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Democracy Based on Difference: Examining the Links Between Structural Heterogeneity, Heterogeneity of Discussion Networks, and Democratic Citizenship

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This study explores the direct and indirect links between structural heterogeneity, network heterogeneity, and political participation. We review the often conflicting scholarship on discussion network heterogeneity and political participation and place it within a multilevel conceptual framework of heterogeneity. Based on this integrated theoretical model, our study uses a combination of macro-level and individual-level survey data from various sources. First, we use a cross-sectional national data set, based on a telephone survey with a probability sample of almost 800 adults. Second, we combine these individual-level data with county-level data on religious, political, and racial heterogeneity. Based on these data sets, we develop a path model linking structure, context, and networks into an integrated pathway to evaluate the direct and indirect effects of heterogeneity on political participation. Our results show positive links between structural and network heterogeneity that are both direct and indirect, that is, mediated through various communication processes.

Scholars studying heterogeneity and political participation have put forward opposing theories and conflicting evidence as to the relation between the two. Early voting research suggested that cross-pressures, or more generally stated political disagreement, discourages citizens' political participation, whereas more recent studies generally view disagreement within social networks as fostering collective deliberation, awareness, political knowledge, and consequently participation. Moreover, additional research has demonstrated how the context, or social space in which individuals are

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embedded, may also directly or indirectly influence individual discussion networks and levels of individual political participation.

This study reviews and evaluates the conflicting scholarship on discussion network heterogeneity and political participation and places it within an integrated conceptual framework. We try to resolve some of the contentious issues in the debate on heterogeneity by integrating overall structural heterogeneity, in which discussion contexts and networks are embedded, and discussion heterogeneity. Using a combination of national survey data and county-level race, voting, and religious data, we develop a path model linking structure, context, and network to evaluate the direct and indirect effects of heterogeneity on political participation. In contrast to most other research in this area, our study combines aggregate-level data with individual-level data (McLeod & Pan, 1989; Pan & McLeod, 1991) in order to fully explore the interplay between structural heterogeneity, network heterogeneity, and democratic citizenship.

The research presented here demonstrates empirically the importance of structural heterogeneity in fostering individual-level heterogeneity and also shows how these factors work together to promote political participation. In addition, our research adds to the growing debate over the democratic consequences of being exposed to diverse viewpoints. We argue that such exposure has procivic outcomes. This study therefore presents a unique look at the civic consequences of sociostructural and individual-level dimensions of heterogeneity simultaneously in a single model.

The heterogeneity debate
The debate regarding the role of heterogeneous discussion networks has revolved around three conceptual frameworks of heterogeneity and its effects. The first stresses the negative impact of heterogeneity on individual political participation due to "cross-pressures" or "cross-cutting networks" (Berelson, Lazarsfeld, & McPhee, 1954/1968; Lazarsfeld, Berelson, & Gaudet, 1944; Mutz, 2002a). The second emphasizes the positive contributions of discussion network heterogeneity on fostering individual political participation, especially by increasing individual political knowledge (Huckfeldt, Mendez, & Osborn, 2004; McLeod et al., 1999; Scheufele, Nisbet, Brossard, & Nisbet, 2004). The third framework focuses more on the role of individual and network ambivalence within heterogeneous discussion networks and its mixed outcomes on political participation (Huckfeldt et al., 2004; Nir, 2005).

The People's Choice was the first study to address heterogeneity and its effect on political participation (Lazarsfeld et al., 1944). Based on their field work in upstate New York, Lazarsfeld et al. found that exposure to cross-pressures resulted in individuals attempting to avoid politics, which in turn delayed citizens' voting decisions and made them less likely to vote (Lazarsfeld et al.). More recently, Mutz (2002a) demonstrated negative effects of network heterogeneity on political participation due to "cross-cutting pressures." Moving from social categories to categories of ideological or political considerations, Mutz suggested that there are two interrelated processes that lead people with heterogeneous discussion networks to be less involved in political processes. First, individuals entrenched in politically heterogeneous social

networks steer clear of politics out of desire not to threaten the harmony of their social relationships. Second, her study showed that "exposure to those with political views different from one's own also creates greater ambivalence about political actions, and thus make it more difficult to take decisive political action" (Mutz, 2002a, p. 851).

Although some scholars found supportive evidence for the negative effects of interpersonal interaction (Hovland, Janis, & Kelley, 1953; Rosenberg, 1954–1955), more rigorous analyses found the cross-pressures hypothesis lacking. Using the original data used by Lazarsfeld et al. and the 1956 national election study, Horan (1971) showed the earlier studies "unintentionally confounded the direct effects of membership in social categories with the effects of being linked to conflicting social categories" (Mutz, 2002a, p. 839). Horan found little evidence to support the cross-pressures theory. Efforts to replicate the Columbia School's findings with new data also failed (Pool, Abelson, & Popkin, 1965), concluding that the cross-pressures theory may be a "product of methodological errors linked to an inadequate theoretical conceptualization" (Horan, 1971, p. 659; see Knoke, 1990, for a review).

More recent research has demonstrated the positive aspects of heterogeneous discussion networks (Cappella, Price, & Nir, 2002; Gastil & Dillard, 1999; Huckfeldt et al., 2004; McLeod, Scheufele, & Moy, 1999; Scheufele et al., 2004). These scholars believe that through heterogeneous networks—comprised individuals trading diverse viewpoints on a number of issues—"public dialogue" and deliberative democracy come alive (McKuen, 1990). Indeed, previous research has found that those individuals who are members of a network comprised of fellow citizens who come from a diversity of sociopolitical backgrounds are also more likely to encounter a diversity of viewpoints and opinions in their political discussions (McLeod, Sotirovic, & Holbert, 1998). Increasing levels of discussion diversity, or network heterogeneity, has been linked directly to an increase in traditional forms of political participation (Leighley, 1990), as well as nontraditional forms, such as deliberative forums or town hall meetings (McLeod, Scheufele, Moy, et al., 1999). In addition, Scheufele et al. (2004) demonstrated both direct and indirect positive effects of network heterogeneity on political participation, especially through higher public affairs media use and the acquisition of political knowledge.

There are at least two theoretical explanations for this positive link between network heterogeneity and political participation. First, discussion within a diverse network usually results in network members having to compromise between different viewpoints, motivating these individuals to reevaluate those issues where conflict occurs (Knight & Johnson, 1994). This exposure to discussion disagreement is likely to produce greater cognitive activity (Levine & Russo, 1995), forcing individuals to learn about alternative perspectives and reflect more carefully on what they already know, thereby enhancing political knowledge and understanding (McPhee, Smith, & Ferguson, 1963). These benefits of heterogeneous discussion include greater political sophistication, a larger "argument repertoire," and more political knowledge (Cappella et al., 2002; Gastil & Dillard, 1999; Huckfeldt et al., 2004). This political

learning function of network heterogeneity is important because previous research has shown that increased political knowledge is positively related to more active participation in various political activities (Bennett, 1986; Inglehart, 1979; Klingemann, 1979; McLeod et al., 1999; Neuman, 1986).

In a second indirect influence, network heterogeneity has been positively linked to hard news media use, with the diversity of viewpoints encountered within a heterogeneous network likely increasing the individual's need for information on a wider range of topics (McLeod et al., 1998; Nisbet, Moy, & Scheufele, 2003). This motivation is consistent with much of the uses and gratifications literature that suggests that individuals will process news content more carefully in anticipation of discussions with nonlikeminded others (Eveland, 2004; McLeod & Becker, 1974). In addition to this more anticipatory motivation, however, network heterogeneity also likely triggers post hoc information seeking. Being exposed to contradictory information in their social environment also forces individuals to follow up on these interactions by seeking out more information in the mass media or other sources in order to bolster their initial positions or even rethink their original issue stances.

Though network heterogeneity may lead to greater political knowledge and learning, it may also foster ambivalence toward candidates or political issues. Individual political ambivalence is typically defined as competing beliefs or considerations simultaneously present in the evaluation of an issue, topic, or candidate (Lavine, 2001; Nir, 2005). Nir makes a useful contribution by distinguishing between the traditional definition of individual ambivalence, and network ambivalence, which is "the balance of oppositional or 'pro' and 'con' forces that are operating at the individual's sociopolitical discursive environment" (p. 25), or in other words, the presence of simultaneous political considerations in an individual social network. Nir's research demonstrated that individual ambivalence was negatively related to political participation and voting, yet network ambivalence was not. In fact, her findings suggested that network ambivalence might aid voters in their decision-making process and thus encourage voting behavior. However, research by Huckfeldt et al. (2004) found that network ambivalence did result in a marked increase in individual ambivalence. Thus, network ambivalence, or heterogeneity, may have direct positive impact on participation by increasing knowledge but possibly could have an indirect negative impact by fostering individual ambivalence.

Social context and networks

Though the different conceptual frameworks of heterogeneity differ on the impact of network heterogeneity on political participation, they share the same primary focus on measuring heterogeneity at the individual network level, rather than examining the degree of heterogeneity within the social space, or context, of political discussion. Social context plays an influential role on individual participation, both directly as a center of recruitment and indirectly by influencing the degree of heterogeneity within an individual network. Contexts are distinct from individual social networks as they are "structurally imposed whereas networks are individually constructed"

(Huckfeldt & Sprague, 1995, p. 128). Contexts are external to the individual and constrain the composition of individual social networks created by individual choice and interaction. As Huckfeldt and Sprague stated, "the network can be seen as the end result of efforts made by individuals to impose their own preferences upon their social contexts, and the composition of networks is subject to the multiple, interdependent, cascading choices of people who are the social space—the people who compose the context" (p. 290).

These social spaces—such as the workplace, the church, volunteer group, or neighborhood—may directly impact political participation by serving as important networks of recruitment, channeling individuals directly into political action by way of requests to participate, and via the social expectations that are forged when individuals see their fellow coworkers, church members, or volunteer group members becoming involved in politics (Verba, Schlozman, & Brady, 1995). As networks of recruitment, the workplace, church, or the volunteer group bring people together in communicative interaction and thus increase the number of channels through which requests for involvement are filtered (Verba et al., 1995). These institutions, and the people who run them, also seek to generate political activity among their members as a means to further their own institutional interests (Verba et al.).

Social contexts may indirectly impact political participation by influencing the level of heterogeneity within an individual social network. These social contexts engage individuals in everyday interactions that potentially expose individuals to a greater diversity of viewpoints than they would otherwise find at home among family members, friends, or neighbors (Huckfeldt & Sprague, 1995). Beyond any differences in the frequency and nature of requests to participate, social contexts are likely to vary in terms of network heterogeneity. Past research has described how social contexts are important in shaping discussion diversity because the setting determines in large part the availability, or potential pool, of discussion partners (Huckfeldt & Sprague, 1995). Social contexts, such as the workplace (Mutz & Martin, 2001) or the volunteer group, that bring individuals into close proximity and contact with people who are not family or friends are generally considered to be important sources of network heterogeneity.

Examining three of these social contexts, work, church, and volunteer group, Scheufele et al. (2004) demonstrated that all three social contexts promote discussion network heterogeneity, and in turn, political participation. However, their degree of influence varied by context, with work and volunteer groups promoting network heterogeneity relatively twice as much as church contexts.

Structural heterogeneity

Social contexts such as church, work, and volunteer groups are at an intermediate level of analysis. Both contexts and individual social networks are embedded within a larger social structure. This structural heterogeneity, or distribution of social groups within a specific geographic space or polity, constrains the relative amount of heterogeneity found within either contexts or individual social networks. The

probability, or opportunity, for social interactions with people of different race, political preference, or religious denomination within different social contexts such as work, church, or volunteer groups is contingent on the relative distribution of these groups within the larger social environment. Scholars in the late 1970s and early 1980s demonstrated the important role that structural heterogeneity plays on determining the composition of individual social networks and individual associational choices (Blau, 1977; Blum, 1984; Feld, 1984; Verbrugge, 1977). For instance, Blum's findings suggest that social structure determines the characteristics and traits of an individual's friends and associates more so than deliberate choices of association and interaction.

Though structural heterogeneity is a key influence on contextual and network heterogeneity, there is scant research linking structural heterogeneity directly or indirectly to political participation. Huckfeldt (1979) examined how the distribution of high-status individuals (measured in terms of education) within a neighborhood either encouraged or discouraged forms of political participation. Lower status individuals are discouraged to participate in social-based forms of participation when embedded in a neighborhood with a high distribution of high-status individuals (see also Oliver, 1999).

Some of these relationships may be mediated by factors such as social trust or social capital. Alesina and La Ferrara (2000, 2002), for instance, found that social trust was lower for individuals who lived in racially heterogeneous communities or those with a high level of income disparity and that racial/ethnic heterogeneity and household income inequality had negative effects on political participation. These findings suggest that heterogeneous communities have less social interactions than homogeneous communities, leading to less social capital and consequently less political participation. Individuals in heterogeneous communities refrain from social opportunities that might lead to interactions with individuals from different racial, income, or ethnic groups.

None of these authors have examined how structural heterogeneity may directly impact the heterogeneity of individual social networks, nor modeled the direct or indirect influences that structural heterogeneity may have on political participation.

Integrated framework of heterogeneity

Table 1 places the disparate literature on the conceptualizations, effects, and levels of heterogeneity in relation to political participation into an integrated theoretical framework that outlines these different approaches. First, heterogeneity exists across different units of analysis, that is, structure (geographic area or polity), context (social space like church, work, volunteer group), and individual discussion network. Heterogeneity may be measured and assessed within each unit separately, yet each unit is not independent of each other. Moving across Table 1, from left to right, we can theorize increasing constraints on context and network heterogeneity depending on the structural and contextual heterogeneity in which the individual is embedded.

Table 1 Conceptualizations of Heterogeneity

Conceptualization of heterogeneity	Structural distribution of social groups	Heterogeneity within social setting	Cross-pressure/cross-cutting networks	Discussion heterogeneity	Network ambivalence
Unit of analysis	Structure	Context	Discussion network	Discussion network	Discussion network
Effects on political activity	Mixed	Mixed	Negative	Positive	Mixed
Mechanisms	Higher political competition leads to greater interest, social withdrawal/avoidance leads to less social capital and participation, constrains associational choices	Work, church, volunteer group contexts contribute to network heterogeneity, whereas neighborhood context does not	Social withdrawal/avoidance and increased indecision	Increased political knowledge, awareness, motivation	Network ambivalence facilitates decision making and knowledge, network ambivalence may promote individual ambivalence and indirectly decrease participation
Studies	Alesina and La Ferrara (2000, 2002), Blau (1977), Blum (1984), Huckfeldt (1979), Oliver (1999)	Huckfeldt and Sprague (1995), Mutz and Mondak (2006), Scheufele et al. (2004)	Berelson et al. (1954/1968), Lazarsfeld et al. (1944), Mutz (2002a, 2002b), Mutz and Martin (2001)	Cappella et al. (2002), Gastil and Dillard (1999), Huckfeldt et al. (2004), McLeod, Scheufele, Moy et al. (1999), Scheufele et al. (2004)	Huckfeldt et al. (2004), Nir (2005)

The conception of heterogeneity also differs across units of analysis. At the structural level, heterogeneity is most often conceptualized as the overall distribution of social groups within a specific polity or geographic space. Contextual heterogeneity is similar, but it expands to include the distribution of ideas or viewpoints, as well as social groups, within a specific social setting such as work or church. Network heterogeneity has competing conceptualizations. Some authors view network heterogeneity as cross-pressures from social groups or cross-cutting ideological networks. Others view network heterogeneity as how often individuals discuss and socially interact with other individuals from different ideological, political, gender, or racial backgrounds. Still, a third set of authors focus on the role of ambivalence within individual networks and how it may impact individual ambivalence.

The observed effects and mechanisms of heterogeneity also vary across units of structure, context, and network. Structural heterogeneity has been found to have both positive effects, by stimulating political interest and awareness, and negative effects, by promoting social withdrawal and hampering social capital, on political participation. Social contexts such as work, volunteer groups, church, and neighborhoods generally promote network heterogeneity and political participation, but their relative contribution varies by context.

The heterogeneity of individual networks has been the focus of most academic debate regarding its influence on political participation. One set of authors have found that heterogeneity negatively impacts political participation due to high levels of competing demands and cues from social or ideological groups, leading to indecision or social withdrawal. A second set of scholars have focused on the positive aspects of heterogeneity and how the heterogeneity of political discussion may increase political knowledge, awareness, and public affairs media use, and consequently participation. Last, those scholars that have focused on heterogeneity in terms of ambivalence have found mixed effects, with individual ambivalence hampering participation and network ambivalence playing a neutral or positive role toward participation. However, whether network ambivalence may indirectly impact participation in a negative manner by promoting individual ambivalence is unclear.

What this framework illustrates is that understanding the mechanisms by which heterogeneity may impact political activity is especially difficult because it is inherently both a *multilevel* and *multidimensional* construct. Heterogeneity is inherently multilevel because it may be examined starting at the community level and moving all the way down to individual social networks or dyadic interactions. It is also multidimensional in that the way it is defined, measured, and operates varies across levels of analysis, and possibly even within levels of analysis (i.e., Huckfeldt et al., 2004; Nir, 2005). What is lacking is research that takes into account these multilevel and multidimensional characteristics of heterogeneity in a holistic manner and develops an integrated model linking structural, contextual, and network heterogeneity to political participation. How do citizens react the sociostructural constraints or opportunities in their respective communities to build more or less heterogeneous discussion networks, and how are these behaviors—in turn—related to participation in political processes?

Linking structure, context, and network to participation

The review of past research and literature suggests three sets of hypotheses regarding the role of structure, context, and network heterogeneity on political participation. The first set focuses on the role of structural heterogeneity on political participation indirectly through network heterogeneity. As previously outlined, more heterogeneity at the structural level increases the probability of network heterogeneity and thus may indirectly impact political participation. Considering that network heterogeneity is traditionally measured in terms of social groups (i.e., race) or ideological or political preferences, our model includes similar dimensions of structural heterogeneity: race/ethnicity, political preference, and religious denomination. Based on the conceptual linkages outlined earlier, we put forth the following hypotheses:

> H1a: Higher levels of structural political heterogeneity will have an indirect positive influence on political participation through network heterogeneity.

> H1b: Higher levels of structural racial heterogeneity will have an indirect positive influence on political participation through network heterogeneity.

> H1c: Higher levels of structural religious heterogeneity will have an indirect positive influence on political participation through network heterogeneity.

In addition to indirect effects, structural heterogeneity has been shown to directly increase participation by fostering social competition (Oliver, 1999). This research, however, did not include individual network heterogeneity as an intervening variable. We argue that any influence on political participation at the structural level will be mediated through individual network diversity, as the above hypotheses illustrate. But are there differences in the relationship between the three types of structural heterogeneity and political participation? We put forth the following research question:

> RQ1: Are there differences between different types of structural heterogeneity, with respect to their links to political participation?

Our second set of hypotheses focuses on the role of context in promoting network heterogeneity and political participation. Previous research by Scheufele et al. (2004) demonstrated that work, church, and volunteer group social contexts promoted network heterogeneity and indirectly increased political participation. Therefore, we theorize that:

> H2a: Work-based political discussion contexts will have an indirect positive influence on political participation by promoting network heterogeneity.

> H2b: Volunteer group-based political discussion contexts will have an indirect positive influence on political participation by promoting network heterogeneity.

> H2c: Church-based political discussion contexts will have an indirect positive influence on political participation by promoting network heterogeneity.

The third set of hypotheses focuses on the role of discussion network heterogeneity itself. Previous research has been mixed on its role and influence on political

participation. However, building upon previous research demonstrating the positive effects of heterogeneous networks, either directly or indirect through political knowledge or public affairs media use (Cappella et al., 2002; Gastil & Dillard, 1999; Huckfeldt et al., 2004; McLeod, Scheufele, Moy et al., 1999; Scheufele et al., 2004), we theorize that:

H3: Discussion network heterogeneity will have a positive influence on political participation

We also ask:

RQ2: What are the processes linking individual-level heterogeneity to political participation?

These hypotheses imply a causal and therefore temporal order across three levels of measurement: from structural and contextual heterogeneity to individual discussion heterogeneity to political participation. The first level of measures is relatively stable sociostructural-level variables. The second level is discussion heterogeneity measures that refer to a respondent's close social circle, and the third level of measures are indicators of individual-level political behaviors.

Our reasoning behind this causal ordering is twofold. First, we assume that the sociostructural variables are a necessary or at least contributory condition for discussion heterogeneity. In other words, it is somewhat unlikely for a respondent to be exposed to political disagreement in a residential setting that is highly homogeneous with respect to religiosity or political viewpoints, regardless of the individual's willingness to expose him/herself to discussion situations that are likely produce disagreement. Second, we assume that a person's willingness to expose him/herself to potentially hostile discussion situations often precedes political participation. From a theoretical perspective, of course, this relationship is likely nonrecursive. Citizens with heterogeneous discussion networks are more participatory, and political activity—in turn—exposes citizens to a more diverse range of opinions. Our conceptualization, however, follows previous work in this area in a variety of disciplines (communication, political science, and sociology) and methodological approaches (survey based, experimental) that all suggested the causal order used in our analyses.

Methods

In order to test our theoretical model, we employ data from two levels of analysis, macrostructural data at the county level and microsurvey data at the individual level. Variables from both data sources can be categorized into three groups: exogenous variables (those not influenced by other variables in the model), "antecedent" endogenous variables (those influenced by some variables in the model but that also influence other variables), and the "consequence" endogenous variable of central interest. The macrostructural data were derived from the 2000 Census conducted by the U.S. Census Bureau (www.census.gov), the *2000 Religious Congregations and Membership Survey* published by the Glenmary Research Center (www.glenmary.org), and county-level voting tallies from the 2000 Presidential election obtained

from the Center for Congressional and President Studies at American University (www.american.edu/academic.depts/spa/ccps/research.html). The micro data were collected from a national telephone survey conducted in October and November 2003 ($N = 781$; response rate: 55%, American Association for Public Opinion Research definition Reponse Rate 3). The survey was based on a carefully constructed probability sample that minimizes sampling and nonresponse biases. Multiple callbacks were used to minimize nonresponse due to the survey topic. For each respondent in the micro data set, the corresponding county-level macrostructural data were added to their case record. In other words, for respondent X, who lives in county Y, county census data, religious data, and voting data for county Y was combined with the microsurvey data. In total, county-level data from 425 different counties were added to the 781 respondent records.

Measures of structural heterogeneity
The three county-level variables included in our model measured structural heterogeneity across three dimensions: race/ethnicity, presidential candidate preferences, and religious denomination. The degree of structural heterogeneity is measured by the probability that two individuals randomly selected from the county population would be from a different group, in this case race/ethnic background, presidential political preference, or religious denomination. The equation used to calculate structural heterogeneity is: Structural Heterogeneity $= 1 - \sum_{i=1}^{N} S_{ij}^2$, where S_{ij} is the share of group i ($i - 1 \ldots N$) in county j. Basically, the proportions of each different category in a county were squared, summed together, and then subtracted from one. This measure of structural heterogeneity is based on previous work examining comparative ethnolinguistic fractionalization, for example see Alesina, Develeeschauwer, Easterly, Kurlat, & Wacziag (2003), Easterly and Levine (1997), and Mauro (1995). In addition, this equation is similar to Mueller and Schuessler's index of qualitative variation (see Agresti & Agresti, 1977; Mueller, Schuessler, & Costner, 1977).

Employing this equation, we calculated the structural heterogeneity for each county in our analysis across each dimension cited above. *Racial/ethnic structural heterogeneity* was calculated using census data on race and ethnic group membership within the county population across eight different racial or ethnic groups, specifically White, Black or African American, American Indian, Asian, native Hawaiian, other race, two or more races, and Hispanic or Latino (the counts for racial groups excluded individuals who were Hispanics and Latinos). Employing this group membership data, the total county population, and the formula outlined above, a measure was constructed that indicates the probability of selecting any two individuals from within the county and having them each belong to a different racial/ethnic group ($M = .333$, $SD = .192$). *Political structural heterogeneity* was calculated using the proportion of total county votes that each presidential candidate (i.e., George W. Bush, Al Gore, Ralph Nader, and other candidates) received in the 2000 election ($M = .505$, $SD = .45$). *Religious structural heterogeneity* was calculated by employing

the proportion of county population that belonged to different religious congrega-tions (Evangelical Protestant, Mainline Protestant, Catholic, Jewish, Islam, and other religion) within the county ($M = .863$, $SD = .102$).

Sociodemographic exogenous variables

The respondents' *age* and level of *education* were measured by continuous open-ended items ($M = 50.1$, $SD = 17.2$ for age; $M = 14.6$, $SD = 3.0$ for education). *Gender* was coded with *female* as 0 and *male* as 1 (45.2%). *Race* was coded with *non-White* equal to 0 and *White* equal to 1 (80.2%).

Antecedent endogenous variables

To assess respondents' level of discussion within specific social spaces (contexts), a battery of questions that asked the location and frequency of their political con-versations were used. Initially, respondents were asked "Now I would like to know which groups you talk to most often about political issues or candidates." On a scale from one to ten, where " 'one' means NEVER and 'ten' means ALL THE TIME, how often do you talk to …" and then were asked "people at work," "people at your church or place of worship," and "people at a nonchurch community/volunteer group." These single item measures were used to assess respondents' *work-based discussion contexts* ($M = 3.5$, $SD = 2.9$), *church-based discussion contexts* ($M = 2.4$, $SD = 2.3$), and *volunteer-based discussion contexts* ($M = 2.9$, $SD = 2.5$).

The items that form the measure of *individual network heterogeneity* ($M = 17.1$, $SD = 9.5$) are derived from the same battery measuring setting of discussion and are derived from previous measures of discussion network heterogeneity (see Scheufele et al., 2004). Using a 10-point scale, respondents were asked how frequently they discussed politics with (a) men, (b) women, (c) people with extreme right views, (d) people with extreme left views, (e) people who are Democrats, (f) people who are Republicans, and (g) people of a different race or ethnicity. We used these measures to create a total discussion heterogeneity scale, with higher scores on this scale reflecting greater heterogeneity in political discussion partners across the dimensions of gender, ideology, political identification, and race/ethnicity. In order to do this, however, we had to make modifications to the original items. For the questions measuring the frequency of discussion with either males or females, male respond-ents were recoded as scoring "0" for the frequency of discussion with men, and female respondents were recoded as scoring "0" for discussion with women, assum-ing that discussion of politics with members of the same sex does not lead to increased gender heterogeneity. Similar recoding was done for the dimensions of ideology and political preference, with discussion with partners of the same ideo-logical or political preferences recoded as 0. Ideological heterogeneity was assessed using respondents' self-placement on two 7-point ideological scales (economic and social) ranging from *very liberal* to *very conservative*. Likewise, we measured

political heterogeneity by using a measure of political party membership that asked respondents if they were registered Democrats, Republicans, or Independent/Other Party. Democrats who discussed politics with other Democrats were coded "0" for that discussion item, and the same was done for Republicans who discussed political issues or candidates with other Republicans. Last, the item tapping frequency of discussion with an individual of a different race or ethnicity remained unchanged because it measured heterogeneity directly. All the items were then totaled into a combined index, based on a respondent's standardized difference between his or her own characteristics and his or her discussion partners.

Like many measures used in survey research, the heterogeneity of discussion network measure presented here is not a direct measure of the diversity respondents' discussion network; it is a proxy measure. This technique of matching sociodemographic variables with the sociodemographic variables of discussion partners has been used successfully is past research (e.g., Scheufele et al., 2004). Furthermore, the use of respondents' self-report of discussion heterogeneity by perceived generalization based on sociodemographic variables overcome many of the problems that plague the snowball sampling that has been used in the past in research examining the influence of social environments. Specifically, the measure used in this study allows us to capture the perception of individuals' social environment and, therefore, allows us to measure actual cross-pressures because such pressures are the result of perceived differences. In other words, an individual must be aware of diversity of discussion networks in order for such diversity to impact their political behavior. In sum, we are confident in the validity of the measure of heterogeneity of discussion network used in this study, albeit unconventional.

Newspaper hard news use ($M = 10.3$, $SD = 6.5$) was tapped using a combination of two measures that asked respondents how much attention they paid to newspaper coverage of national and international public affairs. *Television hard news use* ($M = 12.0$, $SD = 5.3$) was measured by a combined index of attention to television coverage of national and international public affairs. *Factual political knowledge* ($M = 2.6$, $SD = 1.2$, $\alpha = .63$) was measured by an additive index that consisted of four questions tapping correct identification of political figures and governmental decision-making processes (i.e., name of vice president, role of supreme court, required percentage of Congress to override presidential veto, majority party in House of Representatives).

Consequence endogenous variable

Political participation ($M = 2.4$, $SD = 1.93$, $\alpha = .72$) was measured by a cumulative index of nine dichotomous items that asked respondents if they have, in the past 2 years, attended a meeting, written a letter to the editor, circulated a petition, voted for an elected official, worked for a political campaign, called other people to raise funds for a campaign, contributed money to a political organization, or persuaded someone to vote either for or against a candidate or issue.

Generating the model

We tested the relationships among independent and dependent variables by employing path analysis to obtain path coefficients (Wright, 1921; see also Asher, 1983). To obtain path coefficients, we simply regress each endogenous variable on those variables that have a direct relationship with it. In contrast to other multivariate techniques, path analysis allows us to examine direct and indirect effects that one variable has on another. That is, by treating endogenous variables as both independent and dependent variables, path analysis allows for the estimation of direct and indirect effects through the decomposition of the correlations between variables into sums of simple and compound paths. In the present analysis, we report standardized path coefficients for simplicity of exposition. That is, when units are expressed in terms of sample standard deviation, we can directly compare the magnitude of strength of the relationships among the variables in our model.

As previously outlined, we are analyzing data from both an aggregate level and at the individual level. This raises the possibility of nonindependence of observations because survey respondents are nested within their county. At a first glance, multilevel modeling seems like the appropriate technique for analyzing these data. However, more careful examination of the data show that multilevel modeling is inappropriate due to the small n of respondents in each higher level group or, in this case, county. Specifically, 391 counties contained only one respondent, 86 counties contained two, 24 counties contained three, 8 counties contained four, 7 counties contained five, 5 counties contained six, 1 county contained seven, 2 counties contained eight, and finally, one county contained 11 respondents. To illustrate this point further, the calculation of the variance of our dependent variable (political participation) using the intercept-only model ($Y_{ij} = \beta_{0j} + e_{ij}$), where β_{0j} is the intercept of j counties ($j = 1 \ldots J$) and e_{ij} is the residual error term, produces an estimate of the covariance parameter for β_{0j} of zero. The estimate of the covariance parameter for the error term is 3.733. Therefore, a calculation of the intraclass correlation ($p = 0/3.733 + 0$) is zero. We also calculated the intraclass correlation of only the counties that had more than one respondent. Similarly, the estimate of the covariance parameter for β_{0j} is zero. The estimate of the parameter for the error term is 3.412. The main reason for using multilevel modeling is that observations from the same group are generally similar, at least more so than observations from different groups (see Bryk & Raudenbush, 1992; Hox, 2002). In our data, individuals within counties are not more similar than individuals of different counties for the simple reason that most counties only contain one respondent.

In addition, we conclude that these parameter estimates are accurate due to the large n of higher level groups and the use of restricted maximum likelihood (RML) estimation. Specifically, Maas and Hox (2004) suggested that due to the asymptotic estimation methods used in multilevel analysis, many groups are needed (specifically, 100 or more) for one to make accurate group-level variance estimates. Moreover, Browne and Draper (2000) demonstrated that RML produces rather accurate estimations with as little as a dozen groups. The fact that our data has 525 groups and

that the variance was calculated using RML leads us to be highly confident in our conclusion that there is no intraclass correlation between variables at the lower level. Therefore, multilevel modeling is not necessary.

Results

Sociodemographic variables

As Table 2 shows, respondents' education was positively related to all endogenous variables. Specifically, education was related to network heterogeneity ($\beta = .11$), newspaper use ($\beta = .18$), television news use ($\beta = .10$), political knowledge ($\beta = .32$), and political participation ($\beta = .16$). Age was also directly related to all endogeneous variables. Older respondents were less likely to have a diverse social network in which the relationship between age and network heterogeneity produced a beta coefficient of $-.83$. In addition, age was positively related to newspaper hard news use ($\beta = .31$), television hard news use ($\beta = .24$), factual political knowledge ($\beta = .17$), and political participation ($\beta = .14$). Race was negatively related to television hard news use ($\beta = -.08$) while positively related to factual political knowledge. Finally, participants' gender was positively related to political knowledge.

Structural heterogeneity variables

As Table 2 shows, those who live in a politically heterogeneous environment were more likely to have a heterogeneous discussion network ($\beta = .06$). We see a relationship between racial heterogeneity and network heterogeneity ($\beta = .07$). Interestingly, although living in a religiously heterogeneous environment was not related to network heterogeneity, it was directly related to political participation producing a beta coefficient of .08. As can be seen in Figure 1, both political heterogeneity and racial heterogeneity had an indirect relationship with political participation.

Context and network heterogeneity

All social context groups were directly related to political participation, with work-based discussion contexts producing a coefficient of .10 and both church and volunteer discussion contexts producing coefficients of .14. Church discussion contexts were positively related to hard news use ($\beta = .11$ for newspaper and $\beta = .09$ for television). Interestingly, volunteer discussion contexts were negatively related to factual political knowledge ($\beta = -.08$). The three types of social contexts were all significantly related to network heterogeneity with church discussion contexts producing the weakest effect ($\beta = .11$). Work discussion contexts had the strongest relationship with network heterogeneity ($\beta = .42$), whereas volunteer discussion contexts had a positive direct link of .29.

As Figure 1 shows, network heterogeneity links the structural heterogeneity and social context variables to individual level outcomes. Specifically, respondents with more heterogeneous networks were more likely to use newspaper hard news use ($\beta = .13$) as well as television hard news use ($\beta = .24$). Higher levels of media use

Table 2 Regressions

	Network Heterogeneity	NP Hard News Use	TV Hard News Use	Political Knowledge	Political Participation
Sociodemographic variables					
Education	.11**	.18**	.10**	.32**	.16**
Age	−.83**	.31**	.24**	.17**	.14**
Race	.05	−.03	−.08*	.14**	−.02
Sex	−.01	.01	.03	.19**	.04
Structural heterogeneity					
Religious	.04	.06	.04	.01	.08*
Political	.06*	−.05	−.03	−.01	−.03
Racial	.07*	−.03	.03	−.01	−.04
Discussion contexts					
Volunteer	.29**	.06	.03	−.08*	.14**
Church	.11**	.11**	.09*	.03	.14**
Work	.42**	.5	.02	−.02	.10**
Network heterogeneity					
Network heterogeneity		.13**	.22**	.16**	.10*
Media					
NP Hard				.07#	.13**
TV Hard				.09*	.07
Political knowledge					
Political knowledge					.15**
R^2 (%)	44.5	17.5	14.7	28.0	32.9

Note: NP = newspaper.
#$p < .10$. *$p < .05$. **$p < .01$.

were related to higher levels of political knowledge. Network heterogeneity had a direct link with factual political knowledge ($\beta = .16$). Most notably, network heterogeneity was directly related to political participation ($\beta = .10$). Newspaper hard news use was directly related to factual political knowledge ($\beta = .07$) and political participation ($\beta = .13$), whereas television hard news use was significantly related to factual political knowledge ($\beta = .09$). Finally, factual political knowledge was positively related to political participation ($\beta = .15$).

Discussion

This study explored the direct and indirect links between structural diversity, network heterogeneity, and political participation. This study is a direct response to the call by McLeod and Pan (McLeod & Pan, 1989; Pan & McLeod, 1991) for theory building and research that more explicitly bridges different levels of analysis. Larger social structures, in other words, shape not only our behaviors and attitudes but also how we chose our discussion partners in our more immediate social networks.
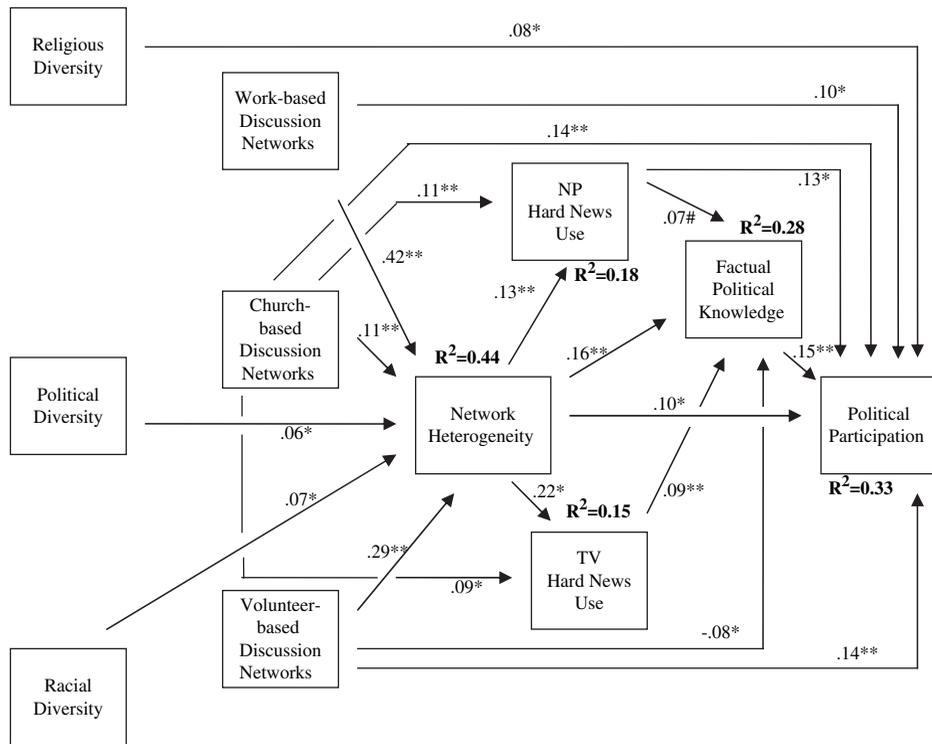
Figure 1 Path model predicting political participation (with demographic variables controlled).
#$p < .10$. *$p < .05$. **$p < .01$.

Unfortunately, there is virtually no research that has addressed this issue in the context of communication research. Some studies have examined the influences of community structure, media use, and other individual-level variables on civic participation (McLeod et al., 1999; Shah, McLeod, & Yoon, 2001). All of these studies, however, operationalized community structure and other sociostructural variables using self-report measures at the individual level. The issue that is not addressed by these studies is how we can model the macro–micro linkages hypothesized in much of the more recent literature between structural factors, discussion networks, and political participation not just conceptually but also at the measurement level.

The unique contribution of our study is the combination of true structural, that is, macro-level data and individual-level survey data to examine the specific influences of heterogeneity across levels. In addition, we found that all three types of heterogeneity to be positively related to levels of political participation. These findings add to the growing body of literature that suggests that exposure to diverse viewpoints has procivic outcomes.

Before discussing these findings in detail, it is necessary to at least briefly address some of the limitations of our data collection.

Limitations

Linking aggregate and individual-level data
As outlined earlier, our analyses were based on individual-level data combined with county-level aggregate data. Ideally, of course, the aggregate-level structural variables should be measured within the smallest possible unit, that is, ZIP codes or even smaller neighborhood-based units, in order to tap structural diversity. In other words, the larger the unit, the less precise our measures of structural diversity is potentially.

An example helps illustrate this point. Structural heterogeneity measures based on county-level data, for example, may indicate a high level of heterogeneity simply because the county includes different townships and villages that differ from one another significantly in terms of religious preference, racial groups, and voting patterns. This does not necessarily mean that individual respondents living in each of these townships and villages are embedded in heterogeneous social structures. In fact, respondents in these areas may live in very *homogenous neighborhoods* within very *heterogeneous counties*. It simply means that the county-based measure of structural heterogeneity is not as precise as it could be.

We were faced with a trade-off between potentially overestimating structural diversity for some counties with our aggregate-level measures, on the one hand, and being able to tap into data sources for structural heterogeneity that were only available at the county level (i.e., religion, voting), on the other hand. We opted for the latter, that is, to include structural heterogeneity measures at the county level. The fact that we did in fact find meaningful links from structural heterogeneity measures to the heterogeneity of people's discussion networks, and other variables in the model gives us additional confidence in the construct validity of our measures. In fact, it is reasonable to assume that future research exploring these relationships with structural heterogeneity measures based on smaller units should find stronger relationships due to less random measurement error.

Causality and path analysis
The second limitation of our combined data set is its cross-sectional nature. Our structural model is based on carefully constructed theoretical arguments about the relationship between different aggregate-level and individual-level measures; and many of these patterns of relationships between exogenous and endogenous variables replicate findings from previous research.

At the conclusion of our literature review, we argued for a specific way of modeling the different levels of variables used in our model, based on previous theorizing and research. It is important to mention, however, that our data do not provide a statistical test of the causal ordering of these variables. Rather, we propose a model that is theoretically grounded and specifies directional links between variables. The path model therefore simply tells us the strength and significance of these relationships. The term "causal modeling" that some scholars have used to describe

path modeling, however, would be misleading, and we caution against overinterpretation of our data in this respect.

A main problem with causal interpretation of these relationships is that political participation may have a reciprocal effect on heterogeneity of discussion network. We performed additional analyses to tease out this possibility. Specifically, we conducted a two-stage least squares (2SLS) regression analysis on a truncated version of the model presented above. 2SLS analyses can help us to examine the "chicken-or-the-egg" problem by examining the endogenous versus the exogenous status of these variables. Although we do not run analyses on full simultaneous systems, 2SLS is useful in "obtaining less biased estimates of the strength of the key causal relationships" (Mutz, 2002b, p. 119).

Toward this end, we created an instrumental variable for the heterogeneity of discussion network using other predictors found in the model above (the first stage of 2SLS). An instrumental variable is used in place of the original variable (the second stage) when a system of equations is analyzed where this variable takes on the role of both an endogenous and exogenous variable. Without the instrumental variable, such a system would be overidentified (see Gujarati, 1988; for an example of 2SLS regression modeling, see Fleury & Lewis-Beck, 1993).

In order to create our instrumental variables, we regressed heterogeneity of discussion network on the three context discussion measures, age of respondent, and education of the respondent and saved the unstandardized predicted values as the instrumental variable. The model produced an R^2 of .43 and instrumental variable was correlated with the original measure ($r = .66, p \leq .001$). Although there are no set rules for constructing instrumental variables, it should be noted that we use a smaller number of variables than is optimal because of the lack of external variables in the data set that could be used in the creation of the instrumental variable. Intuitively, if we had used variables that we also included in the 2SLS regression models in the construction of the instrumental variable, we would have correlated error terms and potentially skewed coefficients. However, because the instrumental variable strongly correlates with the original measure, we are confident in the validity of this measure.

In the second stage of 2SLS, we analyzed the following system of two equations:

Political participation

  $= f$(political diversity, racial diversity, religious diversity, newspaper use,

 political knowledge, heterogeneity of discussion network [instrumental variable])

Heterogeneity of discussion network

  $= f$(political diversity, racial diversity, religious diversity, newspaper use,

  political knowledge, political participation)

Not surprisingly, the results do suggest that there is a reciprocal relationship between political participation and heterogeneous of discussion. The beta

coefficient of the hypothesized path of heterogeneity of discussion network to political participation ($\beta = .293$) is greater than the coefficient of the path from political participation to heterogeneity of discussion network ($\beta = .257$). However, the confidence intervals of these estimates overlap. This means it is plausible to assume that the more politically active an individual is, the more likely he or she is to discuss politics with people with diverse viewpoints. On the other hand, modeling the relationship from heterogeneity of discussion networks to political participation did produce a larger coefficient that is consistent with the hypothesized causal relationship, albeit these beta coefficients are not significantly different. This does not suggest that the influence of heterogeneity of discussion network is being modeled incorrectly in this study. What it *does* suggest is a reiterative relationship between political participation and heterogeneity of discussion. However, as been mentioned before, we are not arguing a strict causal influence here because of the limitations in the survey design. In fact, it would be dangerous to make inferences about two-way causation based on cross-sectional data.

In the case of a reciprocal or two-way causation, two variables X and Y influence each other, that is, causal paths go from both X to Y and Y to X. What proves to be problematic is that any cross-sectional sample will only yield one coefficient to express a relationship between two variables (Marsh, 1982). Based on cross-sectional data, therefore, "you will either be looking at a point in the reciprocating process when everyone is only on one half of the loop, or, more probably, by looking at a cross-section of individuals at different stages in the reciprocal process, you will be getting an estimate of where such a feedback process will 'settle down'" (Marsh, 1982, p.80). Based on our theoretical model and the additional analyses presented here, we are emphasizing the one-way impact of heterogeneity of discussion network on political participation in this study.

Measuring heterogeneity

One last point worthy of consideration concerns the measures of network heterogeneity based on self-reports. In previous research, self-reports of network heterogeneity tended to follow one of two approaches. The first approach uses what can be labeled "manifest" measures of network heterogeneity. These studies ask respondents explicitly to rate differences between themselves and their discussion partners. Unfortunately, these manifest measures tend to be plagued by severe unreliability. Knoke (1990), for example, summarized various studies from the United States and Germany that showed that "[o]ne-third of Germans and one-seventh of Americans [were] unable to report accurately their best friend's party" (p. 55).

We therefore relied on what can be labeled "latent" self-reports of network heterogeneity. Latent in this context means that these measures are based on self-reports, but that the respondent is not asked to form a relative judgment about him/herself and his or her discussion partners. Rather, standardized difference scores are calculated post hoc between the respondent's report of his or her own demographic and ideological characteristics and the characteristics of his or her discussion

partners. In addition to being very reliable, this measure also has the advantage of having been applied consistently by a number of researchers in different disciplines.

Heterogeneity across levels of analysis

With these considerations in mind, our study makes two broad contributions to communication theory and research. First, our study was designed to help resolve some of the contradictory findings from previous research with respect to the positive or negative impact of network heterogeneity on political participation. In particular, we were interested in testing these links in a natural setting without context-specific constraints. We therefore opted for a fairly broad measure of heterogeneity (as opposed to one that is based purely on ideological differences) and a nonelection context. Our results show that network heterogeneity does have a consistent positive effect, even as sociodemographic and structural controls and hard news media use are introduced into the model. The fact that news media use and political knowledge do little to mediate the effect of network heterogeneity also suggests that network heterogeneity is linked to participation due on other, noninformational factors.

Second, as we argued earlier, this study highlights the importance of social settings for communication processes. In this sense, we argue strongly for bridging levels of analysis in order to understand interpersonal communication in the context of people's social structures. This also means, however, that communication researchers will have to begin combining data sources with different units of observations, which will also have implications for the estimation techniques we use. Our study is a first step in this direction, but of course the idea in itself is not new. Lazarsfeld et al. (1944) already emphasized the importance of social structure for shaping communication behavior at the individual level. Unfortunately, few studies in our field have explored these linkages empirically.

How do these broader motivations for our research, however, translate into concrete conclusions and implications for our field? In the following sections, we will answer this question more concretely.

The importance of structural heterogeneity

Consistent with hypotheses H1a, H1b, and H1c, all forms of structural heterogeneity were significantly related to political participation. Some of these links, however, were indirect. Addressing RQ1, only religious heterogeneity had a direct effect on participatory behavior, suggesting, that respondents in counties with well-developed religious structures across different denominations benefited much more from the mobilizing effects of these religious structures (e.g., Verba et al., 1995). The links between political heterogeneity and racial heterogeneity were completely mediated through their links with discussion network heterogeneity. In other words, respondents who lived in politically and racially diverse counties were also much more likely to report more heterogeneous personal discussion networks. It is important to note that the lack of a link between structural religious heterogeneity and the heterogeneity of

discussion networks could be due to the fact that our composite measure of discussion network heterogeneity did not include interactions with discussion partners who held different religious beliefs. In addition, future scholarship should expand the range of both structural and network heterogeneity measures to include economic heterogeneity (e.g., household income, poverty, industry) because previous research (Oliver, 1999) has also linked this dimension to political participation.

The role of heterogeneous networks

As outlined above, the positive indirect links between structural political diversity and structural diversity and political participation are a function of the relationship between the structural heterogeneity measures and the heterogeneity of people's discussion networks. In other words, the heterogeneity of people's discussion networks is largely a function of two different factors: first, structural diversity, and second, the discussion setting (context).

Consistent with previous research on social settings (e.g. Huckfeldt & Sprague, 1995; Scheufele et al., 2004), we found all three types of contexts (church, volunteer based, and work based) to be directly related to both political participation and network heterogeneity. Work-based discussion networks, especially, had the strongest relationship with network heterogeneity in the model and is consistent with Mutz and Mondak's (2006) recent scholarship demonstrating that compared to other social settings, the "the workplace currently has the greatest capacity for exposing people to political dialogue across lines of political difference" (p. 153). Conversely, church-based discussion networks had the weakest relationship with network heterogeneity as the opportunity for self-selection into like-minded networks based on religious and value preferences may be greater in such social settings than others. (Scheufele, Nisbet, & Brossard, 2003).

In turn, network heterogeneity is directly and indirectly (through political knowledge) linked to political participation, supporting H2a, H2b, H2c, and H3. These positive links between structural heterogeneity, context, and network heterogeneity raise interesting issues with respect to the different conceptualizations of heterogeneity outlined above (see Table 1). Our findings are consistent with the previous scholarship that has found that heterogeneity positively impacts political activity by increasing political knowledge, awareness, and motivation (i.e., Cappella et al., 2002; Gastil & Dillard, 1999; McLeod et al., 1999). Most importantly, unlike previous scholars (i.e., Alesina & La Ferrara, 2000, 2002; Berelson et al., 1954/1968; Mutz 2002a, 2002b), we did not find any evidence for social withdrawal or avoidance at either the structural or network level of analysis. In fact, people who lived in counties with high levels of structural political heterogeneity were also more likely to self-select into more heterogeneous discussion networks or develop these networks based on their discussions in social spaces or contexts. As outlined earlier, respondents with more heterogeneous discussion networks were also more likely to participate in politics. These links were both direct and indirect (see RQ3). Not only were respondents with more heterogeneous discussion networks more participatory

but they also attended to more news content and, as a result, were more informed about politics.

The relationship between social environment and political behavior is complex, and isolating specific influences and causal directions is problematic. We recognize the potentially reciprocal relationship between heterogeneity of discussion networks and political participation, and we urge future research to examine this relationship further. Interpersonal discussion is so ubiquitous that it really should not be conceptualized as having only one specific role or having a singular impact. However, as researchers, we need to draw a line and work with limited conceptualizations of political discussion if we are to understand at least some aspects of this very important communication process in democratic citizenship. Rarely, will one study be able to include all roles or model all links that discussion on politics may have. Future research should continue to examine singular links in order to add to our understanding of the overall impact that political discussion has. What we hope that we had accomplished in this study is sketching a link from macro-level heterogeneity to individual-level heterogeneity and assess it influence on political participation.

In short, we found consistent evidence for positive effects of structural heterogeneity and network heterogeneity on political participation. If there are detrimental effects of cross-pressures or ambivalence, they seem to be overridden by the positive motivational and informational effects that we found in our study. Most importantly, the effects identified in our study held after controlling for structural, contextual, and individual-level controls across different levels of analysis.

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