

**Revisiting *Hearing the Other Side*:
Distinct Associations of Social Network Characteristics
With Political Discussion and Participation**

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This study extends research on the impact of cross-cutting political discussion on dialogic openness and political participation by considering political network diversity and network sizes of various tie strengths. The study employs a national survey of U.S. citizens ($N = 1,001$) and finds distinct paths to political participation through political networks' attributes and political discussions according to network type and size. The study also identifies an interaction between cross-cutting discussion and strong tie political homogeneity on both dialogic openness and political participation. Politically homogeneous strong ties dampen participation when unaccompanied by frequent cross-cutting discussion. The study's findings contribute to conceptual and empirical distinctions between the sizes of general social networks and the attributes of political networks. The research integrates various theorizations of the process leading to political participation.

Keywords: political participation, cross-cutting discussion, dialogic openness, tie strength, network size and attributes

Research on the influential factors of political participation has produced various theoretical models (e.g., Gil de Zúñiga, Jung, & Valenzuela, 2012). These models indicate that political interest (e.g., Torcal & Maldonado, 2014), knowledge (e.g., Eveland & Scheufele, 2000), efficacy (e.g., Lee, Kwak, & Campbell, 2015), news consumption (e.g., Kim, Wyatt, & Katz, 1999), and discussion (e.g., Cho et al., 2009) are significantly associated with political participation. This study focuses on the role of political discussion with

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people who support different political candidates and disagree on issues (i.e., cross-cutting discussion) in an individual's political participation. Political discussion is central to deliberative democracy because frequent conversations on political matters facilitate the refinement of one's opinion and participation (Kim et al., 1999). However, cross-cutting discussion may not always improve deliberation and participation depending on the characteristics of one's social network.

Sociologists and political scientists have long considered social networks when explaining varying levels of participation in political activities (Huckfeldt, Johnson, & Sprague, 2004; Lim, 2008; Putnam, 2000). Notably, communication scholars have also examined networks' impacts on political participation, through political discussion networks (Eveland & Hively, 2009; Gil de Zúñiga & Valenzuela, 2011). For instance, scholars have explored the effects of tie strength in political discussions with strong ties (e.g., Lee et al., 2015), weak ties (e.g., Gil de Zúñiga & Valenzuela, 2011), or both (e.g., Gil de Zúñiga, 2017). Others have examined how the size and diversity of an individual's political discussion networks are associated with his or her political knowledge and participation (e.g., Eveland & Hively, 2009; Song & Eveland, 2015).

Existing research presents mixed findings for the effects of cross-cutting discussion and tie strength on political deliberation and participation (Lee et al., 2015; Lu, Heatherly, & Lee, 2016). Some scholars argue that exposure to diverse ideas and discussion with people who hold different opinions may lead to increased political knowledge and deliberation, which in turn leads to greater participation (Kim et al., 1999; Price, Cappella, & Nir, 2002; Scheufele, Hardy, Brossard, Waismel-Manor, & Nisbet, 2006). However, cross-cutting discussion, particularly when it involves strong disagreement with close ties, can also result in negative outcomes, leading to less participation because of ambivalence about one's political stance, social anxiety, or fear of isolation from the social network (Gearhart & Zhang, 2015; Lu et al., 2016; Mutz, 2006; Torcal & Maldonado, 2014). A meta-analysis of 48 empirical studies, which included more than 70,000 participants, found no statistically significant relationships between cross-cutting discussion and political participation (Matthes, Knoll, Valenzuela, Hopmann, & von Sikorski, 2018).

The current study aims to clarify the muddled theoretical terrain by reexamining the link between cross-cutting discussion and political deliberation/participation while considering various social network characteristics that could either positively or negatively moderate the relationship. The main goal is to distinguish the constructs of general social networks from political networks and political discussion. Previous studies have confounded these constructs by measuring the size and attributes (e.g., diversity or homogeneity) of individuals' political discussion networks and tie strength (e.g., Gil de Zúñiga, 2017; Wojcieszak & Rojas, 2011). Tie strength, network size, and network attributes may be distinctively related to attitudes and actions regarding political discussion and participation; thus, more refined conceptual and empirical distinctions between social networks and their associations with political discussion disagreements, deliberative attitude, and participation are necessary.

This study expands Lee et al.'s (2015) study which found a unique moderating role of strong tie political homogeneity in the relationship between cross-cutting discussion and dialogic openness and political participation. Extending that model beyond the consideration of homogeneity, we explore the sizes of people's strong, weak, and dormant mediated tie networks and the diversity of their political networks within a comprehensive theoretical model. People feel safe expressing political opinions with like-minded others

(Noelle-Neumann, 1993). A person's perception of an opinion climate and whether one's opinion is held by the majority likely influence her or his political expression. However, given the differential nature and functions of strong versus weak ties (Burt, 2001; Dunbar, 2014, 2016; Granovetter, 1973, 1983), and potentially of dormant mediated ties, it is worth examining how distinct types of ties and the sizes of these networks are associated with political network attributes and political discussion/participation. People who do not participate in elections or other political activities may not engage in frequent cross-cutting discussion (Nir, 2011), or cross-cutting discussion may not boost participation due to the lack of citizens' deliberative attitudes or the characteristics of their social networks. Thus, this study conceptually integrates existing research by clarifying the complex relationships among general social networks, political networks, political discussion, and participation.

Literature Review and Hypotheses

Different Social Network Characteristics: Size, Attribute, and Tie Strength

Generally, people have more weak ties than strong ties, and weak ties tend to be more diverse than strong ties (Granovetter, 1983). Individuals communicate more frequently with strong ties such as family members and friends and feel emotionally closer to them. Weak ties do not necessarily involve emotional closeness or frequent communication; rather, they can fill previously disconnected parts of a social network (i.e., structural holes; Burt, 2001) and provide access to new network locations. Exposure to these "bridging" weak ties introduce novel information and diverse perspectives (Granovetter, 1973). Scholars have identified distinct effects of strong (e.g., Lee et al., 2015) and weak tie discussion networks (e.g., Gil de Zúñiga & Valenzuela, 2011) on political engagement. Gil de Zúñiga (2017) found that political discussion with weak ties is a stronger predictor of discussion heterogeneity, disagreement, and reasoning—all of which lead to more cognitive elaboration on political issues than discussion with strong ties.

Political discussions with strong and weak ties and the size of an individual's discussion networks have distinct but complementary relationships with political deliberation and participation (Gil de Zúñiga & Valenzuela, 2011). For example, Campbell and Kwak (2011, 2012) found that larger networks of strong ties facilitate the expressiveness of political opinions (i.e., dialogic openness), which leads to more active political mobilization. Meanwhile, Huckfeldt et al. (2004) demonstrated that an increase in the size of one's political network increases the diversity of opinions that one is exposed to. Using Facebook for strong tie communications and Twitter for weak tie communications, Valenzuela, Correa, and Gil de Zúñiga (2017) found political information received from both strong and weak ties facilitates protest behavior. Although the results indicate complementary relationships between distinctive tie strengths and political participation, Valenzuela et al. did not consider the sizes of strong and weak tie networks or network attributes (e.g., diversity or homogeneity). As such, the interactions among these network characteristics are left unconsidered.

Many scholars are interested in a similar theoretical issue: how exposure to cross-cutting discussion is related to political deliberation and participation. The answer seems to be related to network characteristics, such as the nature of relationships with discussion partners (including tie strength), network size, and attributes that structurally influence the likelihood of engaging in political discussion (Huckfeldt et

al., 2004) that involves disagreement. Various terms for similar phenomena (e.g., cross-cutting discussion by Mutz, 2006; Lee et al., 2015; dangerous discussion by Eveland & Hively, 2009) and distinct operationalizations of similar concepts exacerbate the problem. Therefore, it is necessary to conceptually integrate existing studies by proposing a comprehensive theoretical model and to reexamine whether following a particular operationalization of discussion disagreement produces consistent relationships.

Experiencing political disagreement with strong ties lowers a person's political interest (Torcal & Maldonado, 2014), which negatively affects his or her participation. Torcal and Maldonado argue that the emotional cost is high when an individual disagrees with family or close friends in political discussions. A political discussion network that is composed only of opposition can deter participation (Nir, 2011). Meanwhile, Lee et al. (2015) found that discussions within politically homogeneous strong networks buffer the potentially negative effects of cross-cutting discussion (e.g., ambivalence, embarrassment, and anxiety) on political participation. However, weak ties—because they are less emotionally important—are more likely to expose people to diverse perspectives through cross-cutting discussion, which can facilitate deliberation (Gil de Zúñiga, 2017) while avoiding the emotional cost of political disagreement with strong ties.

Taken together, these findings suggest that social network characteristics, such as tie strength, network size, and network attributes, are distinctively and interactively associated with political discussion and participation (Diehl, Weeks, & Gil de Zúñiga, 2015; Lim, 2008; Siegel, 2009). Pertinently, many studies consider network characteristics without differentiating between an individual's general social network and her or his political network. A political network is only one part of a person's general social network, and it can contain members who differ in political orientation as well as in other aspects of social orientation (e.g., religion, occupation, or sexual orientation). One's social network and political attitude coevolve dynamically; network characteristics influence attitude formation, and preexisting attitudes including political orientations influence how social ties are formed (Lazer, Rubineau, Chetkovich, Katz, & Neblo, 2010). The current study proposes a theoretical model that integrates extant research findings and considers distinctive associations between general social network size and political network and relationships between political network and political discussion (see Figure 1).

First, to examine whether a large network of strong ties reduces political homogeneity and increases political network diversity, we propose the following hypothesis:

H1: Strong tie network size will be associated (a) negatively with strong tie political homogeneity and (b) positively with political network diversity.

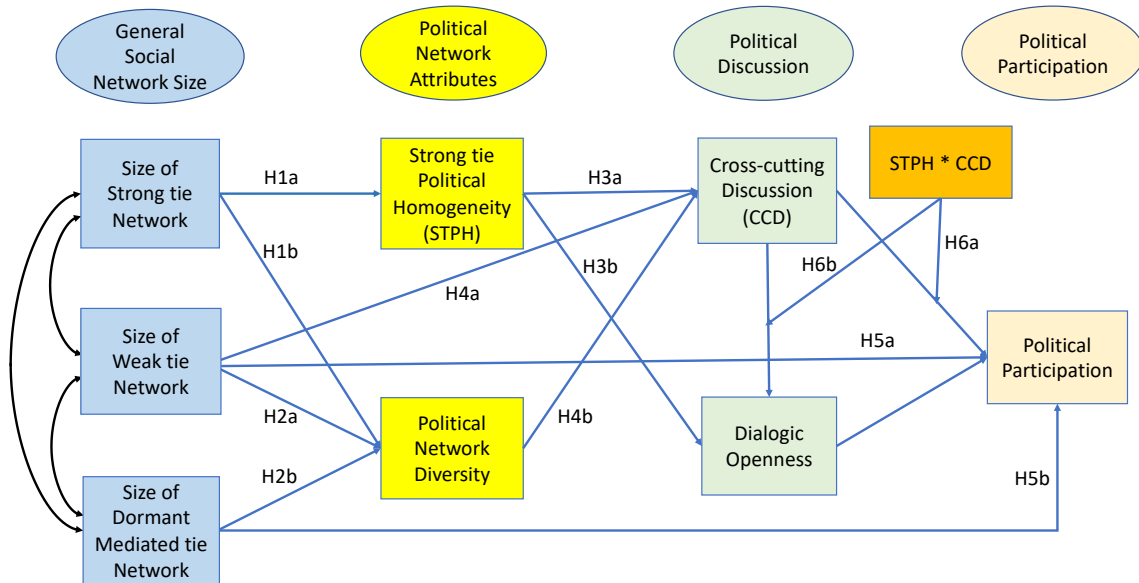


Figure 1. A conceptual model of the relationships between general social network size and political network attributes and political discussion and participation.

Dunbar's (2014) social brain hypothesis suggests that natural social networks in both humans and nonhuman primates are structured by hierarchically inclusive layers. Dunbar (2016) explains, "In humans, these layers have values that approximate 5, 15, 50 and 150, and extend beyond this in at least two further layers to 500 and 1500" (para. 4). These layers reflect communication frequencies and intimacy levels, and "the two outermost layers (i.e., 500 and 1500) correspond to acquaintances and to the number of faces" (para. 4) we recognize; thus, these layers include weak ties and dormant mediated ties,¹ such as contacts on social media and mobile phones, with whom people do not necessarily communicate regularly but whose faces they recognize.

Based on previous findings of the impact of mobile communication (Campbell & Kwak, 2011, 2012) and social media (Diehl et al., 2015; Gil de Zúñiga et al., 2012; Valenzuela et al., 2017) on political participation, we theorize the associations of the sizes of weak and dormant mediated tie networks with political network diversity. Mediated ties include both strong and weak ties because most people interact with both via mobile phones and social media. However, dormant mediated ties include only contacts with whom individuals have exchanged phone numbers or befriended on Facebook but have not communicated

¹ Dormant mediated ties are conceptually distinct from latent ties (Haythornthwaite, 2002). Latent ties are those with whom one can be connected through mutual acquaintances but are not yet actually connected. Dormant mediated ties are already connected either through in-person or online meetings. Communication with dormant ties is not as frequent as communication with strong or weak ties.

with as frequently as strong or weak ties. Due to cognitive and time limitations in building relationships (Dunbar, 2016), one may not often talk to dormant mediated ties, but their political views and activities are still visible through social media feeds, which may increase the person's perceived network diversity. Thus, dormant mediated ties are expected to be the largest group among the three types of ties thanks to technological capacity, and they are expected to contribute to increased political network diversity along with weak ties.

H2: The size of (a) weak and (b) dormant mediated tie networks will be positively related to political network diversity.

In addition, we replicate Lee et al. (2015), hypothesizing that the political homogeneity of strong ties will facilitate cross-cutting discussion and dialogic openness.

H3: Strong tie political homogeneity will be positively related to (a) cross-cutting discussion and (b) dialogic openness.

However, an individual's motivation and social network size may inhibit the influence of network diversity and cross-cutting discussion on political deliberation and participation. If an individual is not highly motivated to participate and too many weak ties are present, political participation is low (Siegel, 2009). Individuals may hear too many conflicting messages and none of the messages are repeated frequently enough to drive their participation. Generally, weak ties are shown to motivate political participation when one's network is neither too small nor exponentially large (Siegel, 2009). A large network of weak ties naturally involves more political diversity, as hypothesized in H2a, which in turn increases the likelihood of experiencing cross-cutting discussion. People who are embedded in large, diverse social networks are more likely to interact with people who support different political candidates and to experience disagreement (Babybeck & Huckfeldt, 2002; Gil de Zúñiga, 2017). Based on previous research showing positive relationships between the number of weak ties and network diversity (Granovetter, 1973, 1983) and between political network diversity and cross-cutting discussion (Eveland & Hively, 2009), we hypothesize:

H4: The size of weak tie networks will be positively related to cross-cutting discussion both (a) directly and (b) indirectly through political network diversity.

A direct relationship between the size of an individual's weak tie network and cross-cutting discussion has not been tested in previous studies, but it is inferred from Gil de Zúñiga's (2017) finding that political discussion with weak ties has a positive impact on discussion disagreement. Huckfeldt et al. (2004) also note that the autoregressive structure² of low-density networks (i.e., a weak tie network) plays a key role in reducing the homogeneity of political discussion and opinions. Similarly, Diehl et al. (2015) found network diversity increased cross-cutting discussion.

² In a model of autoregressive influence within dyads, whether the first individual is influenced by a second individual depends on the distribution of opinions across all other individuals within the network who are also connected to the first individual (Huckfeldt et al., 2004, p. 20).

When citizens are included in nonoverlapping social networks of many weak and mediated ties, their political discussions become more accurate and persuasive, which influences the deliberation of political issues and candidates. When discussing politics frequently, people also develop more accurate views of their discussion partners' political orientations (Eveland & Hutchens, 2013). Individuals' dynamic relationships are embedded in multiple types of overlapping and nonoverlapping network structures, and their political opinion formation and participation need to be understood in a broader context that considers both direct and indirect associations with network size, attributes, and composition (Huckfeldt et al., 2004). Drawing on Valenzuela et al.'s (2017) finding that political discussion with both strong and weak ties on social media leads to protest behaviors, we hypothesize:

H5: The size of (a) weak and (b) dormant mediated tie networks will be positively related to political participation.

The Association of Cross-cutting Discussion With Political Deliberation and Participation

Differing conceptualizations and operationalizations of cross-cutting discussion have led to contradictory research findings (Eveland & Hively, 2009; Klofstad, Sokhey, & McClurg, 2013; Lu et al., 2016; Nir, 2011). For example, Eveland and Hively (2009) classified three types of political discussion (i.e., safe, dangerous, and diverse) based on the political ideologies of one's discussion partners and the extent to which discussions were evenly distributed along the political spectrum. In contrast, Lu et al. (2016) argued that perceptive versus behavioral measures of discussion disagreement explain inconsistent findings.

The current study replicates portions of Lee et al.'s (2015) study and reexamines the inconsistent effects of cross-cutting discussion on political deliberation and participation. Lee and colleagues used a "perceptual measure" of discussion disagreement based on self-reports of how often respondents engaged in political discussion that involved disagreement with people who supported different candidates. The researchers found a stronger relationship between cross-cutting discussion and political deliberation and participation for people who had higher levels of strong tie political homogeneity. The current study aims to confirm the moderating role of strong tie political homogeneity in relationships between cross-cutting discussion and dialogic openness and between cross-cutting discussion and political participation. More specifically, we consider associations with other network characteristics, such as the sizes of various tie strength networks as well as political network diversity, to expand Lee et al.'s study.

Lee et al. (2015) found that cross-cutting discussion was more likely to lead to dialogic openness when discussants were surrounded by a strong politically homogeneous network. Politically homogeneous close ties provided a psychological buffer against potentially negative experiences related to discussion disagreement. Political discussions involving strong disagreement or raising awareness of one's minority position in the network can induce hesitance and ambivalence toward discussing politics further (Lazer et al., 2010; Noelle-Neumann, 1993). Thus, to maintain openness toward discussing politics with people of dissimilar orientations, one needs a strong support network that shares similar political views and confirms one another's stances.

Furthermore, Lee et al. (2015) found that the positive influence of cross-cutting discussion on participation also depends on the political homogeneity of an individual's strong ties. Without exposure to cross-cutting discussion, political homogeneity among one's strong ties is more likely to produce an echo chamber (Burt, 2001). However, the confirmation and strengthening of one's opinions through an echo chamber will not necessarily reduce political participation because partisans may still take actions (Huckfeldt et al., 2004). Similarly, cross-cutting discussion may not always positively influence participation because political disagreements, particularly with close ties, can cause frustration and withdrawal from participation. Nevertheless, Huckfeldt and colleagues argue that ambivalence caused by political disagreement does not reduce political engagement because discussants become less polarized and more knowledgeable about candidates or issues. Thus, to reexamine the moderation effect of strong tie political homogeneity between cross-cutting discussion and political deliberation and between cross-cutting discussion and participation while considering the associations with general social network size and political network diversity, we hypothesize:

H6: Strong tie political homogeneity will moderate the relationship between (a) cross-cutting discussion and dialogic openness and (b) cross-cutting discussion and political participation.

Additionally, to examine the proposed relationships among theoretical constructs within a comprehensive model, we ask:

RQ1: What are the relationships among networks of distinctive sizes and tie strengths, political network attributes, cross-cutting discussion, and political deliberation and participation within a theoretical structure?

Method

The current research utilized an online survey with a national sample of U.S. citizens ($N = 1,001$).³ A survey company, Qualtrics, was employed to conduct quota sampling that matched U.S. census data in demographic distributions (particularly of gender, age, income, and geography) during August 2015. Each participant who completed the survey was paid a rate determined by Qualtrics, and we paid \$5 per person to Qualtrics, including the company's fees.

Sample

The sample was evenly split between male (49.8%) and female (50.2%) subjects. Participants' ages ranged from 18 to 90 ($M = 43.3$, $SD = 16.6$). One-fifth of the participants reported their highest education level as a high school graduate or below, 29.5% had some college education or were currently in college, 33.5% were college graduates, and 16.7% had some graduate education or a professional degree. For monthly income, about one-third of the participants reported earning \$2,000 or less, 33.1% reported

³ A priori power analysis using the Gpower computer program (Faul, Erdfelder, Lang, & Buchner, 2007) indicated that a total sample of 918 people would be needed to detect small effects ($f^2 = .025$) with 95% power using linear multiple regression with $\alpha = .05$.

earning \$2,000 to \$4,000, 18.7% reported earning \$4,000 to \$6,000, and the rest reported earning over \$6,000. All U.S. states and territories except for Alaska, South Dakota, Vermont, and Puerto Rico were represented as the current state of residence in the sample; 18.3% of participants lived in the Northeast region, 22.5% in the Midwest, 36.4% in the South, and 22.7% in the West.⁴

Compared with the most recent U.S. census (2016), this sample was well matched in terms of gender and education level. The census reports 50.8% of the population as women, and our sample had 50.2% women. More than 86% of census respondents had an education level of high school or higher, and 20% of our participants reported "high school or less." The census reports \$53,889 as the median annual household income, and our sample had a median monthly income of \$2,500, which translates to an annual individual median income of \$30,000. Thus, the sample's annual household income may be similar to or slightly higher than that of the census data if dual-income families are considered. Overall, this sample approximates the general U.S. population relatively effectively.

Measures

Political Participation

Four types of involvement in traditional forms of political participation were measured following Lee et al. (2015): attending a political meeting, rally, or speech; working for a candidate or a party; contacting a public official or a political party; and contributing money to a candidate or a political party. The frequency of involvement in each type of participation was reported on a 7-point scale ranging from 1 (*never*) to 7 (*daily*). The responses were averaged to form a composite index ($M = 1.90$, $SD = 1.55$, Cronbach's $\alpha = .93$). Log transformation was used to meet the normality assumption.

Dialogic Openness

The extent of willingness to open political dialogue with those outside one's strong ties was measured by asking how often participants enjoy discussing political issues with people they do not know very well (Campbell & Kwak, 2012). Responses were measured on a 7-point scale ranging from 1 (*never*) to 7 (*daily*) ($M = 2.76$, $SD = 1.93$).

Cross-cutting Discussion

We asked participants how often they engage in the following two types of discussion: talking to others who do not support the candidate they favor and having a conversation about politics or social issues that involves disagreement (Lee et al., 2015). The frequency of engagement in each type of discursive behavior was reported on a 7-point scale ranging from 1 (*never*) to 7 (*daily*). The responses were summed to form an additive index ($M = 6.03$, $SD = 3.73$, interitem $r = .76$).

⁴ For the classification of states into the four regions, we followed the U.S. census: <https://www.census.gov/programs-surveys/economic-census.html>.

Network Size

We measured three categories of relationship networks: strong ties, weak ties, and dormant mediated ties. Strong ties include immediate family members and close friends ($M = 15.57$, $SD = 7.20$, interitem $r = .47$). Weak ties include neighbors, coworkers, and members of the same voluntary organizations ($M = 128.90$, $SD = 138.81$, Cronbach's $\alpha = .88$). Dormant mediated ties include contacts in cellular phones and the most frequently used social media (interitem $r = .56$), and then the numbers of strong and weak ties were subtracted from those sums ($M = 762.82$, $SD = 843.90$). As is typical for network variables, all network size variables were heavily skewed in their distributions, so square root and natural log transformations were performed for their normalization.

Political Network Attributes

Political network diversity was measured according to how often participants socialized with people of various political orientations. Responses were reported on a 7-point scale ranging from 1 (*not at all*) to 7 (*very frequently*) ($M = 4.32$, $SD = 1.86$). Strong tie political homogeneity was measured with two questions: "How likely is it the people in your network of strong personal ties share your political views?" and "How likely is it they support the same presidential candidate as you?" (Lee et al., 2015, p. 578). Responses were measured on a 7-point scale ranging from 1 (*very unlikely*) to 7 (*very likely*) and then were summed to form an additive index ($M = 8.72$, $SD = 3.39$, interitem $r = .86$).⁵ Table 1 presents bivariate correlations among the main variables of this study.

Table 1. Bivariate Correlations Among Major Variables.

	1	2	3	4	5	6	7
1. Size of strong tie network	—						
2. Size of weak tie network	.75***	—					
3. Size of dormant mediated tie network	.63***	.76***	—				
4. Political network diversity	.14***	.21***	.16***	—			
5. Strong tie political homogeneity	.09**	.17***	.13***	.31***	—		
6. Cross-cutting discussion	.25***	.32***	.29***	.41***	.45***	—	
7. Dialogic openness	.28***	.33***	.32***	.37***	.44***	.79***	—
8. Political participation	.42***	.49***	.49***	.33***	.34***	.61***	.66***

Note. Transformed values are used.

** $p < .01$. *** $p < .001$

⁵ A confirmatory factor analysis was performed to examine the measurement fit and structure of the network scale (i.e., size of strong, weak, and dormant mediated ties; political network attributes; and cross-cutting discussion). The final measurement model had an acceptable fit, $\chi^2(164) = 678.54$, $p < .001$. The Steiger-Lind root mean square error of approximation was 0.056, 90% CI [.05, .06]; the comparative fit index was 0.97; and standardized root mean square residual was 0.05 (Hu & Bentler, 1999).

Control Variables

The amount of news consumed through various media outlets was measured in minutes per day via each medium. Data for four off-line media outlets (i.e., network and cable TV, radio, and newspaper; $M = 175.12$, $SD = 159.77$, Cronbach's $\alpha = .85$) and three online media outlets (i.e., social media, Internet via desktop, and mobile Internet; $M = 142.46$, $SD = 150.53$, Cronbach's $\alpha = .90$) were aggregated to create two summated scales, which were standardized. Political news interest was used as a proxy for political interest and was measured on a 7-point scale ranging from 1 (*very little*) to 7 (*very much*) ($M = 4.69$, $SD = 1.97$) and media literacy self-efficacy was used as a proxy for political self-efficacy. Items such as "I can understand the diverse perspectives related to important news" and "I can express my opinions well related to important news through the Internet and social network sites" were used to measure the self-efficacy of media literacy on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), and an average score was created from six items ($M = 5.25$, $SD = 1.12$, Cronbach's $\alpha = .90$).

Interaction Term

One interaction term was created between cross-cutting discussion and strong tie political homogeneity (H6). To reduce the likelihood of collinearity between interaction terms and their components, all the component variables were mean-centered (Tabachnick & Fidell, 2013).

Results

Tests of H1 to H5

The relationships among the sizes of distinct tie strength networks, political network attributes, political discussion, and participation were analyzed by multiple hierarchical regressions and a path analysis. H1 predicted that the size of strong tie networks would be associated (a) negatively with the political homogeneity of strong ties and (b) positively with political network diversity, and H2 predicted that the size of (a) weak and (b) dormant mediated tie networks would be positively associated with political network diversity. Controlling for the effects of demographics (i.e., age, gender, education, and income) and other control variables (i.e., news consumption, political news interest, and media literacy), results show that the size of strong tie networks is negatively related to political homogeneity ($\beta = -.10$, $p = .13$) and political network diversity ($\beta = -.02$, $p = .78$), but the associations are not statistically significant. Thus, H1 is not supported (see Table 2).

Table 2. Regression Models of Strong Tie Political Homogeneity and Political Network Diversity.

	Strong tie political homogeneity β (t)	Political network diversity β (t)
Demographics		
Age	-.03 (-0.62)	-.21 (-4.79)***
Gender	-.05 (-1.06)	-.01 (-0.23)
Education	.10 (2.01)*	.22 (4.72)***
Income	.16 (3.36)**	.11 (2.48)*
ΔR^2	.05***	.10***
Network size		
Strong ties	-.10 (-1.53)	-.02 (-0.28)
Weak ties	.14 (1.75)	.18 (2.37)*
Dormant mediated ties	.12 (1.80)	-.05 (-0.76)
ΔR^2	.03**	.02*
Total R^2	.08***	.12***

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

Results of hierarchical regression indicate that the size of an individual's weak tie networks ($\beta = .18, p = .02$) is significantly related to political network diversity, but the size of dormant mediated tie networks ($\beta = -.05, p = .45$) is not. Thus, H2 is partially supported. Participants with larger weak tie networks and those who are younger, are more educated, and earn higher income have more politically diverse networks. The size of weak tie networks explains about 2% of additional variance in political network diversity on top of demographics (see Table 2).

H3 predicts positive associations between strong tie political homogeneity and (a) cross-cutting discussion and (b) dialogic openness. The analysis finds positive associations between strong tie political homogeneity and cross-cutting discussion ($\beta = .21, p < .001$) and dialogic openness ($\beta = .25, p < .001$; see Table 3). Participants whose close ties are politically homogeneous are more likely to engage in cross-cutting discussion and are more willing to discuss politics with people they do not know as well. Thus, H3 is supported.

Table 3. Regression Models of Cross-Cutting Discussion, Dialogic Openness, and Political Participation.

	Cross-cutting discussion β (t)	Dialogic openness β (t)	Political participation β (t)
Demographics			
Age	-.20 (-4.54) ^{***}	-.20 (-4.70) ^{***}	-.33 (-8.05) ^{***}
Gender	-.20 (-4.52) ^{***}	-.24 (-5.46) ^{***}	-.22 (-5.40) ^{***}
Education	.09 (2.01) [*]	.08 (1.78) [†]	.10 (2.39) [*]
Income	.16 (3.51) ^{***}	.16 (3.58) ^{***}	.18 (4.22) ^{***}
ΔR^2	.12 ^{***}	.14 ^{***}	.20 ^{***}
Other control variables			
Online media	.19 (3.60) ^{***}	.21(4.19) ^{***}	.36 (7.34) ^{***}
Off-line media	.03 (0.63)	.14 (2.88) ^{**}	.12 (2.47) [*]
Political news interest	.28 (6.31) ^{***}	.23 (5.25) ^{***}	.08 (1.92)
Media literacy	.18 (4.24) ^{***}	.12 (3.09) ^{**}	.01 (0.20)
ΔR^2	.22 ^{***}	.23 ^{***}	.18 ^{***}
Network size			
Strong ties	.04 (0.68)	.06 (1.08)	.07 (1.36)
Weak ties	.11 (1.62)	.06 (0.94)	.16 (2.53) [*]
Dormant mediated ties	.01 (0.23)	.04 (0.79)	.10 (1.93)
ΔR^2	.02 ^{**}	.02 ^{**}	.07 ^{***}
Political network attributes			
Diversity	.17 (4.17) ^{***}	.14 (3.32) ^{**}	.09 (2.33) [*]
Strong tie political homogeneity	.21 (4.82) ^{***}	.20 (4.73) ^{***}	.16 (3.82) ^{***}
ΔR^2	.06 ^{***}	.04 ^{***}	.02 ^{***}
Political discussion			
Cross-cutting discussion		.64 (18.31) ^{***}	.19 (3.78) ^{***}
Dialogic openness			.30 (5.92) ^{***}
ΔR^2		.24 ^{***}	.12 ^{***}
Interaction			
Cross-cutting discussion \times Strong tie political homogeneity		.07 (2.41) [*]	.11 (3.33) ^{**}
ΔR^2		.004 [*]	.01 ^{**}
Total R^2	.41 ^{***}	.67 ^{***}	.61 ^{***}

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

H4 predicts that the size of an individual's weak tie networks will be positively associated with cross-cutting discussion both (a) directly and (b) indirectly through political network diversity. The mediation of political network diversity between the size of an individual's weak tie networks and cross-cutting discussion was tested using the PROCESS macro for SPSS (Hayes, 2017). The relationship between the number of weak ties and political network diversity is statistically significant, as is the relationship between political network diversity and cross-cutting discussion when the numbers of strong and dormant mediated ties were considered as covariates. The significance of these direct and indirect effects was tested using

bootstrapping procedures. Unstandardized direct and indirect effects were computed for 5,000 bootstrapped samples, and the 95% confidence interval was computed by determining the effects. The bootstrapped unstandardized direct effect of the size of one's weak tie network on cross-cutting discussion is .002 ($SE = .001$), which is not statistically significant, $t = 1.95$, $p = .051$, $CI [.000, -.004]$. Thus, H4a is not supported. The indirect effect of the size of one's weak tie network on cross-cutting discussion through political network diversity is .001 ($SE = .0004$), with 95% $CI [.0002, .0018]$. Thus, the indirect effect of the size of one's weak tie network on cross-cutting discussion is fully mediated by political network diversity and is statistically significant, supporting H4b.

H5 predicts that the size of an individual's (a) weak and (b) dormant mediated tie networks will be positively associated with political participation. The results of a hierarchical regression show a statistically significant relationship between the size of one's weak tie network and political participation ($\beta = .16$, $p = .01$) and a relationship approaching statistical significance between the size of one's dormant mediated tie network and political participation ($\beta = .10$, $p = .06$) after controlling for the effects of demographics and other variables (see Table 3). This means participants with larger weak tie and dormant mediated tie networks are more frequently engaged in political activities. Thus, H5 is supported.

Tests of H6 and RQ1

H6a predicts that strong tie political homogeneity will moderate the relationship between cross-cutting discussion and dialogic openness. The results indicate that cross-cutting discussion ($\beta = .64$, $p < .001$) and strong tie political homogeneity ($\beta = .20$, $p < .001$) are positively associated with dialogic openness, accounting for 68.6% of the variance together with demographics, network sizes, and other controls. Adding the interaction term between cross-cutting discussion and strong tie political homogeneity to the model explains an additional 0.4% of the variance in dialogic openness, $F(1, 465) = 5.82$, $p = .02$ (see Table 3).

À la the Johnson-Neyman technique utilizing the PROCESS macro for SPSS (Hayes, 2017), data were generated at varying levels (i.e., high, medium, and low) of the moderator, and a graph utilizing the pick-a-point method was produced to assist in interpreting the moderation effect of strong tie political homogeneity (see Figure 2).

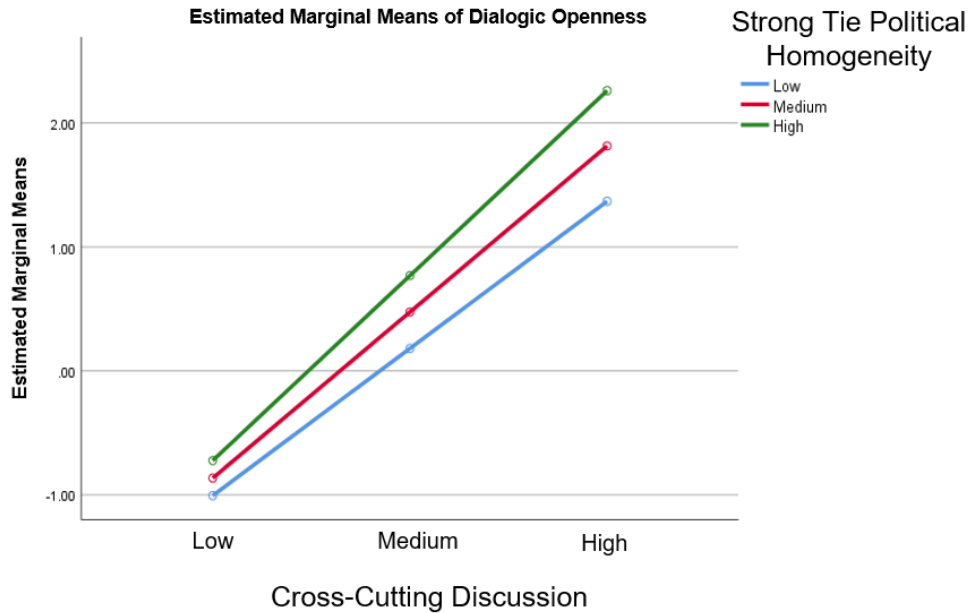


Figure 2. Interaction between cross-cutting discussion and strong tie political homogeneity on dialogic openness.

Within the observed range of the moderator (i.e., strong tie political homogeneity), the interaction between strong tie political homogeneity and cross-cutting discussion is significant at all points from the lowest ($Z = -3.36$) to the highest ($Z = 2.64$) at the $p < .0001$ level with the effects size increasing as strong tie political homogeneity increases. The results indicate that strong tie political homogeneity amplifies the relationship of cross-cutting discussion with dialogic openness, supporting H6a.

H6b predicts that strong tie political homogeneity will moderate the relationship between cross-cutting discussion and political participation. The hierarchical regression's results indicate that strong tie political homogeneity ($\beta = .16, p < .001$) and cross-cutting discussion ($\beta = .19, p < .001$) are both positively and significantly associated with political participation, accounting for about 60.6% of the variance along with network sizes, attributes, and other controls. Adding the interaction term between strong tie political homogeneity and cross-cutting discussion explains an additional 0.9% of the variance, $F(1, 464) = 11.06, p = .001$ (see Table 3).

To explain the moderation effect, tested with the Johnson-Neyman technique, a graph utilizing the pick-a-point method was created by generating data in the PROCESS macro for SPSS (Hayes, 2017) at varying levels for the moderator (see Figure 3).

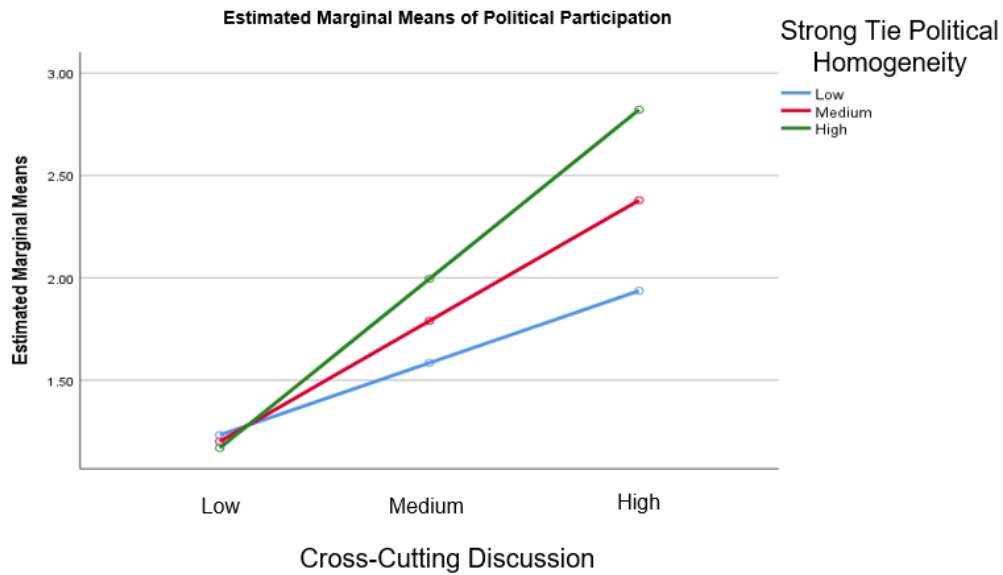


Figure 3. Interaction between cross-cutting discussion and strong tie political homogeneity on political participation.

The data suggest no conditional effect for participants with low levels of strong tie political homogeneity (indirect effect = .06, $Z = -3.06$, $p = .20$), but increasingly larger effects for those with higher levels of strong tie political homogeneity (indirect effect = .20, $Z = -1.86$, $p < .0001$; indirect effect = .70, $Z = 2.64$, $p < .0001$) concerning the interaction between strong tie political homogeneity and cross-cutting discussion on political participation. Thus, the positive relationship between cross-cutting discussion and political participation seems to be amplified by strong tie political homogeneity, supporting H6b.

RQ1 asks about the relationships among network sizes of various tie strengths, political network attributes, political discussion, and participation as a theoretical structure. Path analysis was conducted with Mplus Version 8.2. The results of the path analysis with the standardized coefficients (β) for political participation are presented in Figure 4. This model has an acceptable fit, according to the guidelines set forth by Hu and Bentler (1999), with $\chi^2(12) = 211.95$, $p < .001$, root mean square error of approximation = 0.12, 90% CI [.11, .14], comparative fit index = 0.93, and standardized root mean square residual = 0.08.

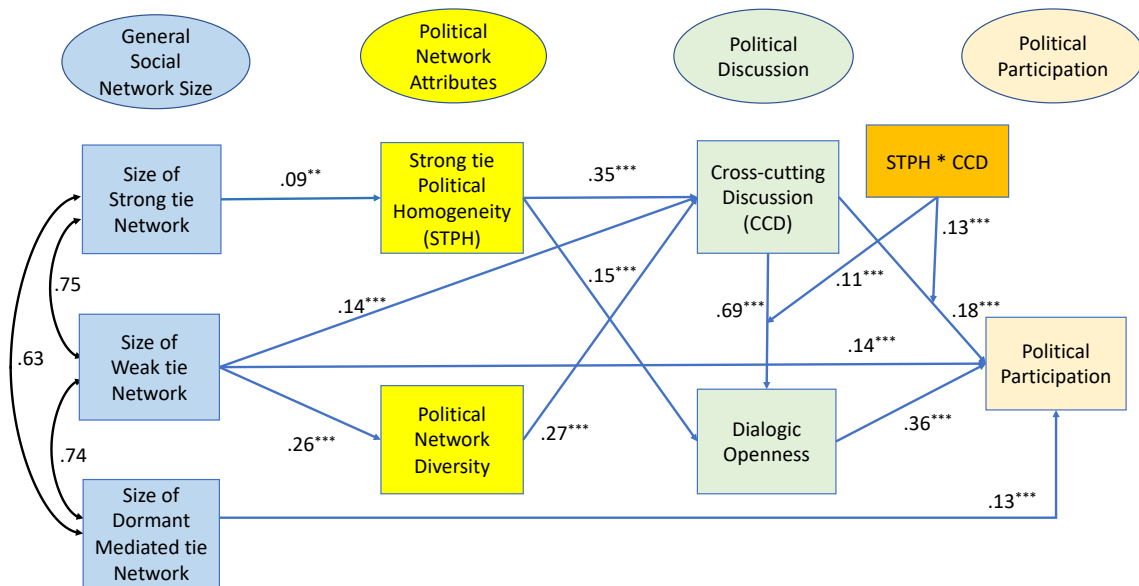


Figure 4. A path model of the relationship between the size of general social networks and political network attributes with political discussion and participation (completely standardized values are shown; ** $p < .05$; * $p < .001$).**

As shown in Figure 4, the sizes of weak and dormant mediated tie networks have distinct paths to political participation. The size of one's strong tie network has only indirect paths to political participation with multiple mediating paths such as political homogeneity, cross-cutting discussion, and dialogic openness (a total of indirect effects; $\beta = .05, p = .04$). As previously mentioned, the size of an individual's weak tie network ($\beta = .14, p < .001$) and dormant mediated tie network ($\beta = .13, p < .001$) have direct positive associations with political participation; the size of one's weak tie network also has indirect influences through political network diversity, cross-cutting discussion, and dialogic openness (a total of indirect effects; $\beta = .10, p < .001$). Approximately 53% of the variance in political participation is explained by this model.

Discussion

Cross-cutting discussion exposes citizens to diverse political disagreement and offers opportunities to deliberate their political opinions. Political deliberation and participation are the building blocks of a healthy democracy; thus, it is important to know what facilitates cross-cutting discussion that leads to more deliberative attitudes and participatory behaviors. Due to inconsistent conceptualizations and methodological variations for studying the impacts of cross-cutting discussion, or political disagreement broadly, previous studies have found either positive or negative relationships with political participation.

Many studies note that the reason for such mixed findings might be the influence of social and political networks on political discussion and participation.

The current study examines the dynamic relationships among general social network characteristics, political discussion, and participation. We retested the inconsistent association between cross-cutting discussion and political participation while considering network sizes of various tie strengths and political network attributes. This study expands a previous study (Lee et al., 2015) by including the variable, the size of the strong tie network, and more importantly, the political network diversity associated with the size of weak tie network. Strong tie political homogeneity, as considered by Lee et al. (2015), does not necessarily indicate that an individual's networks are not diverse; a person can be embedded in politically diverse networks overall but a homogeneous strong tie network. In fact, modification indices from our path analysis suggest that adding a path between strong tie political homogeneity and network diversity would improve the overall fit of the model. However, we do not know whether such a relationship has a linear or curvilinear configuration, so the path is not included in the model. An individual can be enmeshed within an overall homogeneous political network in terms of both strong and weak ties, but it is also possible that someone can have politically diverse strong ties and a relatively homogeneous network of weak ties—although this is less likely than the case of having a politically diverse network of weak ties.

Given that cross-cutting discussion is more likely to occur within large and diverse networks, the primary goal of our study was to theorize and account for the sizes of distinct tie strength networks (Roberts & Dunbar, 2011) and their paths to political participation. The findings contribute to conceptual and empirical integrations regarding general social networks, political network attributes, and political discussion. Based on the differential functions and sizes of distinct tie strength networks (Granovetter, 1973; Roberts & Dunbar, 2011), a more comprehensive theorization about the relationships among social networks and political discussion and participation was achieved.

Campbell and Kwak (2011) found that political mobilization and open dialogue through mobile communication is improved when strong tie homogeneity is coupled with a large network. Although strong tie networks are usually smaller and more homogeneous than weak tie networks, the authors suspected a large strong tie network brought more diverse perspectives and facilitated dialogic openness due to its size (Lee et al., 2015). Our analysis reveals positive and moderate associations between strong tie political homogeneity and dialogic openness. However, the size of the strong tie network itself is not directly associated with dialogic openness or political participation but only indirectly through political homogeneity and its associations with dialogic openness and cross-cutting discussion. Therefore, participants with a sizable primary network of politically homogeneous ties seem to be willing to discuss politics with people they do not know as well. A strong politically homogeneous network serves as a psychological safety net for political discussion.

The size of weak and dormant mediated tie networks may also be associated with cross-cutting discussion and dialogic openness. A large network can indicate that a person is socially active and extroverted, which may also relate to the person's political open-mindedness. However, due to the high correlations among each type of network size (see Figure 4), considering them together in the regression created a multicollinearity

issue; thus, we analyzed each separately and found that the sizes of weak and dormant mediated tie networks were significantly associated with cross-cutting discussion and dialogic openness.

The theorization about the association between the size of weak and dormant mediated tie networks and political network diversity distinguishes the current study from Lee et al.'s (2015). The larger one's network of acquaintances (Granovetter, 1983) and connections through mobile phones and social media, the more likely one is to be exposed to people with various political views. However, our analysis reveals moderate support for the association only between the size of one's weak tie network and political network diversity, not between the size of one's dormant mediated tie network and political network diversity. When the number of strong ties was regressed onto political network diversity, it was not significantly related; thus, the observation that a large strong tie network delivers "diverse perspectives" (Campbell & Kwak, 2011) may need to be reexamined in another study. A large network of acquaintances could lead to more political discussion opportunities involving disagreement on issues and political candidates. Although having large contact lists on mobile phones and social media may not greatly increase an individual's political network diversity because he or she may not interact with some of the contacts regularly (Dunbar, 2016), those who are politically active may reactivate dormant ties to efficiently mobilize collective political actions when necessary (Lim, 2008).

This study confirms the moderating impact of strong tie political homogeneity observed by Lee et al. (2015). The positive associations between cross-cutting discussion and dialogic openness and between cross-cutting discussion and political participation are enhanced by strong tie political homogeneity even when controlling for network size and political diversity. This finding adds robustness to existing knowledge regarding the role of strong tie political homogeneity. While some scholars have observed emotional stress, social anxiety, and ambivalence as a result of cross-cutting discussion involving political disagreements (Gearhart & Zhang, 2015; Lu et al., 2016; Mutz, 2006; Torcal & Maldonado, 2014), these conversations did not result in negative outcomes when participants were surrounded by close and politically like-minded people in this study. Moreover, if an individual does feel ambivalent following a political disagreement, such feelings may not necessarily discourage political participation as their opinions can be reinforced within their inner circle. On the other hand, exposure to various political perspectives may help some citizens become less polarized in their opinions but still participate in politics (Huckfeldt et al., 2004).

There is a caveat to the promising impact of strong tie political homogeneity on political participation: For those who engage in cross-cutting discussion less frequently, their strong politically homogeneous network is associated with less participation. A post hoc analysis of the relationship between strong tie political homogeneity and political participation with cross-cutting discussion as a moderator shows this interaction (see Figure 5). Lee et al. (2015) also found cross-cutting discussion had the most adverse effects on political participation among those who were surrounded by politically homogeneous strong ties and had low internal efficacy.

Although our study does not consider participants' internal efficacy (instead, we controlled for media literacy self-efficacy), the negative relationship found between strong tie political homogeneity and political participation for those who engaged in less cross-cutting discussion (indicated by the blue line in Figure 5) may be due to low internal efficacy. Less efficacious citizens may have perceived themselves and

their strong ties as a political minority after being exposed to a limited amount of cross-cutting discussion. Thus, they may have withdrawn from political actions because they did not believe their participation would make a difference. Furthermore, as shown in Figure 3, the combination of a higher level of cross-cutting discussion with lower strong tie political homogeneity could also lead to decreased political participation. This finding implies that cross-cutting discussion may dampen political participation when unaccompanied by the psychological buffer of strong politically homogeneous ties. On the other hand, when surrounded by close ties who share highly homogeneous political views, engaging in little cross-cutting discussion seems to do more harm than good for political participation. Overall, to facilitate political participation, ideally the level of both cross-cutting discussion and strong tie political homogeneity should be high.

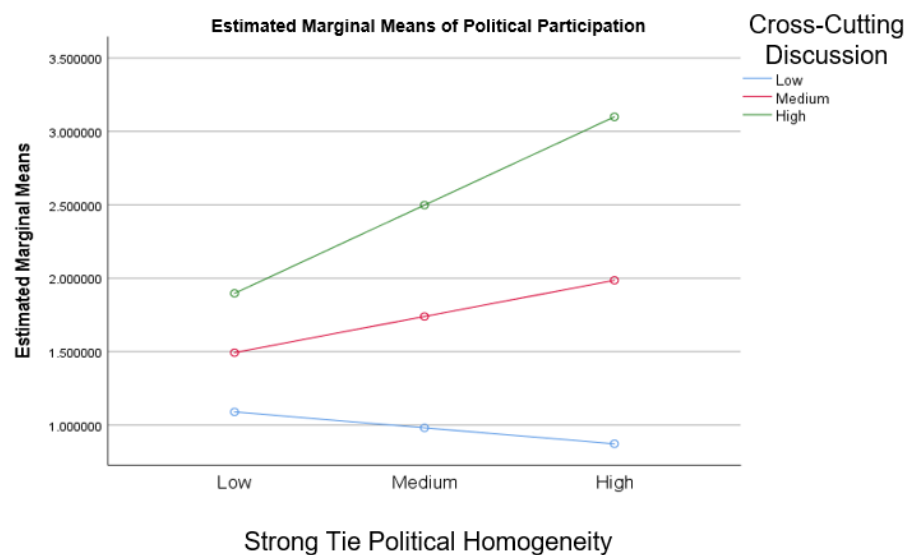


Figure 5. Interaction between strong tie political homogeneity and cross-cutting discussion on political participation.

Meanwhile, it is also possible that experiencing political disagreement via cross-cutting discussion directly motivates citizens to participate more actively in politics. Frequent discussion with people who support different political candidates or with people who disagree on various political issues may raise one's awareness of the opposing views' prevalence. A natural response to this perception for achieving political changes and policies that reflect one's views would be taking political actions, such as attending a political meeting or rally or contributing time or money to a candidate or political party (Lee et al., 2015). This possibility, however, does not apply to those who feel pressured to be silent about their opinions because they perceive them as a minority view (Noelle-Neumann, 1993). Contrary to some research findings (Gearhart & Zhang, 2015; Lu et al., 2016; Mutz, 2006) but in agreement with others (Lee et al., 2015; Price et al., 2002; Scheufele et al., 2006), we did not find a direct negative association between cross-cutting discussion and political participation.

During the 2016 presidential election, many U.S. citizens likely experienced frustration and anxiety due to the widely different views on candidates between Democrats and Republicans. Particularly, when people found their strong ties supported a candidate whom they disapproved of, political discussions might have become contentious. Despite the heated competition and polarization, the overall voter turnout of 2016 was lower than that of the previous presidential election (Regan, 2016). This study's findings allow us to infer two possible reasons for the lower participation: (1) citizens did not have support from their close ties when engaged in cross-cutting discussion with them; or (2) because of small, less diverse weak tie network and politically insular strong tie network, voters' exposure to cross-cutting discussion was limited.

Limitations and Future Directions

The current study does not include some variables that are relevant to political participation, such as attitude strength, political knowledge, and party identification. Although we did not aim to test the effects of such variables, considering them is a well-established custom in political communication research. Including those variables would have increased the cognitive burden on survey participants, which could have lowered the reliability of the measurements of other key variables. Although imperfect, we controlled for political news interest and media literacy self-efficacy as proxies for political interest and internal efficacy.

We acknowledge the measurement of dialogic openness needs to be improved in future studies. The variable was measured by a single item scale, replicating Lee et al. (2015), which made it difficult to assess the scale's validity and reliability. More measurement items related to an individual's willingness to discuss politics with people he or she does not know well need to be developed for improved assessment of the relationship of deliberative attitude with political participation.

The cross-sectional data prevented us from determining causal relationships among cross-cutting discussion, dialogic openness, and political participation. In fact, relationships among any variables examined in this study cannot be claimed as causal for the same reason. Although a general interpretation is that attitudes affect behaviors and discussions affect participation, the reverse relationships may hold that participatory behaviors and experiences lead to more deliberative attitudes and active political discussions with diverse others. Alternatively, cross-cutting discussion and dialogic openness may also interact with each other to facilitate more participation. However, post hoc analyses testing the model fit of these competing models indicate that our model has a significantly better fit than these two alternative scenarios.

Modification indices from the path analysis suggest additional paths, such as one from cross-cutting discussion to political homogeneity of one's strong ties. Although our model predicted that strong tie political homogeneity as a network characteristic would influence political discussion, the opposite direction of influence or bidirectional influence is possible. In fact, another post hoc analysis showed slightly better fit for these competing scenarios. This means that exposure to cross-cutting discussion may make the political orientation of people's strong tie networks more homogeneous. Being informed about dissimilar political views could bring more deliberative attitudes, but it could also bring more defensive attitudes. This potentially double-edged influence of cross-cutting discussion needs to be studied further, preferably with longitudinal data.

Our findings overall reinforce understandings of the positive impact of cross-cutting discussion on political participation moderated by strong tie political homogeneity; however, future studies could specify participants' cross-cutting discussion partners (e.g., strong, weak, or mediated ties) and the direct outcomes of the discussion. Thus far, we only know that high network diversity is associated with a higher likelihood of cross-cutting discussion, and strong tie political homogeneity buffers the negative impacts of cross-cutting discussion. People may not care much about disagreeing with weaker ties because they do not have close emotional connections with them or they do not interact with them as often as they do with strong ties. Also, disagreement with strong ties can be emotionally stressful (Torcal & Maldonado, 2014). Thus, the nature of cross-cutting discussion partners can swing the impact of political discussion, causing either more openness and participation or frustration and withdrawal.

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