 (0.337)
Male	-0.197 (0.149)	0.210* (0.098)	0.155 (0.133)	0.304* (0.135)	0.185 (0.115)	0.198 (0.135)
Parent of a Child	-0.008 (0.149)	0.095 (0.105)	-0.295* (0.138)	-0.152 (0.159)	-0.220 (0.127)	-0.056 (0.164)
Newspaper	0.185 (0.117)	0.155* (0.071)	0.049 (0.103)	-0.106 (0.102)	-0.159 (0.094)	-0.143 (0.100)
Trust	0.121 (0.121)	-0.045 (0.080)	-0.204 (0.116)	0.000 (0.111)	-0.030 (0.099)	0.112 (0.108)
Constant	3.592*** (0.580)	5.045*** (0.532)	3.124*** (0.739)	-2.432*** (0.538)	-3.037*** (0.595)	-4.234*** (0.637)
N	1230	1201	943	1205	943	1205
Pseudo R² 0.5432 0.3772	0.0853	0.0609	0.0636	0.0872		

Note: All variables are coded either as increasing in magnitude or as a dummy-variable
*** = p-value of 0.001 or less (two tail)
** = p-value of 0.01 (two tail)
* = p-value of 0.05 (two tail)

Table 4 – Social Networks and Political Participation

Variables	Voting in 2008	Voting in 2010	Volunteering in 2008	Volunteering in 2010	Donating in 2008	Donating in 2010
Internet News Use	0.109 (0.097)	0.117 (0.072)	0.170* (0.081)	0.198* (0.097)	0.166* (0.071)	0.122 (0.098)
Social Network Use	0.037 (0.104)	0.043 (0.059)	0.233** (0.086)	0.219* (0.088)	0.152 (0.079)	0.113 (0.083)
Education	0.022 (0.052)	0.128*** (0.036)	0.107* (0.051)	0.051 (0.052)	0.123** (0.044)	0.159** (0.055)
Family Income	0.061 (0.036)	0.035 (0.024)	-0.003 (0.034)	-0.003 (0.034)	0.080* (0.032)	0.130 (0.034)
Religious Attendance	0.044 (0.042)		-0.010 (0.039)		-0.053 (0.034)	
Partisan Strength	0.396*** (0.098)	0.201** (0.067)	0.207 (0.121)	0.124 (0.110)	0.179 (0.101)	0.246* (0.118)
Registered to Vote	2.959*** (0.211)	3.133*** (0.381)	0.707 (0.473)	0.260 (0.237)	0.485 (0.357)	0.441 (0.302)
Age	0.013* (0.006)	0.028*** (0.004)	-0.007 (0.006)	0.002 (0.005)	0.004 (0.005)	0.008 (0.006)
Full-Time Employment	-0.090 (0.227)	0.001 (0.150)	-0.090 (0.207)	-0.365 (0.201)	-0.293 (0.175)	-0.210 (0.192)
Part-Time Employment	-0.168 (0.285)	-0.093 (0.186)	0.175 (0.255)	-0.020 (0.248)	-0.146 (0.224)	-0.249 (0.266)
Unemployed	-0.175 (0.295)	-0.082 (0.184)	-0.153 (0.289)	0.177 (0.235)	-0.290 (0.251)	-0.047 (0.251)
African American	0.355 (0.315)	0.129 (0.156)	0.405* (0.204)	0.457* (0.197)	0.317 (0.197)	-0.106 (0.249)
Hispanic	-0.108 (0.248)	-0.037 (0.185)	0.430 (0.225)	-0.336 (0.333)	0.229 (0.224)	-0.200 (0.339)
Male	-0.199 (0.149)	0.202* (0.100)	0.162 (0.133)	0.342* (0.140)	0.173 (0.116)	0.201 (0.137)
Parent of a Child	0.004 (0.149)	0.076 (0.105)	-0.252 (0.140)	-0.196 (0.163)	-0.198 (0.128)	-0.091 (0.165)
Newspaper	0.188 (0.118)	0.172* (0.072)	0.049 (0.106)	-0.057 (0.104)	-0.116 (0.096)	-0.115 (0.101)
Trust	0.135 (0.120)	-0.051 (0.080)	-0.214 (0.116)	-0.030 (0.114)	-0.034 (0.100)	0.105 (0.109)
Constant	-3.447***	-5.083***	-2.915***	-2.882***	-3.256***	-4.162***

	(0.587)	(0.532)	(0.723)	(0.551)	(0.598)	(0.619)
N	1231	1202	944	1206	944	1206
Pseudo R²	0.5414	0.3816	0.0852	0.0869	0.0741	0.0881

Note: All variables are coded either as increasing in magnitude or as a dummy-variable
*** = p-value of 0.001 or less (two tail)
** = p-value of 0.01 (two tail)
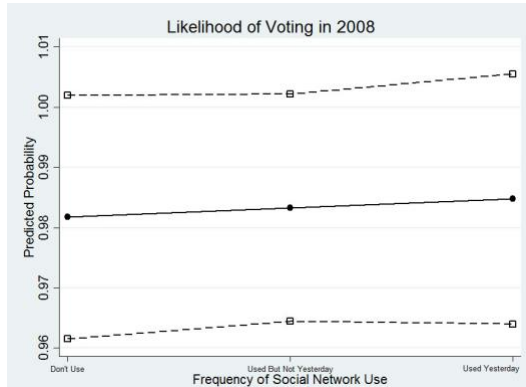* = p-value of 0.05 (two tail)

Figure 1

Figure 2
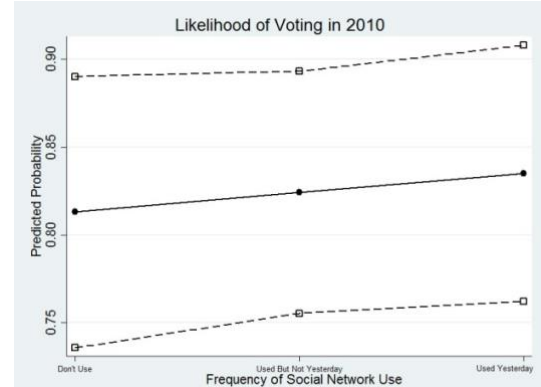
Figure 3

Figure 4

Note: The solid line in the figure represents the average predicted probability. The dotted lines in the figure represent the upper and lower limits of the 95-percent confidence interval.

Figures 1 through 4 provide predicted probabilities to examine the substantive influence of SNS use on political participation. The predicted probabilities hold all the variables, besides the frequency of SNS use, at their median levels. Table S.3, in the Supplemental Appendix, provides these val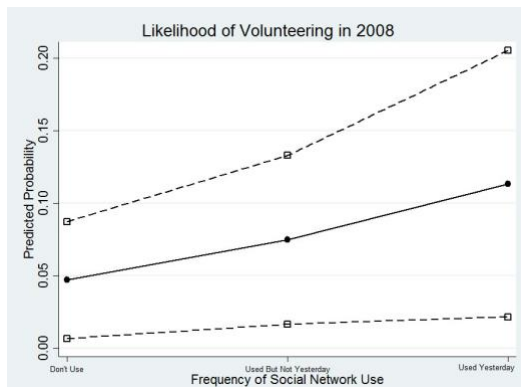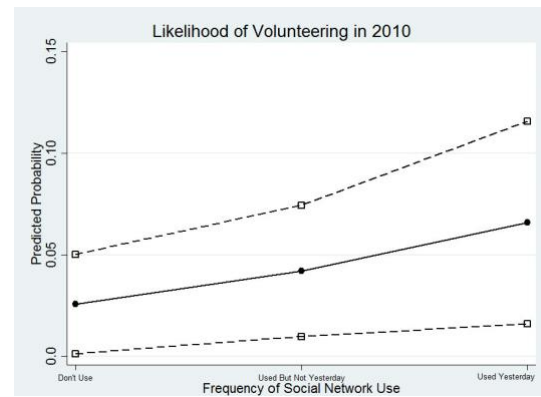ues. The solid lines in the figures represent the average predicted probability, while the dotted lines represent the upper and lower limits of the 95% confidence interval.

Figures 1 and 2 show that an increase in SNS use has no substantive influence on voting. In 2008, the median case that never uses SNS was 98.17% likely to vote, whereas the one that used SNS yesterday was 98.48% likely to vote. Using the same median case, Figures 3 and 4 show that SNS use has a substantive effect on the likelihood to volunteer. In 2008, the median case that never uses SNSs was 4.71% likely to volunteer. The median case who used SNSs yesterday, however, was 11.35% likely to volunteer. Therefore, the use of SNSs increases the probability of signing up to volunteer by over 140%. This change in probability is substantive. While the overall magnitude was not as high in 2010, the effect is similar. Those who used SNSs yesterday are still twice as likely to volunteer than those who do not use SNSs.

To further test the effect of the explanatory variable, predicted probabilities are generated for the case when Internet news use is at its maximum value and all other variables are at their median level. SNS use continues to have a substantive effect on the likelihood to volunteer. In 2008, under these conditions, the likelihood of volunteering increased from 9.11% to 19.25%. In 2010, the likelihood increased from 6.07% to 13.32%. In addition to Figures 3 and 4, these predicted probabilities demonstrate statistically significant and substantive results that support hypothesis 2. Furthermore, Figures 1 and 2 shows that SNS use lacks an effect on voting.

ROBUSTNESS CHECKS

A possible objection is that respondents are not using SNSs for virtual group activities and the development of civic skills. In order to examine this objection, I perform five robustness checks with 32 different regressions. Appendix B in the Supplemental Appendix contains a detailed discussion of the new variables.

The variables used in the robustness check conceptually measure civic skills better than SNS use. The robustness measures, however, are all politically motivated. Political interest is one of the main explanations of political participation. Without direct control for political interest, the robustness measures are more likely to support the second hypothesis due to capturing a respondent's political interest. Thus, the article uses a weaker explanatory variable to provide a more demanding test in the main analysis. While these robustness checks allow for additional tests of the hypotheses, the inability to control for political interest leaves open the possibility that interest in politics instead of the variables of interest are, at least partially, reasonability for any significant findings.

The Pew data allows digital civic skills to be explanatory variables, as preparing a speech for a group is a traditional civic skill. A similar activity for a virtual group member is writing a comment or post to their group. Table S.5 reruns the analysis of Table 4 but replaces SNS use with a dummy variable for those who post comments on an online discussion, listserv, or other online group related to political issues, the campaign, or election. Like Table 4, Table S.5 finds that posting a political comment in an online group has no influence on voting but significantly increases the likelihood of signing up to volunteer. Thus, Table S.5 provides additional evidence of the hypothesis; those practicing a civic skill, even with high levels of political interest, are more likely to volunteer but are not more likely to vote.

The second robustness check examines three specific uses of SNSs and how they influence forms of political participation. These specific uses are individuals getting campaign or candidate information from their SNSs; starting or joining a political group or cause on their SNSs; and posting political comments or questions on their SNSs. The theory predicts that starting or joining a group and posting comments in a virtual group should develop civic skills

that will increase the likelihood of engaging in time-based acts but not voting. Furthermore, it expects information seeking on SNSs not to influence time-based acts.

Table S.6 shows that using SNSs to get information about a campaign or candidates has no statistical influence on an individual's likelihood of voting or volunteering. Furthermore, like Table S.5, posting comments about the campaign or election in a SNS does not influence the likelihood of voting in 2008 or 2010. Posting comments about the campaign or election in a SNS, however, does increase the likelihood of volunteering in 2008. Joining or starting a political group or cause increases an individual's likelihood of volunteering in 2010. Thus, there is some support that online behaviors on SNSs, which are analogous to offline civic skills, increase the likelihood of time-based acts while not influencing voting.

Table S.7 replicates the resource model using the measures of Internet norms employed by Feezell et al. (2016). Table S.5 employs the measure of individuals who commented or posted about political issues as a type of civic skill. Feezell et al. (2016) use this measure as operationalizing citizens who have activated norms. The authors then use Pew's question concerning if individuals look for more information online about candidates' positions or voting records to operationalize citizens with dutiful norms. Feezell et al. (2016) state that one of the study's limitations is that it only examines these measures with regards to voting. Thus, the analysis extends that research.

Like Table S.5, Table S.7 finds that making political posts increases an individual's likelihood to volunteer in 2008 and 2010, but it does not influence if they vote. Those seeking information about candidates' positions or voting records have a greater likelihood of voting and volunteering in the 2010 election. This action, however, does not influence the likelihood of voting and volunteering in 2008. Without data from elections after 2010, it is impossible to know if these information-seeking findings are an anomaly, pattern of midterms, or mark a new behavior. The findings of Table S.7, however, provide additional support for the second hypothesis.

Table S.8 replicates Table S.7 but returns to using SNS use as the explanatory measure of civic skills instead of making a political post. By using those who seek information about candidates' positions or voting records, instead of the primacy of the Internet as a news source, the informational Internet use measure helps as a partial control variable for political interest. As expected, Table S.8 shows that using the Internet to get political information increases the likelihood of all forms of political participation, except voting in 2008. SNS use, however, continues only to increase the likelihood of volunteering. These results provide further support for the second hypothesis, as general SNS use still increases the likelihood of volunteering, even in the presence of a politically motivated online activity.

Finally, the data from 2010 provides an additional measure of a time-based act. The 2010 survey asks respondents if they "Use the Internet to organize or get information about in-person meetings to discuss political issues in the campaign." A similar question does not exist in the 2008 data. Table S.9 reruns the main analysis and the previous four robustness checks with the new dependent variable. The analysis, therefore, tests if the previous models applied only to the time-based act of volunteering or to time-based acts more generally in 2010. Table S.9 finds, in all five models, that the variable(s) that operationalize virtual-group membership or civic skills continue to be significant in increasing the likelihood of engaging in a time-based act. Furthermore, using the Internet for news and SNS to get election information does not significantly influence the likelihood of engaging in time-based acts. While using the Internet to seek information about candidates' positions or voting records (i.e., dutiful norm) does increase

the likelihood of volunteering, this variable correlates with political interest. What is relevant is that SNS use is still significant in explaining another operationalization of the dependent variables, which provides additional evidence of the resource model.

DISCUSSION AND CONCLUSION

This article suggests that the Internet is a medium allowing for multiple uses. Individuals using the Internet to engage in activities that are analogous to offline behaviors will gain similar skills. Thus, members of a virtual group will develop civic skills, which increase the likelihood of participating in time-based acts while not influencing other forms of political participation.

This article first tested if general Internet use consistently explains forms of political behavior to test this theory. Showing that this measure performs inconsistently, the article examines how SNS use influences the likelihood of different forms of political participation. SNSs facilitate virtual groups like a community center facilitates physical groups. Just like a community center, not every user of a SNS will be part of a group. Although a weak measure of virtual-group membership and civic skills, the analysis finds SNS use has a significant and positive relationship with volunteering in multiple elections. At the same time, SNS use lacks a significant influence on voting. Robustness checks with an additional 32 regression models provide additional support for the article's hypothesis. Through examining models that include specific uses of SNSs, an online civic skill, a different measure of using the Internet to get information, and another time-based act as a dependent variable, the robustness checks support that virtual-group membership and digital civic skills increase the likelihood of participating in time-based acts.

While this study provides findings supporting its theory, more work is necessary. First, the theory needs additional testing. Additional tests of this theory require a large-N survey representative of the general population that provides data to replicate the CVM and includes questions regarding uses of the Internet. Questions to gather data regarding political interest, political knowledge, political efficacy, civic skills (both offline and online), and the complete construction of dependent variables, such as time-based acts, are necessary for a more robust analysis.

Second, the data needs to stretch over multiple years to test if the findings are consistent. The Internet is a developing tool. How we use the Internet can change over time. Therefore, data from multiple years will track how technological developments allow an individual to use these tools to engage in political behavior. These developments include how the parties and candidates use the Internet. Steger et al. (2010) find Democrats were more likely to use SNSs in the 2008 election than Republicans. As the Internet changes, one party may be more apt to exploit the opportunities of technology. If the exploitation influences political behavior, such as increasing the number of donations, then the other political party may learn from the past election and embrace the same Internet use in the next election cycle to influence political behavior.

Third, political donations require specific attention, as the findings of this analysis produce a new puzzle for researchers. It is puzzling that the CVM variables existing in Verba et al. (1995) and the Pew data consistently explain voting and signing up to volunteer online, but do not perform in expected manner with online donations. Why are online donations different? Does income better explain physical donations because of the high cost of attending a political banquet, whereas online donations do not require this entry point? These are questions future research needs to examine.

Finally, future studies should collect enough data from each generation – Silent, Baby Boomers, Generation X, Millennials, and Gen Z – to test if generational effects exist. This article tried to perform such an analysis using the Pew 2008 and 2010 surveys. The data, however, contains too few respondents from the Millennials and Gen Z generations to complete the analysis. Additionally, running the regressions with the same variables for each generation proved futile. For example, the analysis uses if a respondent is a parent of a child eighteen or younger as a proxy for free-time – an important control variable for political participation. Respondents in the Silent generation, however, no longer have children under eighteen. Thus, when collecting data to test the article's theory, researchers should also make sure to perform stratified sampling for each generation to test and track generational effects.

While this article does not engage with the research regarding whether the Internet is reinforcing or mobilizing populations to engage in political participation, it theorizes and provides findings that those using the Internet for virtual groups and civic skills are likely to engage in political behavior. While the model cannot include a direct measure of political interest, the inclusion of variables that correlate to political interest – such as partisan strength (Steinberg 2015) – suggests that non-political group activity online can foster political participation (Kahne et al. 2013). Furthermore, the robustness checks, which examine a sub-population of those interested in politics, produce findings that support the main analysis. Furthermore, these robustness checks suggest that civic skills developed and practiced on the Internet influence political participation as predicted by the CVM. Thus, while the article does not inform us if the Internet is mobilizing new individuals to engage in politics or reinforcing the same cleavages, the article does suggest that those who use the Internet in specific ways can develop a particular set of skills they require to participate in civic and political life.

REFERENCES

Anderson, D. M. (2003). *Cautious Optimism about Online Politics and Citizenship*. In M. Cornfield & D. M. Anderson (Ed.), The Civic Web (pp. 19-34). Lanham, MD: Rowman & Littlefield Publishers, INC.

Ayala, L. J. (2000). Trained for Democracy: The Differing Effects of Voluntary and Involuntary Organizations on Political Participation. *Political Research Quarterly,* 53(1), 99-115.

Bimber, B. & Copeland, L. (2013). Digital Media and Traditional Political Participation Over Time in the U.S. *Journal of Information Technology & Politics*, 10(2), 125-137.

Bode, L. (2012). Facebooking It to the Polls: A Study in Online Social Networking and Political Behavior. *Journal of Information Technology & Politics*, 9(4), 352-369.

Bode, L., Vraga, E. K., Borah, P., & Shah, D. V. (2014). A New Space for Political Behavior: Political Science Networking and its Democratic Consequences. *Journal of Computer-Mediated Communication,* 19(3), 414-429.

Bond, R. M., Farris, C. J., Jones, J. J., Kramer A. D., Marlow C., Settle J. E., & Fowler J. H. (2012). A 61-million-person experiment in social influence and political mobilization. *Nature*, 489(7415), 295-298.

Boulianne, S. (2009). Does Internet Use Affect Engagement? A Meta-Analysis of Research. *Political Communication*, 26(2), 193-211.

Boulianne, S. (2015). Social Media Use and Participation: A Meta-Analysis of Current Research. *Information, Communication & Society,* 18(5), 524-538.

Brady, H. E., Verba S., & Schlozman, K. L. (1995). Beyond SES: A Resource Model of Political Participation. *The American Political Science Review,* 89(2), 271-294.

Copeland, L. & Bimber, B. (2015). Variation in the Relationship Between Digital Media Use and Political Participation in U.S. Elections Over Time, 1996-2012: Does Obama's Reelection Change the Picture? *Journal of Information Technology & Politics*, 12(1), 74-87.

Curry, K. E. (2018). Politics in the Social Media Era: The Relationship between Social Media Used and Political Participation During the 2016 United States Presidential Election. Dissertation. https://pdxscholar.library.pdx.edu/open_access_etds/4506. Accessed 10 December 2018.

Davis, R. (1999). *The Web of Politics: The Internet's Impact on the American Political System.* New York, NY: Oxford University Press.

Davis, S., Elin, L., & Reeher, G. (2002). *Click on Democracy: The Internet's Power to Change Political Apathy into Civic Action.* Boulder, CO: Westview Press.

Feezell, J. T. (2016). Predicting Online Political Participation: The Importance of Selection Bias and Selective Exposure in the Online Setting. *Political Research Quarterly*, 69(3), 495-509.

Feezell, J. T., Conroy, M., & Guerrero, M. (2016). Internet Use and Political Participation: Engaging Citizenship Norms Through Online Activities. *Journal of Information Technology & Politics* 13(2), 95-107.

Gil de Zuniga, H., Veenstra, A., Vraga, E., & Shah, D. (2010). Digital Democracy: Reimagining Pathways to Political Participation. *Journal of Information Technology & Politics*, 7(1), 36-51.

Gibson, R. K., & McAllister, I. (2013). Online Social Ties and Political Engagement. *Journal of Information Technology & Politics* 10(1), 21-34.

Gunther, R., Nisbet, E. C., & Beck P. (2018). Trump may owe his 2016 victory to 'fake news,' new study suggests. *The Conversation*. https://theconversation.com/trump-may-owe-his-2016-victory-to-fake-news-new-study-suggests-91538. Accessed 10 December 2018.

Hausknecht, M. (1962). *The Joiners: A sociological Description of Voluntary Association Membership in the United States.* New York, NY: The Bedminster Press.

Hoffman, L. H. (2012). Participation or Communication? An Explication of Political Activity in the Internet Age. *Journal of Information Technology & Politics*, 9(3), 217-233.

Kahne, J., Nam-Jin, L. & Feezell, J. T. (2013). The Civic and Political Significance of Online Participatory Cultures among Youth Transitioning to Adulthood. *Journal of Information Technology & Politics*, 10(1), 1-20.

Kellogg, Don. (2011). Among Mobile Phone Users, Hispanics, Asians Are Most-Likely Smartphone Owners in the U.S. Nielsen. http://www.nielsen.com/us/en/insights/news/2011/among-mobile-phone-users-hispanics-asians-are-most-likely-smartphone-owners-in-the-u-s.html. Accessed 29 May 2015.

Kittilson, M. C., & Dalton, R. J. (2011). Virtual Civil Society: The New Frontier of Social Capital? *Political Behavior,* 33(4), 625-644.

Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukopadhyay, T. & Scherlis, W. (1998). Internet Paradox: A Social Technology that Reduces Social Involvement and Psychological Well-Being? *American Psychologist,* 53(9), 1017-1031.

Kwak, N., Shah, D. V., & Holbert, R. L. (2004). Connecting, Trusting, and Participating: The Direct and Interactive Effects of Social Associations. *Political Research Quarterly,* 14(4), 437-455.

Lane, R. E. (1959). *Political Life: Why People Get Involved in Politics.* Glencoe, IL: The Free Press.

Lee, T., & Wei, L. (2008). How Newspaper Readership Affects Political Participation. *Newspaper Research Journal*, 29(3), 8-23.

Littau, J. (2009). The Virtual Social Capital of Online Communities: Media Use and Motivations as Predictors of Online and Offline Engagement via Six Measures of Community Strength. Dissertation. https://mospace.umsystem.edu/xmlui/bitstream/handle/10355/7026/research.pdf?sequence=3. Accessed 9 August 2015.

Long, J. S. (1997). *Regression Models for Categorical and Limited Dependent Variables*. Thousand Oaks, California: SAGE Publications, Inc.

Nam, T., & Stromer-Galley, J. (2012). The Democratic Divide in the 2008 U.S. Presidential Election. *Journal of Information Technology & Politics,* 9(2), 133-149.

Nie, N. H., & Erbring, L. (2002). Internet and Society: A Preliminary Report. *IT&Society,* 1(1), 275-283.

Norris, P. (1996). Does Television Erode Social Capital? A Reply to Putnam. *P.S.: Political Science and Politics,* 29(3), 474-480.

Oser, J., Hooghe, M., & Marien, S. (2013). Is Online Participation Distinct from Offline Participation? A Latent Class Analysis of Participation Types and Their Stratification. *Political Research Quarterly*, 66(1), 91-101.

Owen, D. (2019). The Past Decade and Future of Political Media: The Ascendance of Social Media. In Towards a New Enlightenment (347-365). BBVA, OpenMind Project. https://www.bbvaopenmind.com/en/articles/the-past-decade-and-future-of-political-media-the-ascendance-of-social-media/. Accessed 3 August 2021.

Pasek, J., more, e., & Romer, D. (2009). Realizing the Social Internet? Online Social Networking Meets Offline Civic Engagement. *Journal of Information Technology & Politics*, 6(3-4), 197-215.

Pew Research Center. (1999). The Internet News Audience Goes Ordinary. Report. http://www.people-press.org/1999/01/14/the-Internet-news-audience-goes-ordinary/. Accessed 31 January 2017.

Pew Research Center. (2008). November 2008 – Post Election. Dataset. http://www.pewInternet.org/datasets/november-2008-post-election/. Accessed 9 August 2015.

Pew Research Center. (2010). November 2010 – Post Election. Dataset. http://www.pewInternet.org/datasets/november-2010-post-election/. Accessed 9 August 2015.

Pew Research Center. (2014). Social Networking Fact Sheet. Pew Research Center. Fact Sheet. http://www.pewInternet.org/fact-sheets/social-networking-fact-sheet/. Accessed 29 May 2015.

Pew Research Center. (2021a). Mobile Fact Sheet. Fact Sheet. https://www.pewresearch.org/internet/fact-sheet/mobile/. Accessed 3 August 2021.

Pew Research Center. (2021b). Social Media Fact Sheet. Fact Sheet. https://www.pewresearch.org/internet/fact-sheet/social-media/. Accessed 3 August 2021.

Popa, S. A., Theocharis, Y., & Schnaudt, C. (2016). From Seeing the Writing on the Wall, to Getting Together for a Bowl: Direct and Compensating Effects of Facebook use on Offline Associational Membership. *Journal of Information Technology & Politics*, 13(3), 222-238.

Putnam, R. (1995). Tuning In, Tuning Out: The Strange Disappearance of Social Capital in America. *P.S.: Political Science Politics,* 28(4), 664-683.

Putnam, R. (2000). *Bowling Alone: The Collapse and Revival of American Community*. New York, NY: Simon & Schuster Paperbacks.

Quick, C. (2009). With Smartphone Adoption on the Rise, Opportunity for Marketers Calling. Nielsen. http://blog.nielsen.com/nielsenwire/online_mobile/with-smartphone-adoption-on-the-rise-opportunity-for-marketers-is-calling/. Accessed 29 May 2015.

Quintanilla, E. 2011. Republicans now as nimble as Democrats on social media, study finds. *The Christian Science Monitor*. https://www.csmonitor.com/USA/Politics/2011/0127/ Republicans-now-as-nimble-as-Democrats-on-social-media-study-finds. Accessed 3 August 2021.

Quintelier E., & Vissers, S. (2008). The Effect of Internet Use on Political Participation: An Analysis of Survey Results for 16-Year-Olds in Belgium. *Social Science Computer Review,* 26(4), 411-427.

Schlozman, K. L., Verba, S., & Brady, H. E. (2010). Weapon of the Strong? Participatory Inequality and the Internet. *Perspective on Politics*, 8(2), 487-509.

Shah, D. V., Kwak, N., & Holbert, R. L. (2001). 'Connecting' and 'Disconnecting' With Civic Life: Patterns of Internet Use and the Production of Social Capital. *Political Communication,* 18, 141-162.

Smith, A. (2008). About Us; Methodology. Pew Internet & American Life Project. Report. http://www.pewInternet.org/2008/12/30/about-us-methodology-8/. Accessed 9 August 2015.

Smith, A. (2011). The Internet and Campaign 2010. Report. http://www.pewInternet.org/2011/03/17/the- Internet-and-campaign-2010/. Accessed 31 January 2017.

Smith, A., Schlozman, K. L., Verba, S., & Brady, H. (2009a). *The Internet and Civic Engagement*. Pew Internet & American Life Project.

Smith, A., Schlozman, K. L., Verba, S., & Brady, H. (2009b). The Demographics of Online and Offline Political Participation. Report. http://www.pewInternet.org/2009/09/01/the-demographics-of-online-and-offline-political-participation/. Accessed 31 January 2017.

Smith, A., & Rainie L. (2010). Politics goes mobile. Pew Internet & American Life Project. http://www.pewInternet.org/2010/12/23/politics-goes-mobile/. Accessed 9 August 2015.

Steger, W. P., Williams, C. B., & Andolina, M. (2010). Political Use of Social Networks in 2008. *Presented at the 2010 Annual Conference of the American Political Science* Association. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1669535. Accessed 21 April 2013.

Steinberg, A. (2015). Exploring Web 2.0 Political Engagement: Is New Technology Reducing the Biases of Political Participation? *Electoral Studies*, 39, 102-116.

Strandberg, K. (2014). Mapping the Online Campaign Audience: An Analysis of Online Participation and Its Mobilizing Potential in the 2011 Finnish Parliamentary Campaign. *Journal of Information Technology & Politics*. 11(3), 276-290.

Teorell, J. (2003). Linking Social Capital to Political Participation: Voluntary Associations and Networks of Recruitment in Sweden. *Scandinavian Political Studies,* 26(1), 49-66.

Theiss-Morse, E., & Hibbing, J. R. (2005). Citizenship and Civic Engagement. *Annual Review of Political Science,* 8, 227-249.

Tolbert, C. J., & McNeal, R. A. (2003). Unraveling the Effects of the Internet on Political Participation? *Political Research Quarterly*, 56(2), 175-185.

Verba, S., Schlozman, K. L., and Brady, H. (1995). *Voice and Equality: Civic Voluntarism in American Politics.* Cambridge, MA: Harvard University Press.

Vissers, S., & Stolle, D. (2014a). Spill-Over Effects Between Facebook and On/Offline Political Participation? Evidence from a Two-Wave Panel Study. *Journal of Information Technology & Politics*, 11(3), 259-275.

Vissers, S., & Stolle, D. (2014b). The Internet and New Modes of Political Participation: Online Versus Offline Participation. *Information, Communication & Society*, 17(8), 937-955.

Vraga, E. K., Anderson, A. A., Kotcher, J. E., & Maibach, E. W. (2015). Issue-Specific Engagement: How Facebook Contributes to Opinion Leadership and Efficacy on Energy and Climate Issues. *Journal of Information Technology & Politics*, 12(2), 200-218.

Weber, L. M., Loumakis, A., & Bergman, J. (2003). Who Participates and Why?: An Analysis of Citizens on the Internet and Mass Public. *Social Science Computer Review*, 21(1), 26-42.

Williamson, D. A. (2020). U.S. Social Media Usage: How the Coronavirus is Changing Consumer Behavior. *eMarketer*. https://www.emarketer.com/content/us-social-media-usage. Accessed 3 August 2021.

Winner, L. (2003). *The Internet and Dreams of Democratic Renewal*. In M. Cornfield & D. M. Anderson (Ed.), The Civic Web (pp. 167-184). Lanham, MD: Rowman & Littlefield Publishers, Inc.

Wombacher, K. 2019. Reliability, Kuder-Richardson Formula. In M. Allen (Ed.), The SAGE Encyclopedia of Communication Research Methods (pp. 1418-1420). Thousand Oaks, CA: SAGE Publications, Inc.

Wurmser, Y. 2019. U.S. Time Spent with Mobile 2019: Smartphones Gain Minutes, but New Challengers Emerge. *eMarketer*. https://www.emarketer.com/content/us-time-spent-with-mobile-2019. Accessed 3 August 2021.

Yang, H. C., & DeHart, J. L. (2016). Social Media Use and Online Political Participation Among College Students during the U.S. Election 2012. *Social Media + Society,* 2(1), 1-18.

APPENDIX A: CONTROL VARIABLE CODING

Control Variables for the Civic Voluntarism Model

The first set of control variables capture control variables included in the analyses of the Civic Voluntarism Model (CVM), as created by Verba et al. (1995). These control variables include education, family income, age, partisan strength, if an individual is registered to vote, work status, and church attendance. While the Pew surveys provide a wealth of data, they are missing other important control variables used in the analyses of Verba et al. (1995). These missing control variables include vocabulary, job level, non-political organization, civic skills, political interest, political information, political efficacy, free time, English spoken at home, and Catholic religious preferences.[5] In the next section, I find and explain other control variables to help capture the missing control variables in the CVM. In the current section, however, I explain how I operationalize the Pew surveys to provide data for eight of the eleven important control variables identified by Verba et al.'s analyses (1995).

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[5] For an explanation of the construction of all of their control variables, see appendix B of Verba et al.'s (1995).

Both Pew surveys ask respondents, "What is the last grade or class you completed in school?" The responses range on a seven-point scale from 1 to 7. These include "None, or grades 1-8," "High school incomplete (grades 9-11)," "High school graduate (grade 12 or GED certificate)," "Technical, trade or vocational school AFTER high school," "Some college, no 4-year degree (includes associate degree)," "College graduate (B.S., B.A., or other 4-year degree)," and "Post-graduate training/professional school after college (toward a Masters/Ph.D., Law or Medical school." In addition, respondents who said they "Don't know" or "Refused" have their responses captured. Only 1.51% of the respondents in 2008 and 1.07% of respondents in 2010 said they "Don't know" or "Refused" to provide their education. These responses, therefore, are dropped from the analysis. Thus, education runs on a 7-point scale, with 1 representing those with an eighth grade or less education and 7 representing those with post-graduate training.

Both Pew surveys use the same question to capture respondents' income: "Last year, that is in 2007/2009, what was your total family income from all sources, before taxes? Just stop me when I get to the right category…" The responses range on a 9-point scale from 1 to 9. These include, "Less than $10,000," "$10,000 to under $20,000," "$20,000 to under $30,000," "$30,000 to under $40,000," "$40,000 to under $50,000," "$50,000 to under $75,000," "$75,000 to under $100,000," "$100,000 to under $150,000," and "$150,000 or more." Respondents can also answer "Don't know" or "Refused." In 2008 and 2010, respectively, 21.21% and 21.49% of respondents answered with "Don't know or "Refused." The missing amount of data is alarming, but both surveys retain over 1,770 respondents despite the missing data. I look at the education level of those who do not provide their income level in these surveys to see if those with lesser or greater levels of education are more likely to not respond. Figure S.1 and Figure S.2 show those with a high school education are the most likely not to respond to the question, while those with higher levels of education being the next more likely (although with some greater frequency in 2010). In general, the pattern of who does not respond to the question concerning income is similar in the surveys and shows those who do not respond are spread out over different education levels. When normalizing the number of missing income responses by education level, I find, in 2010, most are between education levels are missing between 18.9% and 22.7% of income responses. Only the two lowest levels of education do not fall in this range, as high school incomplete is missing 31.3% of income responses, and the lowest level of education is missing 37.1% of income responses. These findings were similar in 2008. While the missing data is at a higher rate than desired, especially for the lowest education groups, there does not seem to be a systematic reason for this missing data.

In both surveys, age is coded as a continuous variable from 18 to 96. In addition, all those who are 97 or older are coded as 97. Of the over 4,511 respondents to both surveys, only five are coded as 97. Thus, the collapsing of those older than 97 into a single value does not distort the data in any significant way. Respondents are also allowed to answer "Don't know" or "Refused" to the question concerning age. In 2008 and 2010, 2.3% and 2.03% of the respondents did not provide their age, respectively. Dropping the respondents who do not provide their age from the analyses does not, therefore, distort the data in any significant manner.

The Pew surveys do not contain a single question measuring partisanship. The surveys, however, ask two questions allowing for the creation of a partisanship variable. First, Pew asks respondents, "In politics today, do you consider yourself a Republican, Democrat, or Independent?" In addition to these three responses, respondents can respond by saying they have "No Preference," "Other party," "Don't know," or "Refused." Second, for those who did not answer the previous question with one of the two major parties, Pew asks these respondents, "As

of today do you lean more to the Republican Party or more to the Democratic Party?" In addition, respondents can voluntarily answer the question with "Don't know" or "Refused." Furthermore, in the 2008 survey, respondents can answer the second question with "Neither/Other party" as a voluntary option.

From these two questions, I construct a measure of partisan strength. The measure runs from the weakest partisanship (0) to the stronger partisanship (3). First, I code strong partisans (3) as those who answer the first question by stating they are either a Republican or Democrat. The partisanship strength measure does not differentiate between respondents' political parties. Instead, the measure captures the strength of respondents' attachment to the political parties. As such, those who identify with either political party in the first question are deemed to have the same partisan strength. Next, I examine the second question concerning learners. Those who identify themselves as Republican or Democrat in the leaner question, which excludes those who identified with the parties in the first question, are coded as a leaning partisan (2). To produce a measure of those who are weak partisans or independents, I examine the two questions together. If a respondent said they were an independent in the first question and then said they were neither party, don't know, or refused to answer, I classify the respondent as a weak partisan/independent. The weak partisans/independents are coded as a 1. Finally, I code those who said they had no preference for the political parties in the first question as a 0. Individuals self-reporting to have no preference appear to have no partisan attachments, compared to independents who may still have weak attachments. The construction of the partisan strength variable, therefore, drops respondents who answered the first question by saying they are a member of some other party, don't know, or refused. The dropping of these respondents causes the analyses to lose 5.5% and 6.33% of the respondents to the 2008 and 2010 surveys, respectively.

If an individual is registered to vote is a dichotomous variable, with 1 representing those who are registered and 0 representing those who are not. Both surveys ask respondents, "These days, many people are so busy they can't find time to register to vote, or move around so often they don't get a chance to re-register. Are you NOW registered to vote in your precinct or election district, or haven't you been able to register so far?" While respondents who said, "Don't have to register," "Don't know," and "Refused" are recorded, only 29 respondents between both surveys did not respond to knowing their registration status. These 29 respondents are dropped from the analyses.

To construct a measure for working status, I use the Pew question that asks respondents, "Are you now employed full-time, part-time, retired, or are you not employed for pay?" From this question, I create dummy variables for each response. I use dummy variables instead of an ordinal variable, as each level of employment does not have a definitive linear difference in value from another. As such, it seems safer to proceed with analyses treating each type of working status on its own accord. Each level of employment – unemployed, part-time, and full-time – is made into dummy variables. In addition, the 2010 survey allows respondents to voluntarily say they own a business or are self-employed. These individuals are coded as having a full-time job. The main baseline category for these dummy variables in the regressions is those who are retired. The surveys also allow individuals to voluntarily say they are a "Student," "Disabled," or "Other." While these individuals also exist in the baseline condition, only 13 respondents in 2008 exist in these three categories. In 2010, 109 respondents answered they exist in these three categories compared to 328 retired respondents. Finally, the analyses drop those who refused to provide their employment status, which accounts for 0.58% of the sample in both the 2008 and 2010 data.

The 2008 analyses also include a 6-point scale for church attendance. The 2010 Pew survey does not include a question concerning church attendance. Respondents, in 2008, were asked, "Aside from weddings and funerals, how often do you attend religious services…more than once a week, once a week, once or twice a month, a few times a year, seldom, or never?" In creating a 6-point scale, I reverse Pew's coding, so a 0 represents those who never attend church, whereas a 5 represents those who go to church multiple times a week. The analyses drop the 1.95% of respondents who responded to the question with "Don't know" or "Refused."

Additional Control Variables for the Civic Voluntarism Model

Of the ten CVM control variables missing from my analysis, the most important ones are political information, political interest, and political efficacy. First, I will explain what questions I use from the Pew surveys to capture elements of these missing control variables. After explaining why I include these control variables, I explain the construction of my additional control variables.

The Pew surveys do not ask any questions to directly capture political knowledge and interest in politics. Previous work using the Pew data has used partisan strength to help capture interest in politics (Steinberg 2015). While I include partisan strength, as it is a variable in the CVM, my analyses cannot control for political information and political interest directly. Hoffman (2012), however, went forward with the Pew 2008 data to test if the CVM applies without these direct measures. Furthermore, those analyses are missing other important controls that are in the CVM that I do include, such as being registered to vote. In order to overcome these missing variables, however, I turn to other questions in the Pew surveys to help capture some elements of political interest and information.

With regards to political interest and information, I include dummy variables for African-Americans, Hispanics, newspaper readers, and sex. Given the candidacy of Senator Barack Obama in 2008 and the focus on immigration/DREAM Act, it is likely African-Americans and Hispanics were interested in the election (Carter et al. 2008). Additionally, given the election of President Obama in 2008, it is possible these groups continued to be interested in the 2010 midterm elections compared to the previous midterm election (Lopez 2011). I include newspaper readers to help capture those with more political information, as newspaper readers tend to belong to a great number of groups and are informed (Putnam 1995). By no means is newspaper readership a perfect measure of political information; however, through reading the newspaper, these individuals have access to more political information. Finally, given the presence of Hillary Clinton in the 2008 primaries and Sarah Palin in the 2008 general election, it is possible women had a greater political interest in the presidential election.

Both Pew surveys ask respondents, "Are you, yourself, of Hispanic or Latino origin or descent, such as Mexican, Puerto Rican, Cuban, or some other Latin American background?" The surveys treat the question as a yes or no question, which I code those responding no as 0 and those responding yes as a 1 to form a dummy variable for Hispanics. Only 1.15% and 1.42% of respondents did not share if they were of Hispanic origin in 2008 and 2010, respectively. These nonresponses are dropped from the dataset. Next, the Pew surveys asked respondents, "What is your race? Are you white, black, Asian, or some other race?" Respondents could identify as White, African-American, Asian, Native American, mixed race, other, don't know, or refused. A variable for African-Americans codes respondents who identified themselves as African-American as a 1. Those who do not identify themselves as African-Americans, do not know their race, or refused to answer, are coded as a 0. Nonresponses to the question concerning race caused 2.22% and 3.41% of the respondents to be dropped from the dataset in 2008 and 2010, respectively.

While the dataset could make dummy variables for Asian, Native American, mixed race, and other individuals, it does not. The dataset does not create these dummy variables because there is no expectation for these groups to have a greater political interest in these elections. Also, the percent of the sample identifying in these ethnicities is small compared to the other three ethnicities. In 2008, only 4.83% did not identify as White, African-American, or Hispanic. In 2010, only 7.27% did not identify as White, African-American, or Hispanic. Thus, the analysis uses dummy variables for African-Americans and Hispanics, with all other respondents forming the base category.

To construct respondents' newspaper habits, I utilize a similar question in both Pew surveys: "How have you been getting most of your news about this year's campaigns and elections…from television, from newspapers, from radio, from magazines, or from the Internet?" In addition, the surveys record if a respondent says, "Other," "Don't know," or "Refused." After collecting a respondent's initial news source, the surveys probed for a secondary news source. I code those who said newspapers are not their primary or secondary form of news as 0. Those who said the newspaper is their secondary form of news are coded as 1. Finally, respondents saying newspapers are their primary form of news are coded as 2. Only 1.42% and 2.92% of respondents, in 2008 and 2010, respectively, are dropped from the analyses due to refusing or saying they don't know what their news sources are.

The surveys include respondents' sex by recording their sex as male or female. In both surveys, every respondent provides what sex they are. Thus, I created a dichotomous variable for sex. Respondents who are males are coded as 1, and respondents who are females are coded as 0.

Another important variable missing in the Pew data is political efficacy. While the Pew surveys do not have a precise measure of political efficacy, they do contain a question to help capture political efficacy. Both surveys ask respondents, "How much of the time do you think you can trust the government in Washington to do what is right…just about always, most of the time, or only some of the time?" In addition, Pew captured respondents answering "Never," "Don't know," and "Refused" to the question. While trust is not the same as political efficacy, an individual must have trust in the government to believe the government will respond to their desires and complaints. As such, trust in the government is a precursor to political efficacy. I, therefore, create a 4-point scale for trust in the government. Those who state the government can never be trusted are coded as 0, with those who say the government can just about always be trusted are coded as a 3. Those who did not know or refused to answer the question caused 4.79% and 4.48% of respondents to be dropped from the analyses.

The surveys also do not include a measure of respondents' free time. Both surveys, however, ask, "Are you the parent or guardian of any children under age 18 now living in your household?" Those who are parents are likely to have less free time than those who are without children. As such, I create a dichotomous variable capturing if a respondent is a parent to capture some measure of the amount of free time a respondent has. If a respondent says they are a parent they are coded as a 1, while if a respondent says they are not a parent they are coded as a 0. Only 27 respondents refused to respond to the question or did not know if they were a parent. Thus, these observations are dropped from the analyses.

Although I have done my best to use other control variables to capture variables used by Verba et al. (1995), I cannot find variables in the Pew surveys to capture respondents' vocabulary, job level, if they are a member of a non-political organization, if English is spoken at home, and if they practice Catholicism. Of these five control variables, the CVM only finds vocabulary and job-level to be significant. Furthermore, vocabulary is only significant for voting, and job-level is only

significant for a time-based act. While not being able to include these control variables is a loss, I do not have any reason to suspect the findings of the analysis will greatly differ from those of Verba et al. (1995) due to the exclusion of these five control variables.

Finally, the analysis does not have an exact measure of civic skills. As I have argued in the explanatory variable section, however, social network site (SNS) use provides a weak measure for the development of civic skills. Additionally, I include robustness check models to support the main analysis. These robustness measures look at virtual group membership of writing a post, which is similar to writing a letter, to show how one potential civic skill influences the dependent variables. The robustness checks also examine how specific uses of SNS influence political behavior to further test the theory.

Additional Control Variables due to Findings Concerning Internet Use

The analysis uses two control variables concerning Internet use. The first regards the frequency of Internet use. My theory argues the frequency of Internet use is a poor measure because it fails to account for how specific uses of the Internet influence and develops resources and skills. I create a frequency of Internet use measure to test this hypothesis. To create the measure, I rely on a question asked in both surveys: "About how often do you use the Internet or email from home – several times a day, about once a day, 3-5 days a week, 1-2 days a week, every few weeks, less often or never?" These questions produce a 7-point scale concerning the frequency of Internet use. I code those who never use the Internet as a 0, while those who use the Internet several times are coded as 6 six. A total of 11 respondents either refused to answer the question or responded by saying they don't know how often they use the Internet at home; these respondents are dropped from the analyses.

In the main analysis, I include a control variable for those using the Internet to get information. Multiple studies find using the Internet to get information has a positive effect on political participation (Boulianne 2009; Pasek et al. 2009; Bimber and Copeland 2013). As my theory contends, however, different uses of the Internet will have different effects on political participation. Thus, I control for those using the Internet to get more information to see if virtual group membership and the development of civic skills have an effect on political participation that is separate from those seeking information.

To measure those using the Internet to get information, I utilize the questions in the Pew surveys asking respondents what their primary and secondary news sources for information about the elections. The question regarding news sources is the same question I use to create the newspaper readership control variable. This allows me, therefore, to construct a 3-point scale of Internet use to get news, which is similar to the 3-point scale for newspaper use. Thus, to construct a measure of those who use the Internet to gather information, I code those who use the Internet as their primary source of information as a 2. Those who use the Internet as a secondary source are coded as 1. Finally, those who do not use the Internet as their primary or secondary source of information are coded as 0.

The Pew surveys allow for a more detailed operationalization of Internet use for information in the 2008 survey. That survey asks respondents: "Did you ever go online to get news or information about the 2008 elections? How often did you go online to get news about the elections…more than once a day, every day, three-to-five times per week, one-to-two days per week, or less often?" As such, the question creates a 6-point scale of using the Internet to get news or information. The scale is twice as detailed as the measure created above. I, therefore, create a second measure of Internet use for news and information in 2008. The second measure codes those

who never use the Internet to get news or information as a 0 and increases by 1 for each response, so those who use the Internet more than once a day to get news or information are coded as a 5. This measure is utilized in Table S.4 to provide a robustness check that the 3-point measure of Internet news use is comparable to the 6-point measure of Internet news use.
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APPENDIX B: ROBUSTNESS CHECK VARIABLE CODING

Table S.5 introduces a measure for the specific activity of posting in a virtual group. The measure captures an activity akin to writing a speech, which is a civic skill. The measure for posting in a virtual group exists in both Pew surveys, although the question wording and order are different. In 2008, Pew asked respondents, "Have you ever posted comments, queries or information about the campaign or the elections in any of these places online? In an online discussion, a listserv, or other online group forum." Respondents are asked to answer yes or no but could voluntarily respond by saying they don't know or refuse to answer. Of the 1,186 respondents, only two did not answer by saying yes or no. I code those who say they did not post in a virtual group as 0, while those who did post in an online group are coded as 1. It should also be noted that Feezell et al. (2016) use this variable to operationalize active citizen norms.

In 2010, Pew asked respondents, "I'm going to read a list of things you may or may not have done online in the months leading up to the November elections. Just tell me if you happened to do each one, or not: Take part in an online discussion, listserv or other online group forum like a blog, related to political issues or the campaign." Again, respondents are asked to answer yes or no but could voluntarily respond by saying they don't know or refuse to answer. Of the 1,628 respondents, all answered yes or no. I code those who say they did not post in a virtual group as 0, while those who did post in an online group are coded as 1.

Table S.6 introduces three variables to capture the way individuals use SNS. These three measures are using SNS to get information about the election, campaign, or candidates; posting a comment/content about the campaign, and joining or starting a political group or group supporting a clause.

Both surveys ask respondents, "Thinking about what you have done on social networking sides like Facebook and MySpace, have you gotten any campaign or candidate information on these sites?" The question is used to create a variable to see if SNS use influences political behavior due to information uses. In 2008, of the 440 respondents to the question, only two individuals did not answer yes or no. In 2010, of the 925 respondents to the question, only four individuals did not answer yes or no. Thus, I code those who say they did not get information about the election from social networking sites as 0 and those who did as one while dropping those who did not respond with either answer.

Both surveys also ask respondents if they joined or started a group on a social networking site. Group membership and being a leader in a group is an important sign of the development of civic skills. In 2008, Pew asked, "Thinking about what you have done on social networking sides like Facebook and MySpace, have you started or joined a political group, or group supporting a cause on a social networking site?" In 2010, Pew asked this single question as two questions to differentiate between those who join a group and those who start a group. In order to create variables that can be compared, I combine the two questions in the 2010 survey into one measure that matches the question from the 2008 Pew survey. Thus, if an individual joined or started a group, they are coded as a 1; if they did not, they are coded as a 0. Of the 440 individuals who answered the question in 2008, only one respondent did not answer yes or no. In 2010, of the 925 respondents to the question about joining a group, only two did not answer yes. All 925

respondents in 2010 answered yes or no to the question about starting a group or cause. Thus, I drop these three missing observations from the data.

Finally, the Pew surveys capture if individuals posted about the election on SNS. Posting about the election is a behavior similar to the civic skill of writing a speech. Thus, I include this variable in robustness models to examine if political participation is affected by those who develop and practice civic skills in SNS. The 2008 survey asks, "Have you ever posted comments, queries or information about the campaign or the elections in any of these places online? On a social networking site such as Facebook, MySpace or LinkedIn." All 380 respondents to the question answered yes or no. I, therefore, code those who say they did not make a post to a social network site as 0 and those who did as 1. In 2010, the question was changed slightly: "Thinking about what you may have done on social networking sites like Facebook and MySpace related to the November elections, did you happen to… Post content related to politics or the campaign on a social networking site." While not the same, the question is similar to the 2008 survey as it asks if individuals post about the campaign on their SNS. Of the 925 respondents to the question, only one person did not answer yes or no. That one respondent is dropped. I code those who say they did not make a post to a social network site as 0 and those who did as 1.

Table S.7 examines how Feezell et al. (2016)'s variables operationalizing dutiful and active civic norms influence the dependent variable. I argue, however, that these variables capture resources (i.e., civic skills and information). The coding of Feezell et al. (2016)'s active civic norm comes from the same operationalization of posting in a virtual group described in Table S.5. To code dutiful civic norms, which I contend is the resource of information, I follow the authors' coding. Both surveys ask respondents, "I'm going to read a list of things you may or may not have done online in the past year related to the campaign and the elections. Just tell me if you happened to do each one, or not. Did you… Look for more information online about candidates' positions on the issues or voting records." Respondents can answer by saying yes or no, although Pew captures those who voluntarily say they don't know or refuse to answer. In 2008, only two respondents out of 1,186 did not answer yes or no. In 2010, only 1 out of 1,628 did not answer yes or no. These three respondents are dropped from the data set. I code those who say they did not look at information online about candidates' positions or voting records as 0, while those who did as 1.

Finally, Table S.9 introduces and uses a second dependent variable that measures a time-based act in the 2010 election. Pew asks respondents, "I'm going to read a list of things you may or may not have done online in the months leading up to the November elections. Just tell me if you happened to do each one, or not. Did you… Use the Internet to organize or get information about in-person meetings to discuss political issues in the campaign." Of the 1,628 individuals who answer this question, only two did not answer yes or no. These two individuals are dropped from the data set. I code those who did not use the Internet to get information or organize an in-person meeting as a 0, while those who did as a 1.

REFERENCES

Bimber, B. & Copeland, L. (2013). Digital Media and Traditional Political Participation Over Time in the U.S. *Journal of Information Technology & Politics*, 10(2), 125-137.

Boulianne, S. (2009). Does Internet Use Affect Engagement? A Meta-Analysis of Research. *Political Communication*, 26(2), 193-211.

Carter, S., Ellis, J., Hossain, F., and McLean, A. 2008. On the Issues: Immigration. http://www.nytimes.com/elections/2008/president/issues/immigration.html. Accessed 17 October 2016.

Feezell, J. T. (2016). Predicting Online Political Participation: The Importance of Selection Bias and Selective Exposure in the Online Setting. *Political Research Quarterly*, 69(3), 495-509.

Hoffman, L. H. (2012). Participation or Communication? An Explication of Political Activity in the Internet Age. *Journal of Information Technology & Politics*, 9(3), 217-233.

Lopez, M. H. (2011). Dissecting the 2010 Electorate. Report. http://www.pewhispanic.org/2011/04/26/ii-dissecting-the-2010-electorate/. Accessed 2 February 2017.

Pasek, J., more, e., & Romer, D. (2009). Realizing the Social Internet? Online Social Networking Meets Offline Civic Engagement. *Journal of Information Technology & Politics*, 6(3-4), 197-215.

Pew Research Center. (2008). November 2008 – Post Election. Dataset. http://www.pewInternet.org/datasets/november-2008-post-election/. Accessed 9 August 2015.

Pew Research Center. (2010). November 2010 – Post Election. Dataset. http://www.pewInternet.org/datasets/november-2010-post-election/. Accessed 9 August 2015.

Putnam, R. (1995). Tuning In, Tuning Out: The Strange Disappearance of Social Capital in America. *PS: Political Science Politics,* 28(4), 664-683.

Steinberg, A. (2015). Exploring Web 2.0 Political Engagement: Is New Technology Reducing the Biases of Political Participation? *Electoral Studies*, 39, 102-116.

Verba, S., Schlozman, K. L., and Brady, H. (1995). *Voice and Equality: Civic Voluntarism in American Politics.* Cambridge, MA: Harvard University Press.

Table S.1 – Descriptive Statistics for 2008 Data

Variables	Observations	Mean	Standard Deviation	Minimum	Maximum	Context
Social Network Use	1591	0.407	0.708	0	2	Frequency of Internet use for social networks increases from 0-2
Internet News Use	2222	0.344	0.668	0	2	Use of the Internet for election news with 2 being a primary source, 1 being secondary, and 0 being neither
Internet News (six-point scale)	1585	1.633	1.730	0	5	How often does an individual use the Internet to get election news with 0 being never through 5 being more than once a day
Election Information from SNS	438	0.208	0.406	0	1	Got campaign or candidate information from SNS represented by 1
Posted Comment about Election on SNS	380	0.292	0.455	0	1	Posted comments, queries, or information about the election in SNS represented by 1
Started or Joined Political Group on SNS	439	0.150	0.358	0	1	Started or joined a political group or a cause on SNS represented by 1
Political Comment in Online Group (Actualized Internet Use)	1184	0.086	0.281	0	1	Posted comments, queries, or information about the election in an online discussion, listserv, or other online group form represented by 1
Dutiful Internet Use	1184	0.557	0.497	0	1	Looked for information online about candidates' positions on the issues or voting records represented by 1
Frequency of Internet Use	1,585	4.272	1.792	0	6	Frequency of Internet use at home; increases from never (0) to several times a day (6)
Education	2,220	4.568	1.657	1	7	Level of education increases from 1-7
Family Income	1,776	5.070	2.326	1	9	Level of income increases from 1-9

Religious Attendance	2,210	2.749	1.664	0	5	Frequency of attendance increases from 0-5
Partisan Strength	2,125	2.537	0.696	0	3	Strength of partisanship increases from 0-3
Registered to Vote	2,244	0.895	0.307	0	1	Registered represented by 1
Age	2,202	54.158	17.907	18	97	Continuous variable capturing age
Full-Time Employment	2,241	0.412	0.492	0	1	Full-time employment represented by 1
Part-Time Employment	2,241	0.112	0.316	0	1	Part-time employment represented by 1
Unemployed	2,241	0.119	0.324	0	1	Unemployed represented by 1
African American	2,204	0.103	0.305	0	1	African-American represented by 1
Hispanic	2,228	0.061	0.240	0	1	Hispanic represented by 1
Male	2,254	0.472	0.499	0	1	Male represented by 1
Parent of a Child	2,241	0.276	0.447	0	1	Parent of a child under 18 in their home represented by 1
Newspaper	2,222	0.452	0.684	0	2	Use of the newspaper for election news with 2 being primary source, 1 being secondary, and 0 being neither
Trust	2,146	1.116	0.619	0	3	Level of trust increases from 0-3

Table S.2 – Descriptive Statistics for 2010 Data

Variables	Observations	Mean	Standard Deviation	Minimum	Maximum	Context
Social Network Use	1622	0.911	0.873	0	2	Frequency of Internet use for social networks increases from 0-2
Internet News Use	2191	0.303	0.611	0	2	Use of the Internet for election news with 2 being primary source, 1 being secondary, and 0 being neither
Election Information from SNS	921	0.147	0.354	0	1	Got campaign or candidate information from SNS represented by 1
Posted Comment about Election on SNS	924	0.111	0.315	0	1	Posted comments, queries, or information about the election in SNS represented by 1
Started or Joined Political Group on SNS	925	0.107	0.309	0	1	Started or joined a political group or a cause on SNS represented by 1
Political Comment in Online Group (Actualized Internet Use)	1628	0.057	0.232	0	1	Posted comments, queries, or information about the election in an online discussion, listserv, or other online group form represented by 1
Dutiful Internet Use	1627	0.348	0.477	0	1	Looked for information online about candidates' positions on the issues or voting records represented by 1
Frequency of Internet Use	1623	4.535	1.670	0	6	Frequency of Internet use at home; increases from never (0) to several times a day (6)
Education	2233	4.550	1.657	1	7	Level of education increases from 1-7
Family Income	1772	4.808	2.426	1	9	Level of income increases from 1-9

Variable	N	Mean	SD	Min	Max	Description
Partisan Strength	2148	2.444	0.804	0	3	Strength of partisanship increases from 0-3
Registered to Vote	2245	0.820	0.385	0	1	Registered represented by 1
Age	2211	51.538	18.515	18	97	Continuous variable capturing age
Full-Time Employment	2244	0.410	0.492	0	1	Full-time employment represented by 1
Part-Time Employment	2244	0.118	0.322	0	1	Part-time employment represented by 1
Unemployed	2244	0.146	0.353	0	1	Unemployed represented by 1
African American	2196	0.123	0.329	0	1	African-American represented by 1
Hispanic	2225	0.099	0.299	0	1	Hispanic represented by 1
Male	2257	0.436	0.496	0	1	Male represented by 1
Parent of a Child	2243	0.245	0.430	0	1	Parent of a child under 18 in their home represented by 1
Newspaper	2191	0.418	0.697	0	2	Use of the newspaper for election news with 2 being primary source, 1 being secondary, and 0 being neither
Trust	2156	1.151	0.657	0	3	Level of trust increases from 0-3

Table S.3
Median Conditions for Predicated Probabilities

	2008	2010
Education	5	5
Family Income	5	5
Religious Attendance	3	N/A
Partisan Strength	3	3
Registered to Vote	1	1
Age	54	53
Full-Time Employment	0	0
Part-Time Employment	0	0
Unemployed	0	0
African American	0	0
Hispanic	0	0
Male	0	0
Parent of a Child	0	0
Newspaper	0	0
Trust	1	1
Internet News Use	0	0

Table S.4 – Internet News Operationalization and Political Participation Robustness Check

Variables	Voting in 2008	Volunteering in 2008	Donating in 2008
Internet News Use (6-point scale)	0.042 (0.046)	0.177*** (0.042)	0.216*** (0.037)
Social Network Use	0.026 (0.105)	0.187* (0.088)	0.089 (0.081)
Education	0.016 (0.053)	0.073 (0.052)	0.091* (0.045)
Family Income	0.058 (0.037)	-0.017 (0.035)	0.071* (0.033)
Religious Attendance	0.043 (0.042)	-0.001 (0.039)	-0.044 (0.035)
Partisan Strength	0.382*** (0.098)	0.143 (0.121)	0.111 (0.103)
Registered to Vote	2.930*** (0.212)	0.528 (0.447)	0.342 (0.356)
Age	0.013* (0.006)	-0.007 (0.006)	0.004 (0.005)
Full-Time Employment	-0.088 (0.226)	-0.149 (0.218)	-0.378* (0.181)
Part-Time Employment	-0.169 (0.285)	0.172 (0.258)	-0.176 (0.231)
Unemployed	-0.169 (0.294)	-0.169 (0.295)	-0.282 (0.256)
African American	0.346 (0.314)	0.379 (0.207)	0.270 (0.203)
Hispanic	-0.115 (0.248)	0.378 (0.230)	0.238 (0.226)
Male	-0.210 (0.151)	0.102 (0.136)	0.101 (0.120)
Parent of a Child	0.004 (0.149)	-0.243 (0.142)	-0.208 (0.131)
Newspaper	0.166 (0.115)	0.050 (0.104)	-0.118 (0.096)
Trust	0.136 (0.120)	-0.172 (0.119)	0.042 (0.104)
Constant	-3.324*** (0.583)	-2.597*** (0.699)	-3.172*** (0.600)
N	1228	942	942
Pseudo R^2	0.5408	0.1085	0.1173

Note: Unless otherwise noted, in all tables, the variables are coded as either increasing in magnitude or as a dummy variable. Furthermore, all tables use the same markings to indicate significance.

*** = p-value of 0.001 or less (two tail)

** = p-value of 0.01 (two tail)

* = p-value of 0.05 (two tail)

Table S.5 – Online Group Type and Political Participation Robustness Check

Variables	Voting in 2008	Voting in 2010	Volunteering in 2008	Volunteering in 2010	Donating in 2008	Donating in 2010
Internet News Use	0.078	0.127	0.163*	0.220*	0.146*	0.109
	(0.107)	(0.071)	(0.083)	(0.100)	(0.072)	(0.103)
Political Comment in Online Group	0.100	0.221	1.102***	1.109***	1.042***	1.181***
	(0.264)	(0.207)	(0.165)	(0.197)	(0.159)	(0.205)
Education	-0.140	0.127***	0.092	0.062	0.115**	0.161**
	(0.063)	(0.035)	(0.052)	(0.054)	(0.045)	(0.058)
Family Income	0.023	0.037	-0.011	-0.009	0.078*	0.014
	(0.047)	(0.024)	(0.036)	(0.035)	(0.033)	(0.036)
Religious Attendance	0.044		-0.013		-0.052	
	(0.050)		(0.040)		(0.035)	
Partisan Strength	0.389***	0.196**	0.256*	0.167	0.230*	0.256*
	(0.119)	(0.067)	(0.128)	(0.116)	(0.107)	(0.124)
Registered to Vote	3.093***	3.147***	0.758	0.187	0.479	0.360
	(0.304)	(0.389)	(0.530)	(0.245)	(0.377)	(0.311)
Age	0.015*	0.028***	-0.009	0.002	0.004	0.010
	(0.007)	(0.004)	(0.005)	(0.005)	(0.005)	(0.006)
Full-Time Employment	0.055	-0.000	-0.128	-0.317	-0.329	-0.158
	(0.264)	(0.150)	(0.213)	(0.206)	(0.177)	(0.200)
Part-Time Employment	0.013	-0.093	0.149	0.000	-0.196	-0.165
	(0.339)	(0.186)	(0.262)	(0.259)	(0.230)	(0.274)
Unemployed	0.077	-0.096	-0.345	0.220	-0.433	0.015
	(0.362)	(0.184)	(0.306)	(0.242)	(0.260)	(0.262)
African American	0.466	0.133	0.393	0.483*	0.279	-0.062
	(0.469)	(0.155)	(0.212)	(0.202)	(0.203)	(0.252)
Hispanic	-0.156	-0.031	0.475*	-0.482	0.171	-0.423
	(0.306)	(0.185)	(0.232)	(0.356)	(0.238)	(0.393)
Male	-0.258	0.184	0.109	0.248	0.149	0.135
	(0.176)	(0.099)	(0.138)	(0.142)	(0.119)	(0.141)
Parent of a Child	0.152	0.077	-0.255	-0.214	-0.172	-0.131
	(0.180)	(0.105)	(0.145)	(0.169)	(0.131)	(0.173)
Newspaper	0.082	0.164*	0.133	-0.085	-0.081	-0.162
	(0.139)	(0.072)	(0.107)	(0.108)	(0.097)	(0.106)
Trust	0.233	-0.040	-0.128	-0.009	0.062	0.165
	(0.149)	(0.793)	(0.121)	(0.115)	(0.102)	(0.110)
Constant	-3.387***	-5.056***	-2.957***	-2.777***	-3.457***	-4.316***
	(0.688)	(0.529)	(0.771)	(0.556)	(0.615)	(0.643)
N	947	1203	948	1208	948	1208
Pseudo R^2	0.4624	0.3976	0.1519	0.1375	0.1249	0.1513

Variables	Voting in 2008	Voting in 2010	Volunteering in 2008	Volunteering in 2010	Donating in 2008	Donating in 2010
Internet News Use	0.476*	0.060	0.205	0.074	0.181	0.101
	(0.224)	(0.086)	(0.134)	(0.118)	(0.124)	(0.123)
Election Information from SNS	0.060	0.094	0.201	0.188	0.483*	-0.218
	(0.440)	(0.211)	(.0254)	(0.230)	(0.245)	(0.267)
Posted Comment about Election on SNS	0.128	0.197	0.895***	0.131	0.591*	0.495
	(0.388)	(0.213)	(0.251)	(0.246)	(0.238)	(0.262)
Started or Joined Political Group on SNS	1.845*	0.276	0.455	0.867***	0.213	0.637*
	(0.885)	(0.230)	(0.257)	(0.233)	(0.256)	(0.261)
Education	-0.149	0.115*	0.040	-0.000	0.082	0.127
	(0.131)	(0.048)	(0.090)	(0.065)	(0.083)	(0.077)
Family Income	0.048	0.028	-0.058	0.000	0.039	0.024
	(0.084)	(0.031)	(0.051)	(0.042)	(0.053)	(0.048)
Religious Attendance	-0.173		0.069		0.016	
	(0.103)		(0.065)		(0.061)	
Partisan Strength	0.621**	0.297***	0.023	0.033	-0.111	0.258
	(0.231)	(0.088)	(0.203)	(0.132)	(0.168)	(0.171)
Registered to Vote	3.454***	2.862***	0.637	0.237	0.639	
	(0.563)	(0.401)	(0.599)	(0.283)	(0.561)	
Age	0.040*	0.027***	0.008	0.002	0.022*	0.010
	(0.16)	(0.005)	(0.009)	(0.006)	(0.009)	(0.007)
Full-Time Employment	0.334	-0.024	0.180	-0.369	-0.229	-0.337
	(0.611)	(0.210)	(0.431)	(0.256)	(0.365)	(0.257)
Part-Time Employment	0.229	-0.262	0.649	-0.124	-0.331	-0.412
	(0.750)	(0.241)	(0.500)	(0.305)	(0.468)	(0.341)
Unemployed	0.226	-0.143	0.209	0.160	-0.164	-0.564
	(0.725)	(0.241)	(0.528)	(0.291)	(0.476)	(0.383)
African American	0.492	0.160	0.458	0.328	-0.234	-0.064
	(0.607)	(0.195)	(0.321)	(0.250)	(0.365)	(0.314)
Hispanic	0.428	-0.217	0.269	-0.328	-0.346	0.055
	(0.607)	(0.225)	(0.322)	(0.375)	(0.390)	(0.402)
Male	-0.729*	0.165	0.170	0.426*	0.532*	0.202
	(0.348)	(0.134)	(0.234)	(0.172)	(0.212)	(0.187)
Parent of a Child	0.392	0.128	-0.618**	-0.156	-0.337	-0.126
	(0.331)	(0.121)	(0.230)	(0.188)	(0.206)	(0.210)
Newspaper	0.206	0.195*	0.130	0.186	0.029	-0.262
	(0.280)	(0.093)	(0.183)	(0.125)	(0.181)	(0.152)
Trust	0.552*	-0.041	-0.157	-.003	-0.120	0.215
	(0.269)	(0.107)	(0.197)	(0.145)	(0.184)	(0.147)
Constant	-5.038***	-4.870***	-2.940**	-2.210***	-3.261***	-3.647***
	(1.358)	(0.598)	(1.141)	(0.627)	(1.008)	(0.762)
N	315	700	315	703	315	588
Pseudo R²	0.5483	0.3953	0.2229	0.1531	0.1731	0.1487

NOTE: Registered to Vote is dropped in the 2010 regression for donating because it predicted failure perfectly. This causes 115 observations to be dropped from the regression.

Table S.7 – Feezell et al. (2016) Measures and Political Participation Robustness Check

Variables	*Voting in 2008*	*Voting in 2010*	*Volunteering in 2008*	*Volunteering in 2010*	*Donating in 2008*	*Donating in 2010*
Dutiful Internet Use	0.137	0.559***	0.287	0.741***	0.905***	0.983***
	(0.176)	(0.109)	(0.151)	(0.157)	(0.154)	(0.171)
Political Comment in Online Group (Actualized Internet Use)	0.064	0.041	1.050***	0.939***	0.903***	1.013***
	(0.267)	(0.211)	(0.168)	(0.206)	(0.162)	(0.213)
Education	-0.019	0.097**	0.083	0.034	0.077	0.133*
	(0.064)	(0.036)	(0.053)	(0.057)	(0.047)	(0.062)
Family Income	0.022	0.033	-0.016	-0.022	0.072*	-0.018
	(0.045)	(0.025)	(0.036)	(0.036)	(0.034)	(0.038)
Religious Attendance	0.045		-0.012		-0.040	
	(0.050)		(0.040)		(0.036)	
Partisan Strength	0.381***	0.197**	0.231	0.137	0.229*	0.318*
	(0.119)	(0.067)	(0.126)	(0.120)	(0.110)	(0.137)
Registered to Vote	3.050***	3.150***	0.676	0.058	0.243	0.186
	(0.307)	(0.397)	(0.531)	(0.252)	(0.393)	(0.333)
Age	0.014*	0.028***	-0.009	0.002	0.007	0.013*
	(0.007)	(0.004)	(0.005)	(0.005)	(0.005)	(0.006)
Full-Time Employment	0.070	0.003	-0.131	-0.387	-0.409*	-0.235
	(0.264)	(0.151)	(0.212)	(0.215)	(0.183)	(0.214)
Part-Time Employment	0.005	-0.117	0.119	-0.055	-0.284	-0.266
	(0.339)	(0.188)	(0.261)	(0.264)	(0.234)	(0.288)
Unemployed	0.084	-0.088	-0.342	0.212	-0.477	-0.056
	(0.362)	(0.186)	(0.305)	(0.247)	(0.268)	(0.276)
African American	0.467	0.148	0.403	0.545**	0.360^	-0.007
	(0.466)	(0.155)	(0.213)	(0.206)	(0.214)	(0.270)
Hispanic	-0.184	-0.030	0.415	-0.468	0.046	0.127
	(0.308)	(0.188)	(0.231)	(0.368)	(0.246)	(0.150)
Male	-0.260	0.187	0.118	0.257	0.168	0.127
	(0.177)	(0.100)	(0.138)	(0.147)	(0.123)	(0.150)
Parent of a Child	0.153	0.056	-0.235	-0.209	-0.133	-0.152
	(0.180)	(0.106)	(0.145)	(0.173)	(0.135)	(0.184)
Newspaper	0.060	0.138	0.085	-0.139	-0.094	-0.178
	(0.134)	(0.072)	(0.103)	(0.110)	(0.096)	(0.109)
Trust	0.214	-0.039	-0.136	0.015	0.055	0.191
	(0.148)	(0.080)	(0.122)	(0.120)	(0.108)	(0.119)
Constant	-3.295***	-5.017***	-2.769***	-2.675***	-3.649***	-4.623***
	(0.679)	(0.532)	(0.760)	(0.562)	(0.643)	(0.687)
N	946	1203	947	1207	947	1207
Pseudo R^2	0.4624	0.3976	0.1516	0.1804	0.1759	0.2334

Table S.8 – Replication of Table S.7 Using SNS Explanatory Variable

Variables	Voting in 2008	Voting in 2010	Volunteering in 2008	Volunteering in 2010	Donating in 2008	Donating in 2010
Dutiful Internet Use	0.131	0.551***	0.445**	0.813***	0.983***	1.042***
	(0.174)	(0.108)	(0.146)	(0.153)	(0.151)	(0.165)
Social Network Use	-0.046	0.030	0.240**	0.196*	0.141	0.090
	(0.119)	(0.059)	(0.086)	(0.091)	(0.081)	(0.089)
Education	-0.025	0.097**	0.089	0.019	0.083	0.123*
	(0.064)	(0.036)	(0.052)	(0.055)	(0.046)	(0.060)
Family Income	0.015	0.031	-0.010	-0.015	0.075*	-0.014
	(0.045)	(0.025)	(0.035)	(0.035)	(0.034)	(0.037)
Religious Attendance	0.040		-0.006		-0.040	
	(0.051)		(0.039)		(0.035)	
Partisan Strength	0.360**	0.203**	0.186	0.124	0.182	0.307*
	(0.120)	(0.068)	(0.120)	(0.116)	(0.105)	(0.131)
Registered to Vote	3.058***	3.148***	0.566	0.102	0.183	0.239
	(0.306)	(0.395)	(0.479)	(0.246)	(0.375)	(0.326)
Age	0.013	0.028***	-0.006	0.002	0.007	0.011
	(0.007)	(0.004)	(0.005)	(0.006)	(0.005)	(0.006)
Full-Time Employment	0.085	0.006	-0.101	-0.439*	-0.381*	-0.298
	(0.266)	(0.151)	(0.208)	(0.211)	(0.181)	(0.207)
Part-Time Employment	0.010	-0.115	0.135	-0.088	-0.241	-0.355
	(0.340)	(0.188)	(0.255)	(0.257)	(0.229)	(0.282)
Unemployed	0.089	-0.074	-0.167	0.177	-0.345	-0.122
	(0.362)	(0.186)	(0.290)	(0.242)	(0.261)	(0.267)
African American	0.462	0.145	0.434*	0.545**	0.405	-0.038
	(0.464)	(0.155)	(0.207)	(0.204)	(0.209)	(0.269)
Hispanic	-0.200	-0.056	0.363	-0.337	0.077	-0.115
	(0.307)	(0.188)	(0.224)	(0.349)	(0.235)	(0.355)
Male	-0.248	0.199*	0.171	0.345*	0.189	0.191
	(0.177)	(0.106)	(0.134)	(0.145)	(0.121)	(0.146)
Parent of a Child	0.170	0.053	-0.217	-0.199	-0.161	-0.110
	(0.181)	(0.106)	(0.141)	(0.169)	(0.133)	(0.177)
Newspaper	0.055	0.142*	0.011	-0.103	-0.129	-0.136
	(0.134)	(0.072)	(0.102)	(0.106)	(0.095)	(0.104)
Trust	0.223	-0.048	-0.223	0.004	-0.035	0.151
	(0.149)	(0.080)	(0.119)	(0.120)	(0.106)	(0.118)
Constant	-3.098***	-5.059***	-2.788***	-2.809***	-3.464***	-4.447***
	(0.714)	(0.542)	(0.722)	(0.568)	(0.628)	(0.670)
N	942	1201	943	1205	943	1205
Pseudo R²	0.4644	0.3980	0.0951	0.1473	0.1381	0.1888

Table S.9 – Replication of 2010 Data with Different Time-Based Actions (Use the Internet to Organize In-Person Meeting

Variables	Meeting	Meeting	Meeting	Meeting	Meeting
SNS Use	0.263***				0.244***
	(0.072)				(0.075)
Internet News Use	0.119	0.034	0.119		
	(0.085)	(0.105)	(0.090)		
Election Information from SNS		0.345			
		(0.195)			
Posted Comment about Election on SNS		0.438*			
		(0.209)			
Started or Joined Political Group on SNS		0.678**			
		(0.214)			
Political Comment in Online Group (Actualized Internet Use)			1.550***	1.390***	
			(0.175)	(0.180)	
Dutiful				0.792***	0.893***
				(0.134)	(0.127)
Education	0.136**	0.073	0.157**	0.132*	0.108*
	(0.047)	(0.059)	(0.050)	(0.053)	(0.050)
Family Income	-0.008	0.001	-0.013	-0.039	-0.032
	(0.029)	(0.037)	(0.031)	(0.032)	(0.031)
Partisan Strength	-0.009	-0.170	-0.024	-0.014	-0.007
	(0.083)	(0.102)	(0.087)	(0.092)	(0.089)
Registered to Vote	0.554*	0.432	0.511	0.411	0.440
	(0.238)	(0.270)	(0.265)	(0.284)	(0.259)
Age	0.005	0.008	0.007	0.009	0.007
	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)
Full-Time Employment	0.101	0.174	0.192	0.181	0.081
	(0.175)	(0.234)	(0.185)	(0.192)	(0.184)
Part-Time Employment	0.122	0.256	0.201	0.173	0.083
	(0.228)	(0.279)	(0.243)	(0.250)	(0.238)
Unemployed	0.251	0.147	0.357	0.336	0.231
	(0.217)	(0.282)	(0.230)	(0.240)	(0.228)
African American	0.407*	0.591**	0.475**	0.550**	0.509**
	(0.172)	(0.203)	(0.178)	(0.188)	(0.182)
Hispanic	0.074	0.257	-0.108	-0.082	0.095
	(0.228)	(0.256)	(0.261)	(0.275)	(0.244)
Male	0.210	0.084	0.110	0.114	0.206

	(0.118)	(0.149)	(0.122)	(0.127)	(0.123)
Parent of a Child	-0.024	0.067	-0.028	-0.047	-0.047
	(0.130)	(0.155)	(0.139)	(0.145)	(0.137)
Newspaper	0.109	0.131	0.073	0.050	0.079
	(0.078)	(0.100)	(0.083)	(0.084)	(0.080)
Trust	-0.078	0.071	0.015	0.011	-0.016
	(0.094)	(0.120)	(0.098)	(0.104)	(0.101)
Constant	-3.430***	-2.775***	-3.501***	-3.559***	-3.520***
	(0.473)	(0.544)	(0.502)	(0.522)	(0.503)
N	1205	702	1207	1206	1204
Pseudo R²	0.0762	0.1502	0.1758	0.2316	0.1572

Figure S.1

The frequency of those who did not respond how much their family income is by education level in 2008
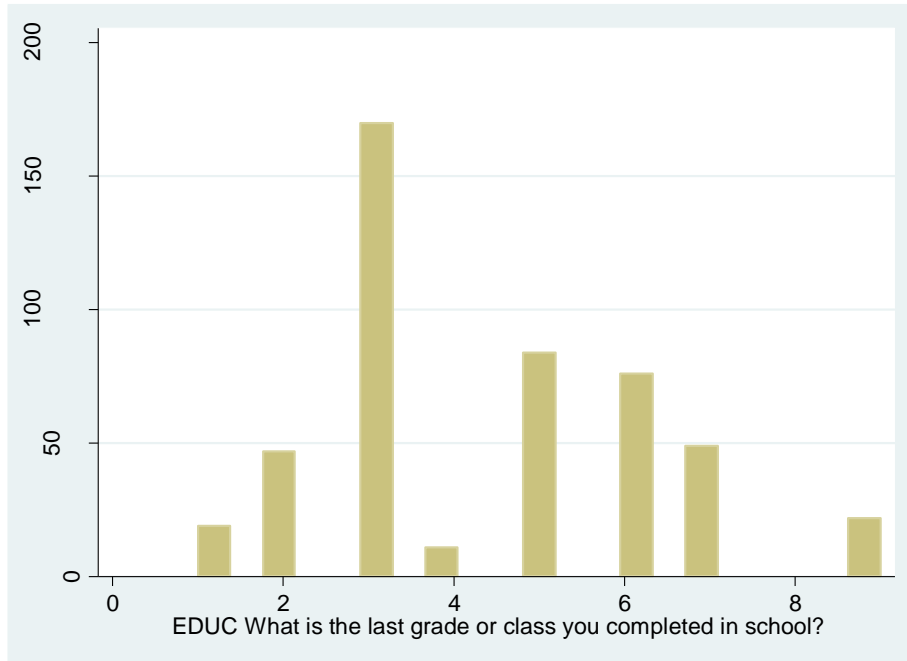

Figure S.2

The frequency of those who did not respond how much their family income is by education level in 2010