

How Does Social Media Trigger Collective Efficacy Through Deliberation? A Field Experiment

DANIEL HALPERN

Pontificia Universidad Catolica de Chile, Chile

This article tests which types of affordances in social network sites (SNS) augment the effects of deliberation on collective efficacy in an experimental setting. For this purpose, 151 participants commented on the Facebook and YouTube accounts of the White House and several other federal agencies for two weeks. Results show that the various affordances of these channels contribute to shape discussion networks, which in turn affect deliberation and collective efficacy. More specifically, the experiment shows that (a) deliberation in SNS has a marginally significant effect on collective efficacy, (b) SNS that allows networked information access (Facebook) causes the highest increase in collective efficacy, (c) cognitive involvement and user engagement explain the increase in collective efficacy, and (d) interactivity positively affects users' engagement.

Keywords: social media, online deliberation, cognitive involvement, user engagement, discussion networks, collective efficacy

The link between the theory of deliberative democracy and the practice of online forums has been the subject of an emerging body of research not only in the political communication literature but also in the fields of information science, computer science, and human–computer interaction (HCI; Xiao & Askin, 2014). Empirical studies have shown that online deliberative activities bring prospective and positive effects on democracy (Luskin, Fishkin, & Iyengar, 2004). The virtuous effects on which such studies have focused include increased political knowledge (Min, 2007), higher opinion quality, and increased social capital and greater trust (Price & Cappella, 2002). Similarly, literature in HCI has recognized specific design features in social computer-mediated technologies that can foster, by virtue of facilitating social interaction, voluntary contributions at a vast scale (e.g., Xu, Li, & Shao, 2012). This is where the concept of affordance—the physical and visual design features that suggest functionality and appropriate means of interaction with computer systems (e.g., Sutcliffe, Gonzalez, Binder, & Nevarez, 2011)—acquires significant relevance.

This article empirically explores whether deliberation in SNS has a positive impact on collective efficacy, which is the belief that citizens have in the capabilities of the public, as a collective actor, to organize the courses of action required to achieve social outcomes (Yeich & Levine, 1994). The literature

Daniel Halpern: dmhalper@uc.cl

Date submitted: 2016–03–31

Copyright © 2017 (Daniel Halpern). Licensed under the Creative Commons Attribution Non-commercial No Derivatives (by-nc-nd). Available at <http://ijoc.org>.

suggests that various affordances presented in these channels contribute to shape discussion networks (Ellison & boyd, 2013; Ellison & Vitak, 2015), which in turn may affect deliberation and, consequently, collective efficacy. To empirically test this relationship, I designed an experiment in which 151 participants commented on Facebook and YouTube accounts of the White House and other federal agencies during a two-week interval. These two social media platforms were chosen because they afford different access to information and identifiability, traditional predictors of online deliberation: Whereas in Facebook users have a very tangible list of friends with real profiles, in YouTube users have more anonymity. Similarly, Facebook users are automatically notified in their newsfeeds about content updates posted by their contacts, whereas YouTube does not inform users' networks about their activities. Regarding the selection of the federal agencies' social media accounts, research has shown that higher levels of interactivity increase the engagement of users, leading to more sociability and deliberation among them (Wise, Hamman, & Thorson, 2006). Consequently, participants commented on federal agencies with very low account activity and on the White House, the most active federal agency during the observing period. Thus, contrasting the effects of conversations on different SNS is expected to provide a clearer understanding of how network features affect discussion when these features are formed through varying social media settings.

Deliberation Theory

There is a consensus among scholars that through deliberation, members of society can clarify their views, understand others' opinions, and foster civic engagement (Gutmann & Thompson, 2009). As Gastil, Deess, and Weiser (2002) suggest, deliberation processes make political participation possible: When citizens engage in political debate, they develop civic attitudes and motivations that enable deeper engagement in political affairs (Gutmann & Thompson, 2009). Thus for deliberative theorists, deliberation can have a transformational influence on citizens because they discover legitimate solutions to political problems only by engaging in sustained, reflective discourse (Chadwick, 2008). From a normative perspective, democratic theory assumes that through discussions, members of society can clarify their views, understand others' opinions, improve ideas, and foster civic engagement (Price & Capella, 2002).

Research has shown that interpersonal discussion about public affairs fosters political involvement because discussants get a deeper understanding of political facts, which has a positive impact on individuals' appreciation and desire to participate in the political process (Eveland & Scheufele, 2000). Gastil et al. (2002) found that political talk also helps people improve the abilities, attitudes, and motivations that enable deeper engagement in civic affairs. By promoting basic norms such as social trust and efficacy, deliberation fosters electoral engagement and engagement in one's community (Price & Capella, 2002). Warren (1996) also argues that deliberation empowers citizens, and this empowerment can lead to more political activity. Empirical research has shown that after exposure to discussions, citizens have a substantial acquisition of factual information (Luskin et al., 2004). In fact, research by Gastil et al. (2002) showed that conclusive deliberative experiences raise future voting rates above those expected based on prior voting history.

Collective Efficacy as a Result of Deliberation

Political efficacy is an individual's perceived ability to influence the political system (McPherson, Welch, & Clark, 1977). Abramson and Aldrich (1982) argue that this construct is necessary for civic participation, given that without feelings of competency and beliefs that personal actions are consequential, citizens would have little incentive to participate. This sense of being capable of acting effectively has been documented by previous research as one of the key psychological variables that explain citizens' participation (Niemi, Craig, & Mattei, 1991). Individuals who feel politically efficacious are more likely to believe that ordinary citizens should be active in their communities (Coleman & Davis, 1976). Although most of the research on efficacy has focused on the individual level, concerted political action may also depend on perceptions of the group's efficacy (Gecas, 1989). This is because political change cannot be realized without the shared belief that other community members are capable of exerting control over political matters (Yeich & Levine, 1994).

During the last two decades, the concept of collective or group efficacy (Bandura, 1982) has been used as a basis of the efficacy construct, and similarly to the concept of political efficacy, scholars have emphasized two main dimensions (Van Zomeren, Postmes, & Spears, 2008). From an internal efficacy perspective, the notion of group efficacy has been conceptualized as the judgments that members of a group have about their capabilities to engage in successful political action (Gecas, 1989). From an external efficacy perspective, Yeich and Levine (1994) understand collective efficacy in terms of the perceived responsiveness of governmental authorities to the collective action that emerges from organized groups. This article considers both perspectives: Following Van Zomeren et al. (2008), the conceptualization integrates the beliefs that individual actions have the potential to transform and change the social structure where the person belongs (Gergen, 1999) but also with the responsiveness of the political system to the collective demands for change. Therefore, drawing from the internal and external dimensions of the construct, collective efficacy will be conceptualized as a citizen's belief in the public's capabilities, as a collective actor, to organize and execute the courses of action required to achieve social outcomes.

In relation to civic engagement, collective efficacy is expected to operate similarly to self-efficacy. Proponents of citizen deliberation argue that it is through discussion that citizens are reassured and have more confidence to express their ideas, which in turn increases their self-efficacy in political issues, and consequently, leaves them feeling more capable of dealing with civic affairs (Finkel, 1985). In the same way that practicing an activity develops one's confidence in performing that activity, deliberation increases citizens' sense that they can understand and participate in the political system, feeling more comfortable to act politically (Gastil et al., 2002). Thus, similarly to the effects of deliberation in offline settings, it is expected that users who debate with others through SNS will also develop higher levels of collective efficacy.

H1: Participants who deliberate in SNS will increase their level of collective efficacy.

Collective Efficacy in a Web 2.0 Environment

To understand how SNS can increase collective efficacy, the key features afforded by social media will be explained first. As was defined above, affordances are the physical and visual design features that suggest functionality and appropriate means of interaction with computer systems (e.g., Sutcliffe et al., 2011). Research has shown that the set of functions embedded in the technology affect the social structures that take place, which in turn have an impact on users' interactions (Ellison & Vitak, 2015).

Ellison and boyd (2013) highlight three key features afforded by social media as capable to increase users' engagement or participation. The first is that participants have uniquely identifiable profiles that consist of content supplied by users themselves, other users, or system data; the second is that users can publicly articulate connections that can be viewed by others; and the third is that users can consume, produce, or interact with streams of user-generated content provided by their connections on the site. Regarding the first affordance, research has concluded that the sharing of identity information via SNS profiles and content streams can support relationship development, and via these relationships, users exchange relevant information, increasing their opportunities to deliberate (Ellison & Vitak, 2015). Additionally, research has shown that the interpersonal communication capabilities embedded in these social platforms to rebroadcast content from their profiles (e.g., sharing news) and to add personal commentary increases users' opportunities to reflect about political issues or personal events related to the issues as they comment on them (Valenzuela, Arriagada, & Scherman, 2014). In fact, users do not need to visit news media or political websites to access information; they may also be notified or invited by their contacts to gain access to that information under their own SNS as they comment on the news. Consequently, if users share news stories and discuss this information in a Web 2.0 environment, more political expressions may be triggered, leading people to engage in public discussion on or via social media.

Research by Barak, Boniel-Nissim, and Suler (2008) found that participants of online communities not only achieve a high sense of personal empowerment by acquiring relevant information and knowledge about their environments, but by taking on the role of helpers, they could also relate their voices to the voices of others, increasing the sense of efficacy. Consistent with the effects of interactive media on efficacy, literature in social psychology suggests that one's awareness of an audience, or a sense of publicness, augments the effect of self-presentation on identity (Kelly & Rodriguez, 2006). These alterations in self-beliefs have been shown to extend the changes in behavior in front of audiences, as individuals try to change to match their self-presentations. Further, this internalization process, referred to by the literature as the *public commitment explanation*, states that when individuals have an audience that can identify with them, individuals feel responsible for their actions (Schlenker, 1980). This means that individuals would feel obligated to behave in a manner consistent with their self-presentations, especially if they can receive feedback from the audience. Schlenker (1980) explains that, at the end of the process, individuals would become more similar to the way they present themselves because they want to match the feedback they expect from their audiences.

Gonzales and Hancock (2008) tested this effect in online settings and found that when individuals make themselves identifiable on a publicly accessible blog, they feel obligated to behave in a manner consistent with their self-presentations, shifting their identities to become more consistent with the online behavior adopted publicly. In civic participation contexts, Rojas and Puig-i-Abril (2009) found a similar influence in the use of blog and social media, concluding that those who express commitment and try to mobilize others through these channels eventually persuade themselves, becoming a powerful route that converts expressive behaviors into more tangible ones such as voting, campaigning, or volunteering. Consequently, it may be expected that the experience of holding public and visible discussion about news or political issues originating in SNS, with the potential for a massive audience, could be particularly salient to one's sense of collective efficacy. That is, discussants may be more likely to internalize this civic attitude when they realize that thousands of users may follow their posts and ideas.

Concerning the public articulation of users' networks and the aggregation of content from one's network, the other two affordances, it may be argued that the ways in which SNS facilitate content distribution and discussion through contacts' notifications also introduce a new structure that finally shapes how people engage with others in these environments. Because most of the interactions are in open text, social exchange and social support are highly visible for all the contacts that form a network, even for those who are not actively participating in these exchanges. Thus, by motivating media information seeking through contacts' notifications and making transparent the structure within which political discussion occurs, discussants in SNS can see what their network members think about public affairs and can respond openly to their personal inquiries when they need more information about issues. And because contacts in one's social network usually respond to information or comments posted by users (e.g., Rainie, Purcell, & Smith, 2011), it is likely that individuals will find resources in their networks or communities when they ask for help or want to clarify information.

However, it is important to note that differences in the affordances of SNS would configure the dynamics between users in a way that shapes participants' engagement, which in turn may affect deliberation and collective efficacy. Regarding the first affordance, the profile that consists of user-supplied content, a user's audience on Facebook is a tangible list of friends with real profiles, and because they are notified about network comments, it is expected that this identified public creates stronger expectations than the unidentified online public on YouTube. Drawing on the public commitment explanation, it may be expected that this higher identification and sense of publicness will make Facebook users feel responsible for their opinions, thus augmenting the effects of online deliberation on their identities. Second, the anonymity and lack of identifiability that YouTube presents may not support enough relational features to enable discussants to correctly identify the kind of interpersonal situations they find themselves in. Further, because in more identifiable media (Facebook), discussants can use the increased personal information available (e.g., political interests) to expand the discussion, it is also expected that Facebook users will engage in more discussion than YouTube users. Consequently, the absence of a clear-cut communication setting that assists users in finding the context of their messages on the more anonymous YouTube may also result in less deliberative engagement.

Concerning the second and third affordances, Facebook users are automatically notified about content updates in their newsfeeds and have immediate access to information posted or liked by their

contacts. When users, for example, comment on news posted by the White House, the message becomes public not only to the users who are participating on the White House page but also to the commenters' social networks. In contrast, YouTube does not inform users' networks about their activities, and when individuals comment on a video, their contacts are not automatically notified about this activity. Additionally, YouTube users become subscribers and manage channels without giving personal information to the system, and consequently the contacts associated with users' networks do not know who the other users are (Courtois, Mechant, & De Marez, 2011). Thus, it is expected:

H2: Users who deliberate in social media channels that allow networked information access (Facebook) will have a higher increase in collective efficacy than users who deliberate in YouTube.

Discussion Engagement and Cognitive Involvement as Predictors of Collective Efficacy

Research related to participatory communication in computer-mediated groups offers an applicable framework to study how certain affordances may affect the engagement of participants (Sharma, Butler, Irwin, & Spallek, 2011). Rafaeli and Sudweeks (1997) distinguish the role that interactivity plays in the social dynamics of mediated groups, arguing that the interaction attained is what keeps message threads and their authors together. They claim that higher levels of interactivity in online communities can increase the engagement of users, leading to more sociability among them. Following this approach that focuses on human interaction, interactivity will be conceptualized as the level of interactive communication between two or more actors mediated by technology (Stromer-Galley, 2004) in which users respond to the input of others in a consequential manner (Sundar, 2004). Wise et al. (2006) found that communities featuring interactive comments that related to earlier messages in discussions elicited greater participation in users than communities featuring noninteractive messages. Based on the finding that a higher level of interactivity in online communities increases user engagement, it is proposed that more interactive conversations between members of a community will generate higher levels of discussion engagement in other users as well (Arapakis et al., 2014). Likewise, when ongoing communication exchanges occur, these exchanges carry a social binding force (Rafaeli & Sudweeks, 1997) that might be expected to serve as a catalyst for extensive conversations, facilitating political discussion among users. In other words, users who engage in interaction with other users are more likely to engage in discussions than users who merely respond to the initial posts.

Additionally, a review of the literature in media effects and cognitive involvement shows that individuals' engagement and level of attention to messages leads both audiences and communication partners to process the presented information more carefully, which in turn affects how the conversation influences participants (Eveland & Scheufele, 2000). Similarly, Kwak, Williams, Wang, and Lee (2005) supported the notion that attentiveness to conversation has a significant impact on establishing attitudinal and behavioral outcomes that occur within the group setting and on facilitating competent interaction of group members (Timmerman, 2002). Moreover, based on previous research about the effects of engagement and discussion attention on group conversation (Timmerman, 2002) and active processing of mediated information, it is expected that cognitive involvement will augment the degree to which the

individual interacts psychologically with the discussants' messages, leading to an increase in attitudinal change (i.e., collective efficacy). Thus, it is proposed that:

H3a: Participants deliberating in less interactive discussions will show lower levels of discussion engagement than those deliberating in more interactive discussions on SNS.

H3b: Participants in the more anonymous social media channel, YouTube, will show lower levels of discussion engagement than on Facebook.

H3c: Participants that interact with others and reply to messages posted by other users will show higher levels of discussion engagement than participants who only comment on the initial thread.

H3d: Discussion engagement and cognitive involvement will be positively related to changes in collective efficacy.

Method

Procedure

For the experiment, 189 undergraduate students were recruited from 10 communication courses at a U.S. northeastern university. To participate, students had to inform their Facebook and/or YouTube user name accounts. They were instructed to post, from their accounts, comments of 50 words making a point related to a message posted by the assigned federal agency. They were to comment for two weeks, excluding the weekends. Students volunteering for the project received two extra credits for their final grades and had the opportunity to win \$10 per day if their post was selected as the best comment of the day. The researcher continuously monitored their comments. Every night, participants received an e-mail announcing the name of the winner with the comment that she or he had posted.

Posting activities of more than 150 federal agencies were analyzed to design the conditions. Thus, 70 federal agencies with very low activity in their social media accounts were selected: 33 in Facebook and 37 in YouTube. The criteria to be considered in this category were agencies that posted at most five message threads or videos per week and that received fewer than 10 comments from their followers on those threads. The White House, on the other hand, was the most active federal agency during the observing period: The average number of comments from followers that the White House account received in each thread was 1,284 posts in Facebook and 648 in YouTube. Thus, five conditions were designed to test the hypotheses. In the first two, groups of participants were assigned to participate on the Facebook and YouTube accounts of federal agencies with low activity in their social media accounts by posting one comment per day. In the third and fourth, participants had to post comments on the White House Facebook and YouTube accounts. These participants also had to post one comment per day. In the fifth condition, designed to test the effects of engagement with other users, participants had to comment three times per day on the White House Facebook account: one comment related to an original message posted by the White House and two others responding to what other users said. Additionally, a control group was included in the experiment. Participants were randomly assigned to one of the six groups:

1. The Facebook account of the White House in which participants posted one message per day (31 participants)
2. The Facebook account of the White House in which participants posted three messages per day (31 participants)
3. The Facebook account of a low-activity federal agency in which participants posted one message per day (29 participants)
4. The YouTube account of the White House in which participants posted one message per day (29 participants)
5. The YouTube account of a low-activity federal agency in which participants posted one message per day (31 participants)
6. A control group condition created to compare the results (38 participants)

Data Analysis

Participants in the treatment groups and the control group took a presurvey to measure their initial collective efficacy levels. This presurvey was taken just before they started posting comments, with the exception of the control group. After 14 days, once they finished their participation in the experiment, a postsurvey was conducted to measure their self-efficacy levels for a second time, the level of discussion engagement they had with other users, and their cognitive involvement. Their pre-experiment collective efficacy levels were compared with their postexperiment collective efficacy levels to identify changes. Conditions, including the control group, were also compared. To explain the variations between the two periods, the difference in collective efficacy between Time 1 and Time 2 was established as a dependent variable, and the conditions, engagement with other users, and cognitive involvement served as independent variables. Hierarchical multivariate ordinary least squares (OLS) regressions were run to assess the relationship between the independent variables and variation in collective efficacy. Participants in the control group took only the presurvey, and then, after two weeks, the postsurvey to measure their collective efficacy levels for a second time, to measure changes.

Measures

Collective Efficacy. Drawing from previous research (Van Zomeren et al., 2008; Yeich & Levine, 1994), three questions on an 7-point scale were averaged to calculate the shared belief held by individuals about the group's capabilities and skills to perform a collective action: "If enough citizens got organized and demanded change, politicians would take steps to end their problems"; "The collective action of people can improve society"; "Politicians would respond to the needs of citizens if enough people demand change." Both the pre-experiment survey ($M = 5.01$, $SD = 1.2$, Cronbach's $\alpha = .87$) and the postexperiment survey ($M = 5.21$, $SD = 1.37$, Cronbach's $\alpha = .86$) showed satisfactory internal consistency.

Discussion Engagement. Drawing from previous research (Kwak et al., 2005), a 7-point user-engagement scale (1 = *strongly disagree*; 7 = *strongly agree*) for five statements, including, "I felt I was having conversations with others" ($M = 4.07$, $SD = 1.15$, Cronbach's $\alpha = .75$).

Cognitive Involvement. Three items from Kwak et al. (2005) were used to measure how individuals process the information elaborated, including, "Posting about public affairs helped me develop better arguments" and "Posting messages in the federal agency made me think more about my own opinions and beliefs." The items, measured on the same 7-point scale, were averaged ($M = 4.63$, $SD = 1.46$, Cronbach's $\alpha = .87$).

Control Variables. Three demographic variables were used in the analysis: gender (58.6% female), age ($M = 20.34$, $SD = 2.76$), and parents' education, with participants asked about the highest level of formal education completed by their mother and father, measured on a 7-point scale (1 = *less than high school*; 7 = *graduate degree*; $Mdn =$ two-year college). These items were indexed in an averaged item, $r(189) = .564$, $p < .001$, $M = 3.7$, $SD = 1.4$. Additionally, I controlled for three variables that affect deliberation:

Political Interest. Respondents were asked separately about their interest in local and national politics on a scale ranging from 1 (*actively do not like it*) to 5 (*very interested*), $r(189) = .49$, $p < .001$, $M = 2.51$, $SD = 0.9$.

Strength of Political Views. Respondents were also asked to indicate how strong their political views were using a semantic differential scale ranging from 1 (*very liberal*) to 5 (*very conservative*). This item was folded into a 3-point scale (1 = *weak political views*; 2 = *regular political views*; 3 = *strong political views*; $M = 1.76$, $SD = 0.64$).

Extraversion. On a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*), respondents rated their agreement with each of the following statements: "I am very outgoing around people I don't know well" and "I tend to be reserved around other people I don't know well." These items were reverse coded, $r(189) = .645$, $p < .001$. The two items of extraversion were then combined to create an average score ($M = 4.66$, $SD = 1.69$).

Results

The effects of deliberation on collective efficacy varied according to the channel in which participants deliberated, as detailed in Table 1. One-tailed t -tests were conducted on paired samples to evaluate the impact of deliberation on participants' levels of collective efficacy for each condition. Overall, deliberation in social media presents a marginal increase in collective efficacy as predicted in H1, as can be seen in Table 1. Contrasted to Time 1 ($M = 5.04$, $SD = 1.37$), Time 2 ($M = 5.18$, $SD = 1.2$) indicates that there is a difference in the level of collective efficacy of participants after deliberation, suggesting that deliberation has a marginally significant effect on users' collective efficacy, $t(150) = 1.55$, $p = .069$, $\eta^2 = .02$. Further, the 38 participants that took part in the control group did not show any significant difference between Time 1 ($M = 5.11$, $SD = 1.36$) and Time 2 ($M = 5.06$, $SD = 1.28$), suggesting that it is not the

repetition of the survey that creates a difference in collective efficacy but, rather, the exercise of deliberation.

Table 1. Differences on Collective Efficacy After Two Weeks of Deliberation.

Condition	Experiment		Significance of Difference
	Time 1	Time 2	
Facebook, three comments on White House	4.83 (1.35)	5.24 (1.04)	$t = 1.8, p < .05$
Facebook, one comment on White House	5.13 (1.55)	5.48 (1.04)	$t = 2.46, p < .01$
Facebook, one comment on federal agency	4.84 (1.43)	4.6 (1.42)	<i>ns</i>
YouTube, one comment on White House	4.94 (1.40)	5.15 (1.17)	<i>ns</i>
YouTube, one comment on federal agency	5.43 (1.01)	5.4 (.93)	<i>ns</i>
Six conditions accumulated (without control group)	5.04 (1.37)	5.18 (1.2)	$t = 1.55, p = .069$
Control condition	5.11 (1.36)	5.08 (1.28)	<i>ns</i>

Note. Means are presented, with standard deviations errors in parentheses. Statistical significance of the difference between conditions was assessed with one-tailed *t*-tests not assuming equal variances.

In testing the influence that networked information access has on collective efficacy, H2a predicted that users who deliberate in social media channels that allow networked information access (Facebook) would present a higher increase in collective efficacy. Results show that there was a statistically significant increase in the levels of collective efficacy of those students who deliberated on the Facebook accounts of the White House. Participants who posted three messages per day showed a statistically significant increase from Time 1 ($M = 4.83, SD = 1.35$) to Time 2 ($M = 5.24, SD = 1.04$), $t(30)=1.8, p < .05, \eta^2 = .051$, and participants who posted one message also showed a significant increase from Time 1 ($M = 5.13, SD = 1.55$) to Time 2 ($M = 5.48, SD = 1.04$), $t(30)=2.46, p < .01, \eta^2 = .091$. The mean values indicate that deliberation in these two conditions produces significantly higher levels of collective efficacy in participants after two weeks. Further, the eta-squared value represents the proportion of variance of the dependent variable that is explained by the independent variable (Cohen, 1988), and both eta-squared statistics indicated moderate effect sizes. However, in participants who posted on the Facebook account of a low-activity federal agency, a nonsignificant diminution of collective efficacy was noted from Time 1 ($M = 4.84, SD = 1.43$) to Time 2 ($M = 4.6, SD = 1.42, p = ns$). In YouTube, although participants had an increase in collective efficacy from deliberation from Time 1 to Time 2, the difference was not significant. To formally test H2a, an independent-sample *t*-test was conducted to compare changes in collective efficacy among users who deliberated in Facebook and in YouTube; however, because participants in one of the Facebook conditions did not show an increase in collective efficacy, the total difference was not significant. Consequently, the results only partially support the idea that users who deliberate in social media channels that allow networked information access (Facebook) present a higher increase in collective efficacy.

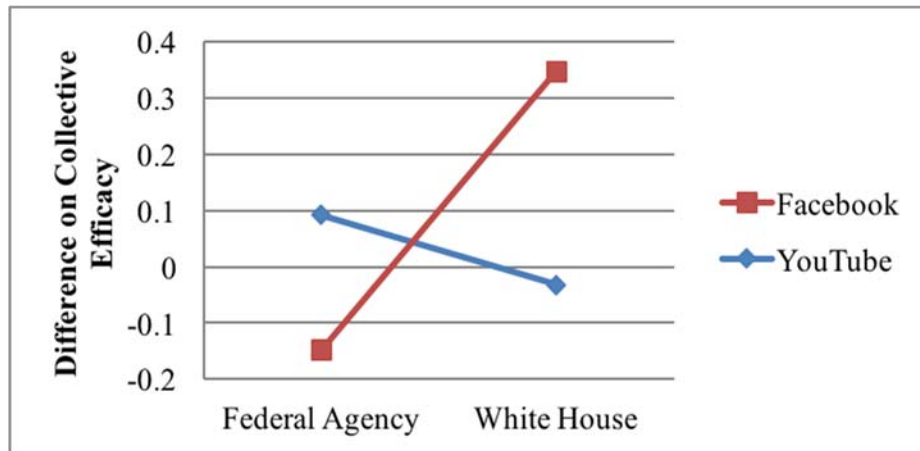


Figure 1. Interaction effects between social media channel and level of interactivity in federal agencies. The figure shows the interaction between participants who posted in the Facebook and YouTube accounts of the White House and of other federal agencies. The highest difference in collective efficacy is observed among those who posted on Facebook but not on YouTube.

To clarify this relationship and determine whether the interaction between the social media channel used for deliberation and the level of interactivity on the federal agency's accounts has an impact on collective efficacy, a factorial univariate ANOVA was conducted for the difference in collective efficacy between Time 1 and Time 2 as the dependent variable. The results show that neither of the main effects was significant, but interestingly, the interaction between these two variables was significant: $F(1,148) = 4.17, p < .05$. From Figure 1, it can be observed that Facebook users who participated in the White House conditions showed the highest increase in collective efficacy, whereas participants who participated in YouTube did not show a relevant difference between the two conditions.

To test whether users in YouTube, the more anonymous social media channel, would show lower levels of engagement than on those in Facebook, an independent-samples one-tailed t -test was conducted. The results from the analysis indicate that there is a marginal difference between the effects of the social media channels in user engagement: $t(149) = 1.51, p = .065, \eta^2 = .02$. The mean values support H2b and indicate that participants engaged with other users marginally more in Facebook ($M = 4.1, SD = 1.15$) than in YouTube ($M = 3.7, SD = 1.21$), although the magnitude of the difference in the means was small ($\eta^2 = .02$). For the role that interactivity plays in engagement, results also marginally supported H3a. Participants who deliberated in less interactive social media accounts ($M = 3.67, SD = 1.19$) showed marginally lower levels of discussion engagement than those who participated in the social media accounts managed by the White House ($M = 4.09, SD = 1.15$), regardless of the social media channel: $t(149) = 1.54, p = .068, \eta^2 = .03$. To determine whether interaction between users has a positive effect on the level of engagement, as H3b predicted, a comparison was made between the condition in which participants commented on other users' posts in the White House Facebook account and the other conditions in which participants commented only on the message posted by the federal agency. Results

showed that the interaction between participants has a significant effect on the level of engagement: $t(149) = 1.69, p < .05, \eta^2 = .03$. This means that participants who referred to others in their posts engaged in significantly more deliberation than participants who interacted only with the initial thread posted by the federal agency.

Table 2. OLS Regressions for Difference Between Time 1 and Time 2 on Collective Efficacy (N = 151).

	Difference in Collective Efficacy between Time 1 and 2 (model 1)	Difference in Collective Efficacy between Time 1 and 2 (model 2)
Age	.176**	.182*
Gender (1 = female)	.085	.087
Political interest	-.319**	-.306**
Strength political views	.081	.04
Parents' education	.11	.041
Extroversion	-.005	.076
Social media channel (1 = Facebook)	.021	.023
Federal agency (1 = White House)	.039	.053
Number of posts (1 = 3 per day)	.19**	.172*
Discussion engagement	.312***	
Cognitive involvement		.216***
Constant	-4.55	-3.64
Adjusted R^2 (%)	16.2	10.3

Note. Cell entries are final-entry OLS standardized coefficients.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Finally, I hypothesized that discussion engagement and cognitive involvement will be positively relative to changes in collective efficacy (H3c). To test this possibility, the difference in collective efficacy between Time 1 and Time 2 was established as a dependent variable, and the conditions, discussion engagement and cognitive involvement, served as independent variables. Hierarchical multivariate OLS regressions were run to assess the exact relationship between the independent variables and variation in collective efficacy, and, to account for potential rival explanations, the regressions were controlled for age, gender, parents' education, extroversion, political interest, time spent in social media, and political talk on SNS. Table 2 shows that both cognitive involvement ($\beta = .216, p < .001$) and discussion engagement ($\beta = .312, p < .001$) were associated positively with variations in collective efficacy, as predicted by H3c. Thus, participants who engaged more with other users and who were more cognitively involved in the discussions showed a significant variation in collective efficacy, even when controlled for the social media channel and the level of interaction in which the deliberation occurs. Remarkably, political interest was the only control variable negatively related to changes in collective efficacy when cognitive involvement was introduced as predictor ($\beta = -.306, p < .01$) and when user engagement was introduced as predictor ($\beta = -.319, p < .01$), which means that for more politically oriented participants, deliberation in social media does not produce a positive change in collective efficacy.

Discussion

This study aimed to test whether deliberation in SNS has an impact on collective efficacy. Overall, the study yielded four major findings. First, regarding the effects of online deliberation, the experiment demonstrated that civic talk in SNS has a marginally positive effect on collective efficacy. Second, the results offered evidence that under the White House conditions, which showed higher level of interactivity among users, deliberation in the social media channel that allows networked information access (Facebook) caused the highest increase in collective efficacy. Third, in explaining the variation in collective efficacy, it was found that in addition to the social media channel used to deliberate, cognitive involvement and user engagement satisfactorily explained the increase in this variable. And fourth, results showed how conversational dynamics between participants played a significant role in the engagement attained by students: Participants who deliberated in more interactive conversations (on White House accounts instead of those of small federal agencies) and those who replied to messages posted by other users (and not only to the original thread initiated by the federal agency) showed higher levels of engagement.

Social Media and Deliberation: A Gateway to Civic Participation

One of the most relevant findings of the experiment was the positive relationship between deliberation and changes in collective efficacy. Although previous research has noted that online deliberative experiments positively affect democratic indicators (e.g., Min, 2007), this study seems to be among the first to find a marginally positive relationship between deliberation in SNS and one of these indicators (collective efficacy). This finding is consequential for several reasons. First, it is consistent with the line of research previously reviewed, which argues that by taking part in deliberative experiences, individuals can get a deeper understanding of political facts and civic behaviors, which has a positive impact on individuals' sense of efficacy, enabling deeper engagement in civic affairs (e.g., Gastil et al., 2002). Therefore, by promoting engagement in one's community, deliberation in SNS also fosters collective efficacy. Further, this relationship is especially relevant given the strong association between perceptions of a group's efficacy and engagement in civic activities. As noted above, research explains that political involvement cannot be realized without the shared belief that other community members are also capable of exerting control over political matters (Yeich & Levine, 1994). Consequently, if deliberation in SNS positively affects this shared belief about the group's capabilities to perform a collective action, from a civic lens, these findings also have practical implications because SNS may be used by civic-oriented organizations to increase participatory behavior.

Second, from a theoretical perspective, the experiment shows that the natural bridge between deliberation and collective efficacy, although it exists, was not entirely consistent with previous findings: There was a significant difference between the channels participants used. In fact, the highest increase in collective efficacy came from the participants who commented on Facebook, which may support the notion that users today are affected by the type of contacts in their networks and not necessarily the act of deliberation itself. Two complementary theoretical approaches could be used to explain this phenomenon. On one hand, the literature in social psychology theorizes that the experience of holding public discussions about civic-oriented issues originating in SNS, with the potential for a massive audience, would cause

discussants to internalize civic attitudes when they realized that thousands of users may follow their posts and ideas (Rojas & Puig-i-Abril, 2009). The public-commitment framework (Schlenker, 1980) explains that an individual's awareness of an audience, or sense of publicness, augments the effect of self-presentation on identity. Interestingly, this internalization process is catalyzed mainly when individuals have a recognizable audience that can also identify them when they generate content, making them feel responsible for their actions and making them behave in a manner consistent with their self-presentations.

On the other hand, Facebook users have a tangible list of friends with real profiles, and because they are notified about network comments, in theory, this identified public creates stronger expectations than the unidentified online public on YouTube. The results corroborated the combination of these two approaches, showing that the effects of deliberation on collective efficacy were particularly salient for Facebook users, who not only identified themselves by names in deliberation and assumed as their own the opinions given in the exercise but also imagined a much closer audience, such as their friends, family, and everyday contacts, reading their comments than YouTube users.

The fact that participants who commented on federal agencies' Facebook accounts did not show an increase in collective efficacy after two weeks of deliberation is relevant to our discussion. Moreover, participants in this condition were the only ones whose collective efficacy levels diminished—although not significantly—after the experiment. One plausible explanation for this difference is that participants did not see any relevant interaction between users in the Facebook account, considering that Facebook users are accustomed to observing many replies to threads posted by organizations. Generally speaking, Facebook users are active content generators, and for organizations with thousands of followers or likers, there is a high level of interaction between users. On the other hand, the notion of collective efficacy is related to the judgments that members of a group have about their capabilities and skills for engaging in successful collective action. Therefore, because the small federal agencies selected for the experiment received fewer than 10 comments from their followers on threads, it may be argued that, given the lack of group interaction, participants felt discouraged about the impact of group actions, and instead of motivating them to generate content, the lack of responses and interaction caused the opposite effect.

Furthermore, based on the idea that collective efficacy is the belief in the capabilities of the public, as a collective actor, to organize the courses of action required to achieve social outcomes, it is perfectly understandable why this belief diminished in participants after they noted the lack of participant interaction on the federal agencies' sites. This result was also corroborated with the interaction effect found between the social media channel used to deliberate and the level of interactivity presented by the federal agency. The study showed that White House Facebook participants showed the highest increase in collective efficacy, whereas White House YouTube participants did not increase their collective efficacy. It is noteworthy that this divergence in collective efficacy was found despite the similarity between messages posted by the White House and user dialogue in both conditions. Similarly, students who posted under the YouTube conditions (White House and federal agencies) did not present any major difference in these two conditions, which can be largely contrasted with the impact that lower levels of interaction had on participants who posted in Facebook. These results are consistent with research in CMC, which has shown that communities featuring interactive comments that relate to earlier messages elicit greater participation than communities featuring noninteractive messages (Wise et al., 2006). Consequently, the results of the

study are relevant because they show that, although the effects of deliberation may be stronger when users identify themselves and imagine their closer Facebook contacts rather than complete strangers in YouTube reading their status updates, this impact is not strong enough to suppress the impact of lower levels of interaction among users.

Therefore, two main conclusions should be noted. On one hand, based on the review of the literature, it is possible to conjecture that the higher identification and sense of publicness with personal contacts in Facebook made users feel responsible for their opinions, thus augmenting the effects of online deliberation on collective efficacy. On the other hand, there are other aspects in the conversational dynamics identified by previous research in CMC, such as low interactivity, that moderate the positive effect on collective efficacy that an imagined audience has on users. Consequently, these findings shed light on the complexity that interactions between structural factors and conversational variables with the capacity to affect the social dynamics of mediated groups have in elucidating the changes.

Furthermore, an explanation of variations in individuals' perceived abilities to collectively influence the political system also require a more psychologically oriented model that specifies relationships among the structural variables and conversational factors. In fact, the literature in political and computer-mediated communication has recognized the reasoning process (cognitive involvement) to elaborate on the information presented (Kwak et al., 2005) and the sense of connection and engagement with other users as critical mechanisms to explain how deliberation may influence possible variations in collective efficacy.

Consistent with this line of thought (Kwak et al., 2005), results showed that both cognitive involvement and user engagement augmented the level of collective efficacy in users. In fact, participants who showed higher levels of cognitive involvement in processing the information posted by federal agencies and a higher sense of connection in interacting with other users were also those participants who revealed higher changes in collective efficacy. Consequently, the experiment supports the notion that user engagement and attentiveness to conversation and active processing of mediated information have significant impacts on attitudinal outcomes.

Last, although the results of this experiment are quite auspicious, as SNS may have the potential to trigger collective efficacy through deliberation, recent research has also shown that SNS may limit users to attitude-challenging information (Lee, Kwak, & Campbell, 2015), which may lead to the fragmentation of public opinion and an increasingly polarized citizenry, to the detriment of democracy (Stroud, 2008). It has been found that social media users are unlikely to be exposed to cross-ideological content from the clusters of users with whom they interact, as they are usually politically homogeneous (Himmelboim, McCreery, & Smith, 2013). Thus, although users in this experiment augmented their collective efficacy as they participated in a specific context, previous research shows that users' social networks consist mainly of individuals with similar views who reinforce each other's viewpoints. Therefore, in real life, SNS would not necessarily augment democratic indicators, as users would avoid information that challenges their political beliefs.

Limitations of the Experiment

This experiment has several limitations that should be mentioned. First, it relies on Facebook and YouTube. Although the popularity of both SNS provided a suitable framework for exploratory investigations about the effects of deliberation on collective efficacy, future efforts should expand to Twitter and other SNS, supplementing the findings derived from this experiment. Second, participants in the YouTube conditions responded to videos, whereas users in Facebook conditions responded mostly to text and images, often derived from a secondary source, such as news reports. These variances in format could produce different effects on participants that may alter their responses to initial messages and subsequent dialogues. In fact, it is possible to assume that reading texts could be more beneficial to deliberation than watching videos. Third, the experiment did not control for topics discussed in the threads. Although all the agencies selected have a civic approach and may post similar messages about political issues, this does not mean that the topics discussed would be equally interesting for participants. And fourth, the undergraduates who volunteered for this experiment could be more technologically savvy and could be better at deliberation than the general population, so it is difficult to generalize the results. Admittedly, future work will need to focus on obtaining a more diverse sample.

References

- Abramson, P. R., & Aldrich, J. H. (1982). The decline of electoral participation in America. *The American Political Science Review*, 76(3), 502–521. doi:10.1017/S0003055400188379
- Arapakis, I., Lalmas, M., Cambazoglu, B. B., Marcos, M. C., & Jose, J. M. (2014). User engagement in online news: Under the scope of sentiment, interest, affect, and gaze. *Journal of the Association for Information Science and Technology*, 65(10), 1988–2005.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37(2), 122–147. doi:10.1037/0003-066X.37.2.122
- Barak, A., Boniel-Nissim, M., & Suler, J. (2008). Fostering empowerment in online support groups. *Computers in Human Behavior*, 24(5), 1867–1883. doi:10.1016/j.chb.2008.02.004
- Chadwick, A. (2008). Web 2.0: New challenges for the study of e-democracy in an era of informational exuberance. *I/S: A Journal of Law and Policy for the Information Society*, 5(1), 9–41. Retrieved from <http://heinonline.org/HOL/Page?collection=journals&handle=hein.journals/isjlp5&type=Text&id=19>
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Erlbaum.
- Coleman, K. M., & Davis, C. L. (1976). The structural context of politics and dimensions of regime performance: Their importance for the comparative study of political efficacy. *Comparative Political Studies*, 9(2), 189–206. doi:10.1177/001041407600900203

- Courtois, C., Mechant, P., & De Marez, L. (2011). Teenage uploaders on YouTube: Networked public expectancies, online feedback preference, and received on-platform feedback. *Cyberpsychology, Behavior, and Social Networking, 14*(5), 315–322. doi:10.1089/cyber.2010.0225
- Ellison, N. B., & boyd, d. (2013). Sociality through social network sites. In W. H. Dutton (Ed.), *The Oxford handbook of Internet studies* (pp. 151–172). Oxford, UK: Oxford University Press.
- Ellison, N. B., & Vitak, J. (2015). Social media affordances and their relationship to social capital processes. In S. Sundar (Ed.), *The handbook of psychology of communication technology* (pp. 205–227). Boston, MA: Wiley-Blackwell.
- Eveland, W. P., Jr., & Scheufele, D. A. (2000). Connecting news media use with gaps in knowledge and participation. *Political Communication, 17*(3), 215–237. doi:10.1080/105846000414250
- Finkel, S. E. (1985). Reciprocal effects of participation and political efficacy: A panel analysis. *American Journal of Political Science, 29*(4), 891–913. doi:10.2307/2111186
- Gastil, J., Deess, E. P., & Weiser, P. J. (2002). Civic awakening in the jury room: A test of the connection between jury deliberation and political participation. *Journal of Politics, 64*(2), 585–595. doi:10.1111/1468-2508.00141
- Gecas, V. (1989). The social psychology of self-efficacy. *Annual Review of Sociology, 18*, 291–316. doi:10.1146/annurev.so.15.080189.001451
- Gergen, K. J. (1999). Agency: Social construction and relational action. *Theory and Psychology, 9*, 113–115. doi:10.1177/0959354399091007
- Gonzales, A. L. & Hancock, J. T. (2008). Identity shift in computer mediated environments. *Media Psychology, 11*, 167–85. doi:10.1080/15213260802023433
- Gutmann, A., & Thompson, D. (2009). *Why deliberative democracy?* Princeton, NJ: Princeton University Press.
- Himelboim, I., McCreery, S., & Smith, M. (2013). Birds of a feather tweet together: Integrating network and content analyses to examine cross-ideology exposure on Twitter. *Journal of Computer-Mediated Communication, 18*(2), 40–60. doi:10.1111/jcc4.12001
- Kelly, A. E., & Rodriguez, R. R. (2006). Publicly committing oneself to an identity. *Basic and Applied Social Psychology, 28*(2), 185–191. doi:10.1207/s15324834basp2802_8

- Kwak, N., Williams, A. E., Wang, X., & Lee, H. (2005). Talking politics and engaging politics: An examination of the interactive relationships between structural features of political talk and discussion engagement. *Communication Research, 32*(1), 87–111. doi:10.1177/0093650204271400
- Lee, H., Kwak, N., & Campbell, S. W. (2015). Hearing the other side revisited: The joint workings of cross-cutting discussion and strong tie homogeneity in facilitating deliberative and participatory democracy. *Communication Research, 42*(4), 569–596. doi:10.1177/0093650213483824
- Luskin, R. C., Fishkin, J. S., & Iyengar, S. (2004, May). *Considered opinions on U.S. foreign policy: Face-to-face versus online deliberative polling*. Paper presented at the International Communication Association Conference, New Orleans, LA.
- McPherson, J. M., Welch, S., & Clark, C. (1977). The stability and reliability of political efficacy: Using path analysis to test alternative models. *The American Political Science Review, 71*, 509–521. doi:10.1017/S0003055400267427
- Min, S. J. (2007). Online vs. face-to-face deliberation: Effects on civic engagement. *Journal of Computer-Mediated Communication, 12*(4), 1369–1387. doi:10.1111/j.1083-6101.2007.00377.x
- Niemi, R. G., Craig, S. C., & Mattei, F. (1991). Measuring internal political efficacy in the 1988 National Election Study. *American Political Science Review, 85*, 1407–1413. doi:10.2307/1963953
- Price, V., & Cappella, J. N. (2002). Online deliberation and its influence: The electronic dialogue project in campaign 2000. *IT & Society, 1*(1), 303–329. Retrieved from https://www.researchgate.net/profile/Joseph_Cappella/publication/228817373_Online_Deliberation_and_Its_Influence_The_Electronic_Dialogue_Project_in_Campaign_2000/links/09e4150c788df27f1e000000/Online-Deliberation-and-Its-Influence-The-Electronic-Dialogue-Project-in-Campaign-2000.pdf
- Rafaeli, S., & Sudweeks, F. (1997). Networked interactivity. *Journal of Computer-mediated Communication, 2*(4). doi:10.1111/j.1083-6101.1997.tb00201.x
- Rainie, L., Purcell, K., & Smith, A. (2011). *The social side of the Internet*. Washington, DC: Pew Research Center's Internet & American Life Project. Retrieved from <http://www.pewinternet.org/Reports/2008/The-Internet-and-the-2008-Election.aspx>
- Rojas, H., & Puig-i-Abril, E. (2009). Mobilizers mobilized: Information, expression, mobilization and participation in the digital age. *Journal of Computer-Mediated Communication, 14*(4), 902–927. doi:10.1111/j.1083-6101.2009.01475.x
- Schlenker, B. R. (1980). *Impression management: The self-concept, social identity, and interpersonal relations*. Monterey, CA: Brooks/Cole.

- Sharma, N., Butler, B. S., Irwin, J., & Spallek, H. (2011). Emphasizing social features in information portals: Effects on new member engagement. *Journal of the American Society for Information Science and Technology*, 62(11), 2106–2120. doi:10.1002/asi.21624
- Stromer-Galley, J. (2004). Interactivity-as-product and interactivity-as-process. *The Information Society*, 20(5), 391–394. doi:10.1080/01972240490508081
- Stroud, N. J. (2008). Media use and political predispositions: Revisiting the concept of selective exposure. *Political Behavior*, 30(3), 341–366. doi:10.1007/s11109-007-9050-9
- Sundar, S. S. (2004). Theorizing interactivity's effects. *The Information Society*, 20(5), 385–389. doi:10.1080/01972240490508072
- Sutcliffe, A. G., Gonzalez, V., Binder, J., & Nevarez, G. (2011). Social mediating technologies: Social affordances and functionalities. *International Journal of Human-Computer Interaction*, 27(11), 1037–1065. doi:10.1080/10447318.2011.555318
- Timmerman, C. E. (2002). The moderating effect of mindlessness/mindfulness upon media richness and social influence explanations of organizational media use. *Communication Monographs*, 69(2), 111–131. doi:10.1080/714041708
- Valenzuela, S., Arriagada, A., & Scherman, A. (2014). Facebook, Twitter, and youth engagement: A quasi-experimental study of social media use and protest behavior using propensity score matching. *International Journal of Communication*, 8, 25. Retrieved from <http://ijoc.org/index.php/ijoc/article/view/2022/1189>
- Van Zomeren, M., Postmes, T., & Spears, R. (2008). Toward an integrative social identity model of collective action: A quantitative research synthesis of three socio-psychological perspectives. *Psychological Bulletin*, 134(4), 504–535. doi:10.1037/0033-2909.134.4.504
- Warren, M. E. (1996). Deliberative democracy and authority. *American Political Science Review*, 90(1), 46–60. doi:10.2307/2082797
- Wise, K., Hamman, B., & Thorson, K. (2006). Moderation, response rate, and message interactivity: Features of online communities and their effects on intent to participate. *Journal of Computer-Mediated Communication*, 12, 24–41. doi:10.1111/j.1083-6101.2006.00313.x
- Xiao, L., & Askin, N. (2014). What influences online deliberation? A Wikipedia study. *Journal of the Association for Information Science and Technology*, 65(5), 898–910. doi:10.1002/asi.23004
- Xu, B., Li, D., & Shao, B. (2012). Knowledge sharing in virtual communities: A study of citizenship behavior and its social-relational antecedents. *International Journal of Human-Computer Interaction*, 28(5), 347–359. doi:10.1080/10447318.2011.590121

Yeich, S., & Levine, R. (1994). Political efficacy: Enhancing the construct and its relationship to mobilization of people. *Journal of Community Psychology, 22*(3), 259–271. doi:10.1002/1520-6629