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ORIGINAL ARTICLE

Social Pressure on Social Media: Using Facebook Status Updates to Increase Voter Turnout

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The widespread adoption of the Internet offers tangible potential for increasing political participation through disseminating digital reminders to vote. This study presents three experiments in which confederates mobilize members of their networks to vote by tagging them in Facebook status updates. Relying on the technological affordances of Facebook, treatments publicize individuals' past participation or failure to vote in an ongoing election. The results show substantial increases in turnout greater than that which is usually produced by face-to-face methods. Findings suggest that digital media offer citizens the potential to generate tremendous gains in voter participation, and address concerns that our increasingly digitally networked society may prove harmful to democracy.

Keywords: Digital Media, Social Networking, Facebook, Political Participation, Voting Behavior.

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Rates of Internet adoption currently outpace voter participation in most U.S. elections. Use of the Internet has soared from 1.4% of American adults in 1983 to 87% in 2013 (Fox & Rainie, 2014; Zickuhr & Smith, 2012), whereas turnout in national elections rarely exceeds 60% in presidential cycles and hovers around 40% in congressional midterms (McDonald, 2014). Given these numbers, it is no surprise that political campaigns and organizations have turned to digital media in an effort to mobilize voters. However, the question remains largely unanswered as to whether digital media can be utilized to measurably increase voter turnout.

Taken as a whole, the literature on digital media suggests a positive relationship between Internet usage and political participation, particularly as rates of Internet adoption increase among American adults (Bimber, 2003; Boulianne, 2009; Tolbert & McNeal, 2003; Vitak et al., 2011, among others). Social networking sites are among

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the most popular uses of digital technology; currently 73% of online adults use Facebook (Smith, 2014), and 66% of users report having already taken at least one civic or political action on the platform (Rainie, Smith, Schlozman, Brady, & Verba, 2012). If Facebook can be strategically utilized to increase political participation, then the platform—and potentially digital technology as a whole—may offer the potential to reinvigorate voter participation. Furthermore, as social networking users tend to be younger and more ethnically diverse (Duggan & Smith, 2013) than the American electorate as a whole (Rosenstone & Hansen, 2003), Facebook presents a unique opportunity for outreach to underrepresented voter demographics.

Several analog methods have proven effective at increasing voter turnout and are particularly well suited for adaptation to Facebook. Social pressure messaging, usually consisting of postcard mailers that emphasize the public nature of voting records and include past participation histories of subjects and their neighbors—has generated sizeable boosts in turnout, often in the range of 5–8 percentage points (Gerber, Green, & Larimer, 2008, 2010). As social pressure works by increasing the perceived publicness of an individual's compliance with the social norm of voting, and Facebook makes visible the actions of users in their networks, a method that leverages the social networking platform to deliver these messages has the potential to increase turnout. Additionally, direct voter contact in the form of canvassing and phone banking can produce gains in participation (Gerber & Green, 2000; Gerber, Green, & Nickerson, 2003; Green & Gerber, 2015; Nickerson, 2006, 2007). This, too, can be adapted to Facebook, on which users can digitally canvass their friends, reminding them to vote.

The following article presents three studies that produced substantial gains in voter turnout through the use of status updates posted on Facebook by individual users that contain social pressure messaging. These studies extend prior theoretical work by demonstrating that emphasizing social norms within social networks can increase voter participation, through utilizing the technological features of the Facebook platform to communicate these norms. Two experiments that directly tagged subjects in voting reminders on Facebook with social pressure messaging produced substantial gains in turnout, amounting to percentage point effects ranging from 15.8 to 24.3 over the control group. A third experiment that tested the effect of exposure to the social pressuring of others found that these treatments appear to only be effective on newer or infrequent voters. Direct social pressure on Facebook is more effective at increasing voter turnout than social pressure by proxy. Each study also indicates that the message itself matters—simple blandishments to vote proved ineffective, whereas messages with social pressure elements mobilized voters. Theoretically, this work provides evidence that social networks influence voting behavior and demonstrates that social norms can be induced and leveraged in online social networks. Facebook can be utilized to increase voter participation and generate gains in turnout above that which has been demonstrated by face-to-face methods, offering the potential to increase voter participation in an increasingly digitally networked society.

Political participation and internet use

Extensive research points to a positive association between Internet use and political participation in the form of voting and other electoral activities. Boulianne (2009) performs a meta-analysis of 38 studies of Internet use and political participation and finds 74 positive, significant effects. All studies conducted with data collected after 2004 show a positive association between Internet use and political participation, suggesting that as technological adoption increases the relationship becomes more consistent. Tolbert and McNeal (2003) find an increase in voting associated with Internet access; online political discussion (Hardy & Scheufele, 2005), election news use (Tolbert & McNeal, 2003), and blog use (Gil de Zúñiga, Puig-i-Abril, & Rojas, 2009) are also positively associated with additive measures of participation that include voting. Many forms of Internet use are also positively associated with offline participation such as attending a rally or wearing a button (Nisbet & Scheufele, 2004).

Political activity on Facebook also has a positive association with political participation

Vitak et al. (2011) determine that political activity on Facebook is significantly associated with higher political participation both offline and on, an assertion backed up by Facebook's own study of users' behavior in the 2012 cycle (Bakshy, 2012). Witnessing friends' participatory activities on the platform is also a significant predictor of political activity on Facebook (Vitak et al., 2011) and in elections (Bond et al., 2012). Facebook's own data science team compared two forms of voting reminders in the 2010 election: One group was shown a text-only reminder asking them to click an "I Voted" button, whereas another was shown the same reminder plus images of their friends who had already affirmed their participation (Bond et al., 2012). Users in the social condition were 2% more likely to click the button, 0.26% more likely to click on polling location information, and 0.39% more likely to vote than those in the informational condition. These results suggest that exposure to other friends' voter participation on Facebook has the potential increase offline voter turnout within one's network.

Taken as a whole, this research suggests that rather than depressing political activity, use of Internet-based communication technologies can increase participation. The Facebook findings in particular suggest that if political activity can be strategically induced on the platform, increased participation should follow. Participation in the form of voting is easily measured through public records, so a "get out the vote" experiment on Facebook should demonstrate whether the platform can be used to generate gains in turnout. Experimental research in political science provides two socially constituted methods of voter mobilization — social pressure and peer-to-peer interaction — that can increase turnout and are well suited to adaptation to Facebook. An overview of this literature follows, including an explanation of how these methods are motivated by social norms.

Social pressure and social interaction

Voting reminders that heighten public awareness of individuals' participation are effective at increasing turnout. Gerber et al. (2008, 2010) demonstrate that sending

mailers with a "social pressure" component produces dramatic gains in turnout. These messages may work because they emphasize the social norm of voting and public nature of voting records, make clear the subject's turnout has been and will be monitored, and threaten to publicize participation or abstention in an upcoming election. Social pressure mailers can invoke in subjects feelings of pride or shame about their voting records. Mailers shaming subjects for failing to vote in a past election raised turnout 6.3% compared to a control group, whereas mailers praising voters for past participation raised turnout 4.0% (Gerber et al., 2010). A recent meta-analysis of nonpartisan direct mail finds that it raises turnout by less than 1 percentage point (Green & Gerber, 2015), so the increases from social pressure messaging are staggering for a mail program.

Threats to make voters' abstentions public knowledge generate the greatest increases in voter turnout. Gerber et al.'s (2008) postcard with neighbors' voting histories that promised to mail out an updated version after the election raised turnout by 8.1%. Similarly, Panagopoulos (2010) finds threats to publish abstainers' names in a local newspaper boosts turnout by 6.9%, whereas threats to publish voters' names in a local newspaper in two separate experiments bumps up turnout by only 0.9 and 4.7%. Essentially, when voters become aware of the public nature of their voting records and the potential of others to know that they failed to conform to the norm of voting, their participation increases dramatically.

In addition to social pressure, interpersonal voter contact through canvassing or phone calls can produce dramatic gains in voter participation (Gerber & Green, 2000; Gerber et al., 2003; Nickerson, 2006, 2007). Gerber and Green (2013) find that such messages are most effective when delivered by a personal contact within the voter's social network. These methods work because they emphasize the social norm of voting and its value within a community. Social pressure messaging and peer-to-peer voter contact are readily adaptable to the Facebook platform because it allows users to target individuals with voting reminders and enables increased awareness of users' voting behavior to their networks.

The specter of social sanction

Social pressure hinges on support for the norm of voting within social networks. Norms are a social phenomenon: They must be understood by, salient to, and valued by members of a group. They arise from a cycle of repetition and rewarding of given behaviors, and guide individuals' actions through the threat of social sanction (Cialdini & Goldstein, 2004; Cialdini & Trost, 1998; Posner & Rasmusen, 1999). Social norms are constituted in social networks (Coleman, 1988), and thus should function in online contexts as well. Norms are powerful: They induce individuals to perform socially desirable behaviors due to concerns over what others might think. Cialdini and Goldstein (2004) define this, "the act of changing one's behavior to match the responses of others" (p. 606), as conformity.

The degree of conformity hinges on the public nature of the norm, which in turn produces the socially constituted emotions of pride or shame. Cialdini and Trost

(1998) state, "conformity is stronger when responses are made in public" (p. 166). Conformity is thus driven by a desire to obtain social approval by exhibiting a desired behavior (Deutsch & Gerard, 1955). Cooley (1929) explains that pride and shame derive not from an assessment of one's own actions but from the anticipation of how others might react to such behavior: "The thing that moves us to pride or shame is not the mere mechanical reflection of ourselves, but an imputed sentiment, the imagined effect of this reflection upon another's mind" (p. 184). Essentially, the drive to comply with the social norm of voting results in individuals changing their behavior to either avoid shame or gain pride from their actions. This positive relationship between norm conformity and publicness of behavior explains why social pressure is likely to work on Facebook.

Social pressure on social networking sites

Facebook is ideally suited for a peer-to-peer "get out the vote" (GOTV) experiment because it enables users to digitally canvass their friends, tagging them in status updates that contain voting reminders. As these messages come from within subjects' networks, they should be particularly effective (Gerber & Green, 2013). Based on the effects of canvassing, a hypothesis is proposed:

H1: Subjects who are tagged in GOTV status updates on Facebook will vote at higher rates than subjects in the control group.

It is the publicness of Facebook activity that makes the platform an ideal locus for social pressure. Facebook makes visible users' actions to individuals in their networks (boyd & Ellison, 2008) and enables individuals to monitor actions of others—and in anticipating their own surveillance by others, potentially change their behavior to conform to powerful social norms. In this manner, Facebook is akin to a digital version of Bentham's panopticon, in which users behave with the understanding that others might be watching and judging them accordingly. Status updates tagging an individual and shaming her for failing to vote or praising her for past participation could potentially be seen by her entire network, which should heighten their effectiveness. Building on Gerber et al. (2010), a hypothesis is proposed:

H2: Subjects treated with shame messages will vote at higher rates than subjects treated with pride messages.

Furthermore, given that Facebook makes visible actions by other people in one's network, it is possible to study the effect of seeing one's friends tag other individuals in social pressure voting reminders, termed here "social pressure by proxy." The following hypothesis is proposed:

H3: Subjects exposed to social pressure by proxy will vote at higher rates than subjects in the control group.

However, past voter turnout experiments suggest that voter mobilization efforts work differently on individuals based on their past participation records (Arceneaux & Nickerson, 2009; Dale & Strauss, 2009; Gerber & Rogers, 2009; Malhotra,

Michelson, Rogers, & Valenzuela, 2011). These studies find statistically significant interactions between treatments and measures of past voter history. As such, similar results are expected in these experiments:

H4: Treatment effects will be moderated by subjects' past voter history.

Below, three experiments are presented that demonstrate the capacity of social pressure messages utilized in Facebook status updates to increase voter turnout.[1] In the first two experiments, subjects are tagged in status updates posted by their friends. In a third experiment, subjects are exposed to the social pressuring of others.

Study I: Peer-to-peer social pressure

While many social pressure experiments have been fielded in local elections, this study was conducted during the November 2014 general election in Dallas County, TX. This election cycle was relatively high-profile, owing to multiple open, races for statewide offices including governor and attorney general, and extensive campaign expenditures. Additionally, Dallas County was host to several closely contested countywide and legislative races. However, statewide turnout in the 2014 general election in Texas amounted to 33.70% of registered voters, and reached only 34.02% in Dallas County.

Methodology

This experiment utilizes a methodology in which confederates post "get out the vote" status updates with social pressure components and tag specific Facebook friends in the messages. The purpose is to give subjects the impression that their voting behavior—either participation or abstention—is being publicized to their entire Facebook network.

Procedure

To carry out the study, seven confederates were recruited through a local political organization. Each confederate was active in local Democratic politics and fully informed about the process of the experiment before agreeing to participate. Confederates downloaded their Facebook friend lists, which were matched to the voter file. Friends that produced a unique match in the voter file and were connected to only one confederate were enrolled in the study. Any subjects who were elected officials or candidates in the 2014 cycle were removed. No subjects were removed on the basis of voting history.

Next, subjects were block-randomized at the level of confederate into one of four experimental conditions—control, civic duty, pride, or shame—following Gerber et al. (2010). Within each condition, subjects were then randomly assigned to a treatment day during the 2-week early voting period. Confederates then used Facebook's Friend List feature, which allows a user to secretly group friends and either restrict status update visibility to a group or block the group from seeing a

particular post. The Friend List feature prevented spillover effects and made sure that subjects could only see messages intended for their treatment group. Any subject who could not be grouped due to her own Facebook privacy settings was dropped from the experiment, because she could not be treated.

Treatment of subjects began after the fourth day of early voting, on the evening of Thursday, 23 October, and concluded on Wednesday, 29 October.[2] Each night, confederates posted status updates tagging the day's assigned voters adapted from Gerber et al. (2010), using privacy settings to make sure that only subjects in the specific treatment group could see the messages. (The text of these status updates is available in the Appendix section.) Confederates posted the status updates after 7:00 p.m. each day when the polls closed, to clearly separate treatment from the measured outcome variable. Dallas County releases reports on the previous day's Early Voters, so anyone who had voted before their assigned tagging date was not treated. After the experiment concluded, voter files were obtained from each county both to verify who cast a ballot and obtain past voter history of participants.[3]

Measurements

Mobilization efforts often work differently on individuals based on their past participation records. Two measurements of voter history were calculated to serve as covariates in the analysis of treatment effects. The model used is based on Gerber and Rogers (2009), in which participation in the past 10 primary and general elections is used to create a categorical variable for infrequent, occasional, and frequent voters.

Total vote count. This variable was computed by tabulating the number of even-year general and primary elections the subject had voted in from 2004 to 2012. The maximum value is 10 and the minimum is 0. This variable only considers a subject's voting history in Texas, as participation records do not travel with voters when they move across state lines.

Eligible turnout. A variable was calculated to reflect the percentage of elections each subject voted in during the time they had been registered in Texas. Using each subject's earliest registration date, his or her maximum number of eligible elections was computed; each subject's total vote count value was then divided by this number to express the percentage of eligible elections in which the voter participated. Values ranged from 0 to 100.

Participants

Subjects were enrolled in the study through their Facebook connection with one of seven confederates who carried out the tagging treatments. This amounted to 293 registered voters in Dallas County. The sample was 55.3% female and 44.7% male, roughly corresponding to the gender breakdown of the confederates (four male, three female). The average age of subjects was 46.8 years old ($SD = 17.53$, range = 19–94), again reflecting the diversity of confederates, whose ages ranged from 21 to 68 years. Data on race, ethnicity, income, or education were not collected from subjects due to privacy concerns.

Table 1 Logistic Regression Analysis of Voter Turnout, Dallas County (2014)

Coefficient (*SE*) Treatment Group	Main Effects
Civic duty	−0.16 (0.27)
Pride	0.70^{+} (0.40)
Shame	1.09* (0.40)
Constant	0.07 (0.27)
Nagelkerke R^2	0.08

$n = 218$; $^{+}p < .10$. $^{*}p < .01$.

Public records provided subjects' voter registration and participation history. Subjects' mean length of time registered to vote was 15.94 years ($SD = 11.94$), and subjects had voted in an average of 3.26 of the past five federal general elections ($SD = 1.87$) and 1.83 primary elections ($SD = 1.85$). Of the 31 subjects who had not voted in any previous general election, nine subjects (29.0%) had registered to vote in the 2014 election cycle. These descriptive statistics suggest that the recruitment process was successful in generating a diverse subject pool in terms of age, length of registration, and voter history.

To verify random assignment, robustness checks were performed to determine if voter history variables were significantly associated with any group. A chi-square test of independence showed no significant relationship between group assignment and subject of the sex or confederate, voting in the 2010 general election, or having any Democratic or Republican primary history, respectively. To check for differences in the mean number of elections voted in by members of each group, an analysis of variance (ANOVA) was performed. Results were not significant.

Results

Logistic regression was used to determine the effect of the treatment on subjects' probability of voting at any time in the election period. To estimate treatment effects, subjects who voted on the first 4 days of early voting (before tagging started) were excluded, because they were not exposed to the treatment. Including them would artificially inflate the turnout of subjects across the experiment. A chi-square test of independence showed no association between group assignment and voting in this period, χ^2 $(3, N = 293) = 5.74$, $p = .13$. A series of logistic regressions were performed to estimate the effects of treatment on overall turnout, and also test for any moderating effects of past voter history. Results are presented in Table 1.

The treatments containing social pressure elements—pride and shame—were able to substantially increase voter turnout. Subjects in the shame condition voted at 76.2% overall, amounting to a 24.3 percentage point effect over the control group, which voted at a rate of 51.9%. Additionally, at 67.9% overall turnout, the pride subjects exhibited a 16.0 percentage point increase over the control group. These results provide partial support for H1, which states that voters who are reminded

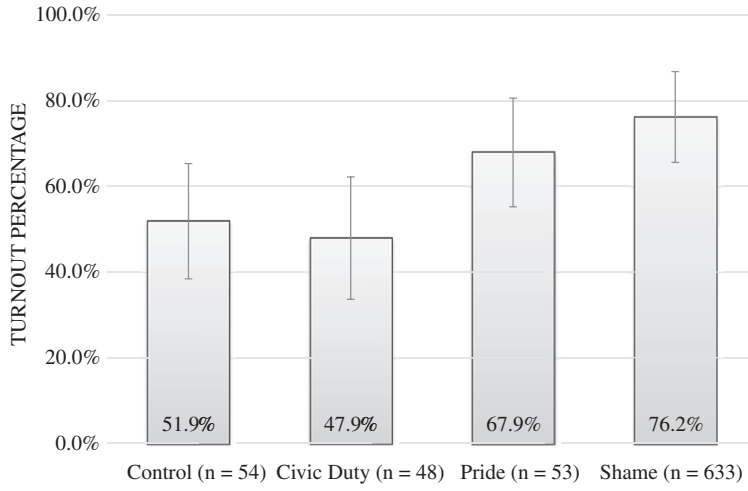

Figure 1 Turnout by treatment group, Dallas County (2014).

to vote through being tagged in status updates will turn out at a higher rate than those who are not. Notably, the civic duty treatment had no significant effect here, suggesting the message of the treatment matters. While shame produced larger gains in turnout over control than the pride messages, a direct comparison of the two treatments was not significant. The results provide no support for H2, which states that voters in the shame condition will vote at a higher rate than those in the pride condition. Figure 1 shows the turnout rates of subjects in each experimental condition calculated from the raw data, with error bars depicting the 95% confidence interval.

A series of logistic regressions were run to control for subjects' prior voter history, and also test for any moderating effect on treatment.[4] When the covariate accounting for voter history was added to the model, both the shame and pride conditions produced statistically significant increases in turnout, whereas civic duty messages did not.[5] A test for any interactions between treatment and voter history was not significant, suggesting that pride and shame treatments are effective at increasing turnout regardless of a voter's past participation. The data fail to provide support for H4, since treatment effect is not moderated by past voter history.

Study II: Social pressure in a low-salience election

A similar experiment was conducted one year earlier in a different county and very different electoral context, with a slightly different methodology.[6] Every November in odd-numbered years, Texas holds a statewide election to affirm legislative measures that necessitate voter approval to become law. By and large, these are extremely uninteresting affairs — in 2013, the statewide turnout was 8.55%. In Travis County, where this study took place, there was also a noncontroversial municipal bond on the ballot

that passed by wide margins, as well as a special election in one legislative district. Turnout in the county was 13.75%.

Methodology

In this experiment, the researcher used her own Facebook friend network as the subject pool, restricting the experiment to people registered to vote in Travis County, TX.

Procedure

The researcher downloaded her Facebook friend list and matched it to the voter file. Subjects who had voted in all four of the previous two general and primary elections (2010 and 2012) were excluded to focus on lower probability voters and decrease the likelihood of subjects figuring out they were part of an experiment. Additionally, any voter registered in the legislative district holding the special election was removed. Subjects were randomized into four groups: control, on-page, pride, and shame. On-page subjects received a post directly on their Facebook wall. Members of the pride and shame groups were tagged in status updates visible to only their respective treatment groups. Treatment day was randomly assigned within each group.

The experiment began on Monday, 21 October, the first day of early voting, and concluded on Monday, 4 November, the day prior to Election Day. Subjects were treated each morning. Travis County makes available daily early voting rosters on a one-day delay, so anyone who was shown to have already voted was not tagged. In this experiment, half of the on-page, pride, and shame subjects who had not voted by the end of early voting on 1 November were randomly assigned to be retreated before Election Day.

Measurements

A measure of voter history was used in the analysis to control for past participation on constitutional amendment elections. A binary variable, "any constitutional" was calculated to reflect whether the subject had voted in either of the two previous constitutional amendment elections in 2011 and 2009.

Participants

For this study, 239 registered voters in Travis County were enrolled in the experiment. Each was a Facebook friend of the researcher at the start of the experiment and had not voted in any of the four last general and primary elections. Participants were 54.0% female and 46.0% male. The average age ($M = 35.54$, $SD = 10.56$, range = 19–71) skews younger than the traditional average age of the electorate as a whole, but is close to that of the researcher. Subjects had been registered an average of 8.80 years ($SD = 7.73$). Only 28.0% of the sample had voted in either of the last two constitutional amendment elections. Again, data on race, ethnicity, income, or education were not collected from subjects due to privacy concerns.

A chi-square test found no statistical significance between treatment group and sex or having voted in a constitutional amendment election before. A series of

Table 2 Logistic Regression Analyses of Turnout, Travis County (2013)

Coefficient (*SE*)	Entire Voting Period	Early Vote Only
On-page	0.17 (0.37)	0.49 (0.43)
Pride	0.29 (0.37)	0.79+ (0.42)
Shame	0.23 (0.37)	0.84* (0.42)
Constant	−0.06 (0.26)	−1.34** (0.32)
Nagelkerke R^2	0.005	0.030

$n = 239$; $+p < .10$. $^*p < .05$. $^{**}p < .001$.

ANOVAs were conducted that found no significant relationship between assignment group and either age, length of time registered, or number of votes in past constitutional amendment elections.

Results

A series of logistic regressions were performed to determine if the treatment had an effect on participation in the early voting period and on turnout overall. The main effects model shows a statistically significant difference in turnout during early voting; however, the model predicting overall turnout across the entire election period was not significant. This is likely due to heterogeneous effects from retreatment, which was conducted on a randomly selected half of individuals in each group who had not yet voted by the end of early voting.[7] Attempting to control for retreatment in the main effects model was not feasible because only nonvoters were randomized into the condition, as opposed to all subjects. As treatment was consistent for all subjects during the early voting period this analysis is more straightforward. Regression results are presented in Table 2.

As in the Dallas study, the Travis results support H1, because subjects tagged in status updates voted at higher rates than those in the control group. Subjects in the shame condition voted early at a rate of 37.7%, amounting to 17.0 percentage point effect over the control group turnout rate. The pride messages were marginally significant, generating 36.5% turnout during early voting, for a 15.8 percentage point effect. Both the pride and shame treatments produced gains in turnout larger than that generated by social pressure mailings, which range from 3 to 8 percentage points (Gerber et al., 2008, 2010). The on-page reminder had no effect, suggesting that either the message or the publicness of the reminder matters. Again, however, a direct comparison of pride and shame was nonsignificant, and thus failed to provide support for H2. Figure 2 shows turnout during early voting for each treatment group, again calculated from the raw data with error bars representing the 95% confidence interval.

Analysis was also conducted to control for any past participation in a constitutional amendment election and test for interaction effects. A dummy variable was used to represent any past voting history in the 2011 or 2009 constitutional amendment elections. Although the covariate itself was a significant predictor of turnout, tests for interactions produced null results, suggesting that past voter history does not

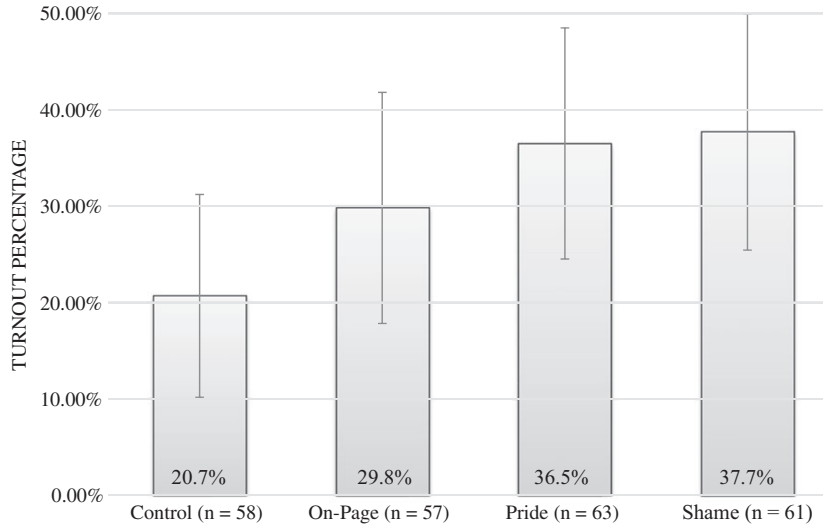

Figure 2 Early voting turnout by treatment group, Travis County (2013).

impact the efficacy of the treatment. The data do not support H4, which anticipates heterogeneous effects.

Study III: Social pressure by proxy

Studies I and II demonstrate that social pressure messaging can generate impressive gains in turnout when voters are directly shamed or praised for their participation records. But what happens when voters are exposed to the social pressuring of others? Is social pressure strong enough to increase turnout even among bystanders who are not directly praised or shamed themselves? Facebook's ability to enable users to see status messages tagging other people allows for the testing of hypotheses pertaining to social pressure by proxy.

Methodology

This study employs a similar design to the Dallas and Travis County experiments, in that it utilizes eight confederates who conduct the treatments on their Facebook friends. However, in this instance the subjects were not directly tagged—instead, confederates tagged each other in status updates that were visible to specific subsets of their friend lists. The goal of the design was to give subjects the impression that they could be the next person tagged by their friend (the confederate) in these status updates.

Procedure

A statewide political organization assisted in the recruitment of eight confederates in Collin County, TX. Confederates downloaded their Facebook friend lists, which

were matched to the county voter file. Any subjects that were Facebook friends with more than one confederate were removed from the study, as well as any candidates or elected officials. Subjects were then block-randomized by confederate into one of four groups: control, civic duty, pride, or shame. Confederates grouped their friends using Facebook's Friend Lists feature.

Treatment began on Wednesday, 22 October and concluded on Tuesday, 28 October, once all eight confederates had tagged each other. Updates were posted after 7:00 p.m. each day to separate treatment from the dependent variable of voting. Each day, confederates tagged one another in separate status updates that were visible only to members of each treatment group. For example, on the first night of the experiment, Confederate A tagged Confederate B in a message emphasizing civic duty visible only to the civic duty group, a message praising the confederate for voting visible only to the pride group, and a message shaming the voter for failing to cast a ballot visible only to the shame group. On the second night, Confederate A repeated the process by tagging Confederate C in three updates, each visible only to the intended treatment group. Confederates tagged each person once during the 7-day treatment period. The treatment did not consider whether the confederates actually *had* voted—since the subjects were not friends with the confederates tagged by their friends in the posts, they would not know the truth.

Measurements

As in the Dallas County study, each subject's past voter history was measured using total vote count and percent turnout in eligible elections while registered. Total vote count was used in the analysis because it was a better fit for the control group.

Participants

Subjects were registered voters in Collin County. A total of 671 subjects were enrolled in the experiment. The average age of subjects was 34.02 years of age, ranging from 18 to 85 ($SD = 16.32$). Males comprised 36.2% of the sample and females 63.8%, which is likely a function of having five female and three male confederates. Data on race, income, and education were not collected due to privacy concerns, but each subject's voter history was collected from public records. The Collin subjects had a low average participation in prior elections, with a mean general election count of 1.66 ($SD = 1.78$) over the last five federal cycles and a mean primary count of 0.42 ($SD = 0.94$). Average years registered was 7.95 ($SD = 7.90$) across the sample. Of subjects who had voted in zero of the past general elections, 48.3% had registered to vote in the 2014 cycle.

Chi-square tests between group and sex of the subject or confederate, any democratic or republican primary history, registering in the 2014 cycle, or voting in the 2010 election were all nonsignificant. A series of ANOVAs was performed that found no significant differences in average age, length of registration, or total vote count for each of the four groups.

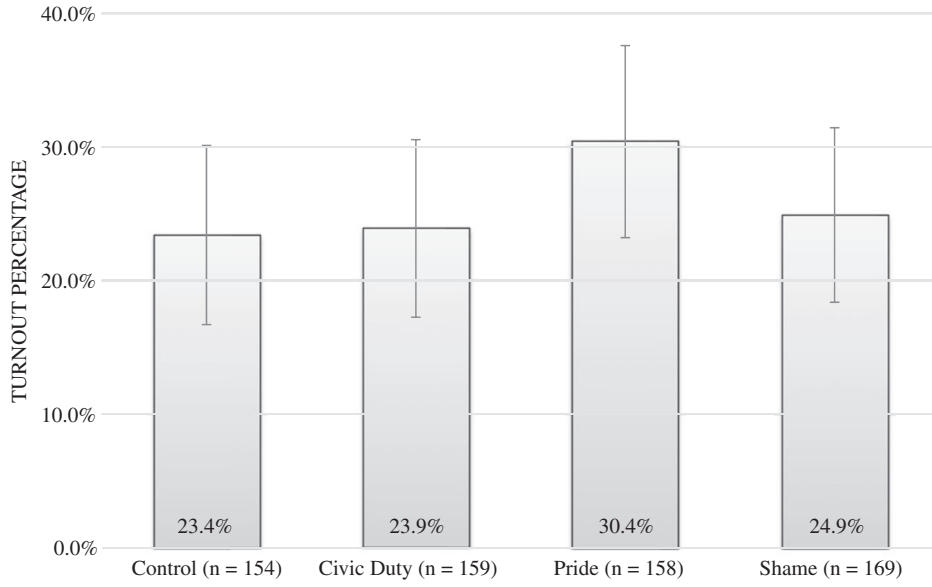

Figure 3 Overall turnout by treatment group, Collin County (2014).

Results

Logistic regression was utilized to determine if social pressure by proxy impacted turnout. In order to estimate actual treatment effects, subjects that voted before treatment started were removed from the analysis, as they could not have been affected. A chi-square test of independence found no association between group assignment and voting in the first 3 days of early voting, χ^2 $(3, N = 671) = 3.32$, $p = .34$. A series of regressions were performed to determine the main effects of treatment, effects when controlling for past voter history, and if any interaction exists between treatment and past voting history. (Results are described in the Appendix section.)

Ultimately the findings suggest that there is no consistent main effect of social pressure by proxy, though subjects in the pride group did have the highest rate of turnout. Voter turnout rates for each treatment condition are presented in Figure 3, calculated from the raw data and showing 95% confidence intervals. The main effects model and model controlling for voter history produce null results. However, the inclusion of an interaction term between treatment and voter history produces a significant and positive result for the pride condition, suggesting that treatments praising others for voting may be able to motivate subjects with a small number of past votes. These findings run counter to H2, because shame messages did not produce greater gains than pride messages.

These results provide partial support for H3, which states that voters exposed to social pressure by proxy will vote at higher rates than subjects in the control group. The significant interaction between voter history and the pride treatment also provides partial support for H4. Overall, however, these results should be

viewed with caution, as it is possible that the significant interaction term is a type II error due to multiple tests. Furthermore, the sample as a whole had very little past voter history; subjects had voted in an average of 1.92 out of the last 10 primary and general elections. Less than 10% of the sample had voted in 6 or more of the last 10 elections. It is possible that this significant interaction would not appear in a sample with a more even distribution of the voter history covariate among subjects.

Discussion

These experimental results demonstrate that Facebook status updates can be used to increase voter turnout, producing gains in participation in excess of what has traditionally been found from face-to-face voter contact. Overall turnout rates for the direct pride and shame treatments generated percentage point effects in turnout over the control groups ranging from 15.8 to 24.3%. These effects are substantially larger than those which have been generated by canvassing or social pressure mailers, which are in the 3–5% and 5–8% range, respectively. Digitized direct voter contact that includes social pressure messaging from a member of one's network appears able to maximize the gains of both methods. However, despite the tremendous effects size, some caution is urged since the amount of variance in turnout explained by the treatments is relatively small. Conversely, although the social pressure treatments that directly tagged subjects were successful, the efforts to mobilize bystanders by exposing them to social pressure by proxy did not appear to produce measurable gains. Direct social pressure within social networks is much more effective.

Notably, the message matters. Simply tagging friends in a reminder to vote is insufficient—only treatment groups who received social pressure messages referencing their voting records exhibited higher turnout than the control group. And while pride and shame both produced significant increases in voting, the shame messages were not a statistical improvement over the messages praising voters. Therefore, it is the heightened visibility of individuals' voting behavior made possible on Facebook that appears to be driving turnout. The method is effective in low-salience and higher-profile elections, and does not appear to be substantially influenced by the individual applying the social pressure. Furthermore, this method offers logistical benefits over door-to-door canvassing, which requires voters to be home and usually is conducted during daylight, or phone-calling programs that necessitate correct and connected phone numbers to call. Digital canvassing can be performed day or night, and will create a Facebook notification for subjects, further increasing the likelihood that they see the reminders.

Although the results in Studies I and II echo past social pressure experiments (Gerber et al., 2008, 2010), the percentage point effects generated here are much larger than what has been found in many past GOTV experiments. This may be due to the novelty of the effect, or the lack of other sufficient voting reminders in what were ultimately low-turnout affairs. However, following the literature on norms, it is likely that the

gains are a result of heightening the visibility of their voting behavior: Subjects perceived that they were being called out by a friend in a manner that their entire social network could see. This technique maximizes the publicness of their conformity to the norm of voting not merely to their neighbors, but to everyone they have connected with on Facebook—friends, family, and colleagues.

Although direct social pressure produces clear and dramatic gains in turnout, the impact of social pressure by proxy is less evident. In Study III, there was no significant main effect of treatment. However, it is possible that pride treatments—in which subjects see others receive praise for voting in the ongoing election—are effective at mobilizing voters with less robust voting history. Research on descriptive norms offers insight on the potential mechanism behind these results. Pride treatments may have given subjects the impression of high turnout, thus creating the descriptive norm of participation. Gerber and Rogers (2009) find that messages emphasizing high turnout—creating the descriptive norm that "everybody's doing it"—increased voters' stated intention to vote more than a low-turnout message in which the voter's lone ballot could make more of a difference (i.e., the rational model of voting). Matland and Murray (2014) demonstrate that sending mailers with inconsistent descriptive and injunctive norms, which emphasize both the importance of voting and low turnout, do not produce gains. The shame and civic duty treatments encouraged participation while creating the descriptive norm that people were not voting. Alternatively, the pride treatments provided a norm-consistent message that created an impression of high turnout. Regardless, the experiment merits replication with a more representative sample that has a more balanced distribution of voter history.

Notably, all of the social pressure came from politically engaged individuals with a history of activism on and off the Facebook platform. This choice mimics the conditions in which the treatments would likely be deployed in a real-world setting by supporters of a candidate or cause, and lends more credence to what La Due Lake and Huckfeldt (1998) term politically relevant social capital. They define this social capital as "produced as the consequence of political expertise and information that is regularly communicated within an individual's network of social relations" (p. 570). They argue that a specific form of social status accrues in individuals who participate and discuss politics, and that political interaction within networks is positively associated with participation. Here, the confederates are fostering that interaction by systematically tagging individuals to encourage them to vote. Whether the same results would be found in a study employing apolitical confederates is worth considering: Are GOTV messages more or less effective when coming from someone with little past political interest?

Conclusion

In the face of lackluster political participation, the demonstrated ability of Facebook status updates to produce substantial increases in voter turnout represents a new hope

for democracy. This method creates a form of digital canvassing in which users do not need to go door to door but rather @ to @, systematically calling out their friends who have failed to vote—or, for less frequent voters, exposing them to the praise of others for past participation. As such, American adults who use Facebook can be effectively contacted and mobilized to vote by members of their own network. Furthermore, this method produced gains greater than that found from face-to-face contact, suggesting that direct contact within digital networks might be even more effective at fomenting turnout than traditional methods. This contributes to theoretical conceptions of the impact of digital media on democratic society, and provides a reason to be optimistic that online networks may be utilized to increase voter participation.

Harkening back to Katz and Lazarsfeld (1955), these studies demonstrate that there is a flow of voter action, not just information, within personal networks. Experimentally inducing political activity within confederates' networks produced sizable and measurable gains in turnout from members of those networks. These studies extend the theory of interpersonal influence on voting by showing that social pressure from within one's network is more influential in increasing turnout than mere awareness of an election as is generated by the media and campaign activities. Technology has enabled individuals to make their networks manifest and visible through digital media. Those digital networks, in turn, can be successfully leveraged to increase voter turnout, specifically by leaning on Facebook's ability to increase awareness within an individual's network of his or her compliance with strongly held social norms. In this sense, promoting the norm of voting within underperforming networks may be the ultimate challenge in fostering turnout.

Although this method is certainly time- and labor-intensive, member-based political organizations or grassroots campaigns may want to consider using it to demonstrably increase turnout at essentially no cost, rather than more expensive techniques such as direct mail or paid canvassing. Additionally, the technological potential exists to further automate this process. Facebook itself could choose to incorporate voters' participation records into their profiles on Election Day. While the backlash would certainly be great, so might the boost in turnout.

Looking ahead, these studies offer tantalizing potential to engage voters that may not participate as frequently in American electoral processes. Voters in the American electoral system tend to be White, wealthy, well educated, and older than the population as a whole (Rosenstone & Hansen, 2003); use of social networking sites is more prevalent among minority groups and lower-income, less educated, and younger individuals (Duggan & Smith, 2013). Operationalizing this form of digital canvassing to reach a broader segment of the population may result in not only higher turnout nationwide, but also a more representative electorate. These results suggest, then, that an increasingly digitized society may have positive effects on voter turnout, and that just as technology has started to close divides in access to information, so too might it enable an equalization of political participation.

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Notes

1 All three studies were reviewed and approved by the University of Texas at Austin Institutional Review Board. Informed consent was waived given that the dependent variable was measured using public voting records and it would be impossible to inform subjects without impacting the outcome of the study. Subjects were not debriefed after the study; however, subjects who asked confederates or the researcher about the treatments were told after the election that it was an experiment.

2 In Texas, elections include an in-person early voting period that usually runs for 12 days and starts 15 days before election day. During early voting, any registered voter may cast a ballot at any early voting polling location in their county. Polls are open for a fixed period each day, which can vary by the day of the week and is set by each county's administrative body.

3 At the beginning of the experiment, all subjects were successfully matched to the voter file for their respective county; however, during the postelection analysis it was determined that some subjects had moved and reregistered elsewhere between the initial match and the start of Early Voting. As such, they were removed from the final analysis. Measuring turnout of subjects who were no longer legally eligible to vote in that county would not be appropriate.

4 Tests were performed to determine if any individual confederate had a significant impact on turnout. When all confederates were added to the model with treatment groups and a voter history covariate, only one was marginally significant and negative when compared to the confederate with the median percentage turnout among their friends in the study.

5 As explained in the measurements section, two voter history covariate models were used. One controls for voter history measured as the total number of elections a subject has voted in out of the past 10; the other determines what share of eligible elections the subject has voted in out of the last 10. Both covariates were tested on the control group, and the total vote count variable produced a better fit than the eligible turnout model, so the former is used in this analysis.

6 The 2013 study, which was conducted a year prior, has several methodological departures from the Dallas County study. In this study, the researcher conducted the experiment on her own Facebook friends, rather than employ confederates. Additionally, half of the Travis subjects who had not voted by the end of early voting were randomly assigned to receive retreatment before Election Day. Finally, treatment was performed each day in the late morning while polls were open. This made it difficult to determine the chronology of tagging and voting. In Study I, treatment was moved to after the polls closed at 7:00 p.m. each day to isolate treatment from the dependent variable of voting.

7 The on-page and shame groups showed no meaningful difference in Election Day turnout as a result of retreatment. The retreated subjects in the on-page condition voted at a rate of 31.6% versus 33.3% for those who were not retreated. In the shame condition, both groups

voted at a rate of 26.3%. However, subjects in the pride group who were retreated voted at a rate of 19.1% on Election Day, compared with 42.1% turnout among those who were not retreated. However, the sample size for pride retreatment was only 40 subjects, so it is both statistically impossible and unwise to draw conclusions from this curious result. Further experimentation is needed to measure the impact of multiple reminders to vote from Facebook friends.

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Appendix. Text of Voting Reminders

Study I

Civic Duty: Voting is your civic duty! Just a reminder for [name], [name], [name], [name], and [name] that Early Voting ends Friday, 31 October. Here is a list of Dallas County Early Voting locations: [bit.ly link] Do your civic duty, and VOTE!

Pride: Voting records are public! Thanks to [name], [name], [name], [name], and [name] for voting in past elections. Early Voting ends Friday, 31 October. Here is a list of Dallas County Early Voting locations: [bit.ly link]. Do your civic duty and VOTE!

Shame: Voting records are public! Records show that [name], [name], [name], [name], and [name] have not yet voted this year. Early Voting ends Friday, 31 October. Here is a list of Dallas County Early Voting locations: [bit.ly link] Do your civic duty and VOTE!

Study II

On-Page: Hey [name]! Just a reminder — early voting in this year's statewide Constitutional Amendments elections ends Friday, 1 November. Voting records are public. Don't forget to vote! Here's a link to a list of locations. [Link]

Pride: Voting records are public! Thanks to [name], [name], [name], [name], [name], [name], [name], [name], [name], and [name] for voting in past elections. Early voting in this year's constitutional amendment elections continues through Friday, 1 November. Click here for locations. [Link]

Shame: Voting records are public! Records indicate that [name], [name], [name], [name], [name], [name], [name], [name], [name], and [name] have not yet voted in this year's constitutional amendment elections! Early voting ends Friday, 1 November. Click here for locations. [Link]

Study III

Civic Duty: Voting is your civic duty! Just a reminder [name], Early Voting ends Friday, October 31. Here is a list of Collin County Early Voting locations: [bit.ly link] Do your civic duty, and VOTE!

Pride: Voting records are public! Thanks [name] for voting in this election. Early Voting ends Friday, 31 October. Here is a list of Collin County Early Voting locations: [bit.ly link]. Do your civic duty and VOTE!

Shame: Voting records are public! Records show that [name] has not yet voted in this election. Early Voting ends Friday, 31 October. Here is a list of Collin County Early Voting locations: [bit.ly link] Do your civic duty and VOTE!

Table A1 Logistic Regression Analyses of Voting by Treatment Condition, Collin County (2014)

Coefficient (*SE*)			
Predictor Variable	Main Effects Model	Model With Voting History	Model With Voting History and Interaction
Civic duty	0.03 (0.27)	−0.15 (0.31)	0.00 (0.58)
Pride	0.36 (0.26)	0.28 (0.30)	1.22* (0.49)
Shame	0.08 (0.26)	−0.01 (0.31)	0.53 (0.52)
Total vote count		0.55*** (0.05)	0.76*** (0.13)
Civic × total vote			−0.09 (0.17)
Pride × total vote			−0.38* (0.15)
Shametotal vote			−0.22 (0.16)
Constant	−1.19*** (0.19)	−2.40*** (0.25)	−2.91*** (0.41)
Nagelkerke R^2	.006	0.35	0.36

$N = 640$. + $p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.