Won't you be my (Facebook) neighbor?

Community communication effects and neighborhood social networks

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Abstract

This paper examines the effect of neighborhood social context, specifically the degree of racial pluralism, on the number of residents who use Facebook to connect with their local neighborhood association to follow issues affecting their community. Analysis is based on a new "community communication effects" approach, replacing the city-wide analysis of prior studies with an analysis of neighborhood data more likely to influence users of newer, participatory communication platforms. Results suggest more complicated, non-linear effects than theorized by the existing literature. Some degree of neighborhood heterogeneity is necessary to create interest in neighborhood issues and spur mediated as opposed to interpersonal communication among neighbors. But too much heterogeneity is associated with a decline in following neighborhood associations on Facebook. The paper identifies where that tipping point occurs and discusses practical and theoretical implications.

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Community communication effects and neighborhood social networks

There is a long history of research focusing on the role of the press in helping to manage social conflict, particularly in diverse, urban communities (Park, 1922; Janowitz, 1952; Tichenor et al., 1980; Viswanath and Demers, 1999), including the "community structure approach." The community structure approach examines "the connection between multiple city characteristics in major U.S. cities and newspaper reporting on critical events"—that is, how social context influences newspaper coverage of events involving social conflict (Pollack & Yulis, 2004, p. 284). An important community characteristic that influences the press' role in reporting on community conflict is structural pluralism. Studies based primarily on local newspaper coverage of controversial topics has found that as a community becomes larger and more heterogeneous, communities rely more heavily on the press to communicate and coordinate between diverse interest groups. Thus, newspapers' roles in reporting on local conflict expand compared to newspapers' roles in smaller, more homogenous, less urban communities (Demers, 1994b; Donahue, Olien, & Tichenor, 1985; Griffin & Dunwoody, 1995; 1997; Hindman, 1996; Hindman, Littlefield, Preston, & Newmann, 1999; Jeffres, Cutietta, Sekerka, & Lee, 2000; McCluskey, Stein, Boyle, & McLeod, 2009; Olien, Donohue, & Tichenor, 1995; Tichenor, Donohue, & Olien, 1980). A more recent shift toward digital, participatory communication technologies and the decline of the U.S. metropolitan press, though, require a shift from understanding how traditional media cover social conflict to how community context influences residents' use of participatory technologies—blogs (Watson & Riffe, 2011), mobile apps (Watson, 2016), and social networking sites, etc.—to share, discuss, and otherwise engage with information about neighborhood issues.

Existing community structure approaches are based on city-level analyses. Analyzing city characteristics make sense when analyzing media (i.e., newspapers) that are responsive to a metropolitan media market. However, the community effects literature, which examines how the context of where one lives affects a range of quality of life outcomes, has found that an individual's immediate neighborhood in which one lives has stronger effects than city-wide context. And residents are turning to newer forms of mediated communication to curate, share, and discuss information affecting their communities, which are organized around neighborhoods (i.e., neighborhood Facebook groups) and even specific residential blocks (i.e., block association email Listservs). Thus, especially in the context of resident-driven, participatory media, we need a new "community communication effects approach" that uses more immediate contextual units of analysis, such as the neighborhood, to understand how community context influences how residents use mediated communication to share, discuss, and otherwise engage with information affecting their communities.

This paper utilizes structural pluralism theory to examine how neighborhood-level social context affects the number of residents who connect with their local neighborhood association on Facebook as a means of learning about, sharing, and discussing issues affecting their community. Structural pluralism has assumed a linear effect: The greater the degree of pluralism in a community, the greater the reliance on mediated communication, including, for example, blogs (Watson & Riffe, 2011) and civic mobile phone applications (Watson, 2016). Looking more specifically at neighborhood context, though, the effects of pluralism—and accompanying social distance and social conflict—are more mixed. A degree of underlying social conflict is necessary to prevent the ossification of society, inspire innovation, and spur communication about collective concerns (Olien, Donohue, and Tichenor, 1995, p. 303). The community effects

literature, however, suggests that too much social stress decreases communication, increases isolation, and results in psychological and physiological morbidity (Perkins & Taylor, 1996; Sampson, Morenoff, & Gannon-Rowley, 2002; Wen, Hawkley, & Cacioppo, 2006; Woldoff, 2002). Thus, this paper hypothesizes a more complex, non-linear, relationship at the neighborhood level, suggesting that initially an increase in structural pluralism will spur more residents to use Facebook to connect with one's community before reaching a tipping point after which increased social distance and underlying conflict is associated with a decline in following neighborhood associations on Facebook.

<div align="center">**Literature Review**</div>

Structural pluralism

While the community structure approach can incorporate a range of independent variables, structural pluralism theory dominates research in this area – and is utilized in this current study – because it theorizes much clearer underlying social relationships that are central to life in a contemporary city. Urban life is characterized by the paradox of greater density (i.e., more physical contact), but a loss of common social bonds (i.e., more social distance) (Wirth, 1938). In order to vie for limited public resources and influence a large, complex social system, individuals organize into groups (e.g., political parties, ethnic organizations, houses of worship, trade unions, and even neighborhood associations). Structural pluralism is defined as the "degree of differentiation in the social system along institutional and specialized interest group lines, in a way that determines the *potential* [emphasis added] sources of organized social power" (Tichenor, Donohue, and Olien, 1980, p. 16). The larger, more diverse, more complex, more structurally pluralistic a community becomes, the greater the number of specialized interest groups vying for social power, and the greater the amount of underlying social conflict.

As already discussed, social conflict is necessary for the progress of society. Thus, the goal is not to eliminate social conflict, but control it (Olien et al., 1995; Viswanath & Demers, 1999). According to Tichenor et al. (1980), mass media fulfill two primary social control functions: distribution control and feedback control. Tichenor et al. (1980) theorized that because mass media are part of an interrelated social system on which the media are heavily reliant for information and revenue sources, media tend to act as a "guard dog" of the dominant social structure. Smaller, more homogenous communities have fewer specialized interest groups vying for social power. Thus, in homogenous communities, social power is more concentrated among a small group of elites who manage what social conflict does arise largely through interpersonal communication. The media protect this social arrangement, engaging in distribution control, limiting coverage of conflict in their coverage. However, in more pluralistic communities, social power is more dispersed and society is more reliant on the media to communicate and coordinate among diverse stakeholders. Thus, media in more pluralistic communities are more likely to openly and critically cover social conflict, raising alarm about potential conflicts that need attention in order to maintain social order (i.e., feedback control). The function of media in a pluralistic society is not to amplify conflict, but rather draw attention to an issue and serve as a forum for discussion of those issues in a way that allows for "moderated" social change and social progress (Viswanath & Demers, 1999).

Structural pluralism research, however, extends beyond just predicting characteristics of newspaper coverage to predict adoption of more numerous, more complex forms of mediated communication. Demers (1994a, 1994b) found that after controlling for purely economic explanations, that the increasing pluralism of U.S. society predicted the growth of corporate newspaper chains and advertising expenditures. He suggested that these findings suggest a more

generalizable pattern that as structural pluralism increases, so too does societal reliance on mediated communication—including more complex forms of mediated communication—to communicate and coordinate among increasingly diverse social groups. This general pattern is also supported by Armstrong (2008) who found that in pluralistic communities, city governments utilize their websites to make available a wider range of records—meeting agendas, budgets, contact information—and media (audio/video). She interpreted her findings to suggest that the greater distribution of social power in a pluralistic community increases government transparency. Her findings, though, could also lend support to Demer's (1994a;1994b) explanation that as structural pluralism increases so does reliance on more complex forms of mediated communication to communicate with increasingly diverse residents and other stakeholder groups.

Structural Pluralism and Non-Institutional Actors

Donohue et al. (1985) theorized that newspapers' coverage reinforces the dominant social structure because newspapers have a profit-driven motive to maintain the social arrangements that they rely on for sources of information, profit, and influence. More recent research, however, has found that media generated by non-institutional actors (i.e., media users) follow similar patterns. Watson (2015) compared how structural pluralism influenced both Gulf Coast journalist and Twitters' users content about the 2010 BP oil spill. Not surprisingly based on the previous literature review, he found that journalists in more pluralistic communities were more likely to focus on BP's role in the oil spill (as opposed to the government's response to the disaster) and write more negative stories about the disaster. More interestingly, though, he found that Twitter users' content followed identical patterns, both in terms of the direction and strength of the proposed relationships. He concluded that despite the fact that some have suggested that

the Internet overrides traditional geography and the influence of traditional communities (Reese, Rutigliano, Hyun, & Jeong, 2007)—and this might be true to an extent about the distribution of online content—that the producers of participatory online content are still rooted in traditional communities and are influenced by the social context of those local communities.

Other studies have found that structural pluralism not only influences how users use mediated communication to discuss issues involving conflict, but also influences users' overall reliance on emerging media to discuss those issues affecting the community. Watson and Riffe (2011) found that the number of citizen-authored public affairs place blogs—blogs about the experience of living in a particular community—was positively associated with the degree of structural pluralism in the city where those blogs were based. Their study also included measures of "community stress," including a city's violent crime rate, meant to measure the community conflict theorized to underlie structural pluralism. Community stress also positively predicted the number of public affairs place blogs in a community.

Watson (2016) also found that controlling for a city's population (i.e., the potential user base), residents' use of SeeClickFix, a mobile phone application that allows users to request non-emergency city services by snapping photos of community problems with their smartphones, was greater in more pluralistic cities with higher amounts of community stress. Both studies suggest that despite the increasingly interconnectedness of digitally-networked communities spanning traditional geographic boundaries, a community structure approach generally, and structural pluralism theory specifically, continue to have utility for not only explaining media's social control functions, but *users' adoption* of social and mobile technologies as potential forms of "participatory social control" (Watson, 2016, p. 20).

Neighborhood-Level Community Communication Effects

All of the previous structural pluralism studies use the city as the level of analysis. A city-level unit of analysis is included in the very definition of the "community structure approach" as examining how "multiple *city* characteristics" [emphasis added] affect reporting on controversial issues. The community effects literature, however, suggests that it is the immediate neighborhood environment, not the city-level environment, that has the greatest impact on residents. In a study in Cook County, IL, researchers found that lower neighborhood socio-economic status (SES) and perceived poor neighborhood quality was positively associated with increases in loneliness, hostility, depression and decreased self-reported overall health, even after controlling for individual-level characteristics. That is, neighborhood context affects residents beyond individual-level variables. It is anticipated that the influence of neighborhood social structure should also affect communication variables—what might be termed "community communication effects"—particularly when conceptualizing how *local media users* make use of user-driven, participatory mediated communication technologies/platforms to share information about, discuss and otherwise engage with community issues.

It is useful to combine a focus on the type of urban independent variables that interest community effects researchers—urban issues, such as crime, poverty, physical decay, etc.—and a "community structure approach," which examines how city-level social context affects media coverage of social conflict. This new "community communication effects" approach can be defined as the study of how neighborhood-level social context, more specifically in this case structural pluralism, affects residents' use of increasingly online, mediated, participatory communication technologies to share and discuss information about social conflict in the communities where they live.

The synthesis of these different literatures is not completely "new." Kim and Ball-Rokeach (2006), who also drew on the community effects literature, examined how the "communication action context" affects the frequency of interpersonal discussion of neighborhood issues with other residents. Interpersonal discussions among neighbors are part of what the communication infrastructure theory terms the story-telling network, which consists of interpersonal discussions among neighbors, connections to community organizations, and use of neighborhood and city-level media. They hypothesize that connections with the story telling network predict neighborhood belonging, collective efficacy, and civic engagement.

Consistent with the community effects literature, Kim and Ball-Rokeach (2006) hypothesized a linear, negative relationship between neighborhood-level "ethnic heterogeneity" —which is identical to the concept of "racial pluralism"—and interpersonal discussions with residents. They also found an interesting interaction effect, consistent with the structural pluralism literature, that the story-telling network, which includes use of neighborhood and metropolitan newspapers, is a stronger predictor of civic engagement for residents in racially heterogeneous communities. That is, residents in more structurally pluralistic neighborhoods are more reliant on mass media for information about and engagement with local issues.

If the synthesis of community effects and community structure approaches to studying communication at the local level are not completely novel, why do we need a "new" approach to understanding how community context influences residents' use of today's online, participatory media tools to share information about and discuss local neighborhood issues? The reason a new approach is needed is that these participatory technologies, including Facebook, sit awkwardly between literatures that have largely addressed interpersonal communication at one end of a mediated communication continuum and mass communication at the other (Baron and Davis,

2015). Furthermore, it is likely that there are more complicated, non-linear relationships between neighborhood context and use of these participatory technologies than would be hypothesized based on either a "pure" community structure (mass communication, city-level approach) or community effects (interpersonal communication, neighborhood approach).

On the interpersonal end of the spectrum, while joining a neighborhood Facebook group is different than "friending" an individual neighbor as part of one's personal network—a more interpersonal relationship—friending one's neighborhood Facebook group does involve sharing some level of personal information. Depending on one's privacy settings, minimally one would be sharing one's name and Facebook profile photo with other members of the Facebook group. Residents are also likely to use the neighborhood Facebook group to fulfill diverse needs, but at least some join to share and discuss information about neighborhood issues, such as local crime, with their neighbors. Residents might also ask and share recommendations for local service providers, such as a recommendation for an emergency after-hours plumber.

Racial pluralism is likely to decrease informal interactions between neighbors, which reduces relational trust—"trust built up over time as a result of repeated interactions" (Sherchan, Nepal, and Paris, 2013, p. 6)—and as a function of increased perceived social distance, decrease dispositional trust—"generalized expectations about the trustworthiness of other people" (Sherchan et al., 2013, p. 7). Both forms of trust are important to one's willingness to join social networks. We also know that it is simply human nature that "similarity breeds connection"—the so-called homophily principle of networks (McPherson, Smith-Lovin, and Cook, p. 415). Thus, we might hypothesize that increased neighborhood-level racial heterogeneity would be negatively associated with the number of residents that are part of a neighborhood Facebook group.

However, some degree of racial pluralism is necessary for community progress (Olien et al., 1995) and on the mass communication end of the spectrum is positively associated with reliance on mediated communication, especially for feedback control (Demers, 1994b). And the positive relationship between heterogeneity and communication is not necessarily limited to mass communication. While the community effects literature has primarily focused on negative effects of social friction, several community effects studies have found that conflict *increases* some forms of communication. In a study of residents of Nashville, Tennessee, Woldoff (2002) found that while measures of perceived social and physical neighborhood disorder and self-reported criminal victimization reduced individuals' feelings of neighborhood attachment and informal neighboring—knowing neighbors by name, having "long talks" with neighbors, exchanging favors with neighbors, etc.—conflict *increased* communication with neighbors through formal problem solving—attending neighborhood association and crime watch meetings. Bachrach and Zautra (1985) found that the threat of a hazardous waste facility being sited in a community increased meeting attendance, letter writing, and petition signing. That is, while social friction reduces interpersonal communication among neighbors, some degree of heterogeneity and friction is necessary to spur interest in and communication about neighborhood issues, particularly in more mediated venues, such as a neighborhood meeting *or* a neighborhood Facebook group. Without some degree of heterogeneity and social conflict, there is nothing to spur, for example, residents to use Facebook to share and receive warnings about local crime. (In a homogenous community, a resident would likely share concern over crime and seek social support via interpersonal communication with neighbors.)

That said, we cannot predict a linear relationship between neighborhood pluralism and underlying social conflict and residents' use of mediated communication technologies to share

information and discuss neighborhood issues, either. Watson and Riffe (2011), for example, found that at the city-level, structural pluralism and community conflict appear to spur residents to go online to use blogs to share and discuss information about community issues. However, at the neighborhood level they emphasized that it is unlikely that residents of neighborhoods with the greatest amount of social friction were going online to write about their communities' problems. In a study of New Orleans bloggers, Watson (2016) found that bloggers writing about problems in that city were primarily young, middle-class professionals living in transitional urban neighborhoods—neighborhoods with some, manageable social friction, but not the neighborhoods that routinely make the nightly crime news. That is, some degree of pluralism and underlying social conflict is necessary to spur residents' use of mediated communication to share and discuss information about their neighborhoods. But there is likely a tipping point after which increased heterogeneity and underlying social conflict reduce use of user-driven, online mediated communication as a means for neighbors to share information about and discuss neighborhood issues.

Hypothesis

The "community structure approach" examines how city-level characteristics, including the degree of structural pluralism in a city, influence reliance on newspapers to help manage social conflict through their news coverage of controversial issues. Increasingly, though, residents are turning to participatory communication platforms to share, discuss, and otherwise engage with information about issues affecting their communities. Even where the existing literature has examined how community structure affects residents' use of blogs and mobile apps to engage with local issues, researchers have used the city as the contextual unit of analysis. The community effects literature, though, suggests that residents are more likely to be influenced by

their immediate neighborhood context. Thus, the new community communication effects approach uses neighborhood-level analyses. It also examines more complicated potential effects assumed by previous literature. Structural pluralism theory suggests that some degree of community heterogeneity and underlying social conflict is necessary to spur interest in and communication about neighborhood issues, and that as pluralism increases, so does reliance on more complex forms of mediated communication, such as Facebook. Thus, the first hypothesis is:

H1a: Initially, as racial pluralism increases, so will "likes" for that neighborhood's Facebook page.

However, the community effects literature suggests that as conflict, heterogeneity, and social distance increases, so will interpersonal communication among neighbors. Since joining neighborhood Facebook groups does involve at least minimal sharing of profile information, not to mention if one uses the group to discuss one's personal perspective on neighborhood issues or seek recommendations and support from one's neighbors, it is hypothesized that after some point, increased pluralism and underlying social conflict will have a negative effect on the number of residents who join their local neighborhood association's Facebook page.

H1b: The relationship proposed in H1a will reach a "tipping point," after which increased pluralism will lead to a decline in the number of "likes" for a neighborhood's Facebook page.

What cannot be anticipated is at what point this "tipping point" occurs. Thus, this paper also examines the following research question:

RQ$_1$: Where does the tipping point occur, after which increased pluralism will lead to a decline in the number of "likes" for a neighborhood's Facebook page

Methods

Dependent measure

This study is based on data from Minneapolis, Minnesota, site of the author's ongoing research on the local communication ecology and community information needs of that city. Data collection started with a list of that city's neighborhoods from the city's "Neighborhood Profiles" website (City of Minneapolis, 2012). That original list included 87 neighborhoods. Three non-residential industrial areas (Mid-City Industrial, Humbolt Industrial Area, and Camden Industrial Area) were eliminated from this list, as was the University of Minnesota, which is not a traditional, residential "neighborhood." The remaining list of 83 neighborhoods was then used to search Google for the neighborhood name, words "association," "Minneapolis" and "Facebook." The resulting Google search results were then examined to find hyperlinks to corresponding neighborhood associations' Facebook pages. In cases where a Facebook page was not found, an effort was made to find an association website and to see if it contained a link to a corresponding Facebook group. In the course of this search, it was learned that 12 neighborhoods were represented by joint neighborhood associations. An additional three neighborhoods were represented by professionally-staffed, non-profit community development organizations. These 15 neighborhoods were eliminated from analysis leaving a total of 68 neighborhoods. Facebook groups were identified for 64 of the 68 Neighborhood associations.

Dependent Variable: Neighborhood Facebook Group Penetration

The neighborhood associations' Facebook pages were visited by the author from February 27 to March 3, 2017, and the number of "likes" for each page was recorded. Census data were gathered from the Minnesota Compass website, a Wilder Foundation website that gathers data on social indicators from across the state (Wilder Foundation, 2017). The site

provides neighborhood-level census data for each neighborhood in Minneapolis. Because larger neighborhoods may have more "likes" simply as a function of having a greater number of residents, the final dependent variable was the "penetration" of each neighborhood's Facebook page. Penetration was calculated as the number of likes divided by the number of adult residents over 18 years-old in a given neighborhood (M=.13, SD=.11, range=0 to .525).

Independent Variable: Racial Pluralism

The independent variable was racial pluralism. While race is not the only marker of a pluralistic community, the availability of data, particularly from smaller neighborhoods, is limited. Thus, race is the most commonly recognized marker of structural pluralism that is consistently available for each neighborhood included in this study. Racial pluralism has also been identified as an important marker of structural pluralism in prior research (Nan & Armstrong, 2011; Kim & Ball-Rokeach, 2006). Previous structural pluralism studies have measured racial pluralism simply as a function of the percentage of non-white residents (Nan & Armstrong, 2011). But a neighborhood that is 100% black, for example, is no more pluralistic than a neighborhood that is 100% white (Gandy, 1999). Thus, measuring pluralism based on the distribution of the population across multiple interest groups is a superior measure of structural pluralism (Watson, 2015). Blau's index measures the probability that two members of a population, drawn randomly with replacement, are from different groups (Blau, 1975, 1977). The population of each neighborhood was divided into the proportion of White alone, Black alone, Asian alone, American Indian/Alaska Native alone, two or more race groups, and Hispanic (M=.47, SD=.18, range=.18 to .76).

Control variables

Previous studies of local news media use have found that traditional local media use is higher among high-income, better-educated, homeowners (Kang & Kwak, 2003). While predictors of local news media and Facebook neighborhood association pages are not necessarily the same, these variables are consistent with who is more likely to be online and more involved in neighborhood affairs. Thus, median household income (*M*=$57,468.03, *SD*=$26,257.93, *range*=$12,473 to $114,873.00), the percentage of homes that are owner-occupied (*M*=.48, *SD*=.23, range=.10 to .89), and the percentage of residents 25 years and older with a bachelor's degree or higher (*M*=.43, *SD*=.19, range=.11 to .81), were used as control variables in the final model.

Data analysis

Data analysis was conducted using SPSS 23.0.0.2 using Hierarchical Ordinary Least Squares Regression. The control variables were entered along with the independent variable in the first step of the model. This model represents the linear effect of the independent variable controlling for median household income, education level, and percentage of owner-occupied housing units.

In the second step, the square of the independent variable was entered in the equation. This squared variable represents the quadratic function of the model—it tests the hypothesis that there is a tipping-point after which the relationship between racial pluralism and number of residents who have "liked" their local neighborhood association on Facebook. There are two things to look for in the final output to see if the hypotheses stating a non-linear, quadratic effect are correct. First, the overall fit of the model, reflected in the value of the *F*-statistic, should improve between Model 1 that just contains the linear portion of the model and Model 2 that also includes the quadratic relationship. Second, in Model 2 the coefficients representing the linear

and quadratic relationships should both be significant, suggesting that there is an initial positive effect of a community's degree of racial pluralism on the number of residents who have liked their neighborhood association's Facebook page before that effect tapers off and becomes negative. The vertex of the regression line indicates where the tipping point in the relationship is.

Results

As shown in Table 1, Model 1 was non-significant ($F(4,61)=1.434$, p=.234), suggesting that the model with just the control variables and the linear portion of the racial pluralism effect was a poor fit for the data. Model 2, the quadratic model, however, was a significantly better fit for the data ($\Delta F(1,60)=8.360$, p=.005). The control variables were non-significant, but in the expected direction: the percentage of owner-occupied housing units ($\beta=.219$, $p=.208$), the neighborhood's median household income ($\beta=.090$, $p=.722$), and the percentage of residents with bachelor's degrees or higher ($\beta=.292$, $p=.150$), all had a slight positive relationship with the percentage of residents who liked their neighborhood's Facebook group. Overall Model 2 predicted 19.8% ($R^2=.198$) of the variance in the number of residents who connect with their local neighborhood association on Facebook.

H1a stated that there would be an initial positive relationship between racial pluralism and "likes" for that neighborhood's Facebook page. The linear relationship is represented in the first racial pluralism coefficient in Table 1. As shown in this table, there was an initial increase in "likes" for a neighborhood's Facebook page as racial pluralism increased ($\beta=2.735$, $p=.002$). Thus, **H$_{1a}$** was supported.

H$_{1b}$ stated that the relationship proposed in **H$_{1a}$** would reach a "tipping point," after which increased pluralism will lead to a decline in the number of "likes" for a neighborhood's Facebook page. This effect is represented by the coefficient of the second racial pluralism

variable in Model 2. As shown in Table 1, the quadratic relationship was also significant and negative (β=-2.41, p=.005). There is a slightly stronger initial positive effect of racial pluralism on the number of residents who like their neighborhood association's Facebook page, but after a point that relationship becomes negative and increased pluralism lead to a declining number of residents who like their neighborhood association's Facebook page.

RQ₁ asked at what point does the tipping point occur. Figure 1 shows the regression line of just the quadratic effect of racial pluralism on neighborhood association Facebook page penetration without the control variables. As shown in this figure, the tipping point occurs when racial pluralism reaches approximately .45—that is, the point at which there is a 45% chance that two neighborhood residents, drawn at random, will be from different racial/ethnic groups. That is, so long as there is still a relative mathematic certainty that neighbors more or less look like one another, some increase in neighborhood heterogeneity and underlying social friction encourages use of Facebook to connect with and share information and discuss neighborhood issues. However, as the probability that neighbors will look either similar or different than one another begins to approach a random coin-toss, residents of more racially heterogeneous neighborhoods are less likely to join their neighborhood association's Facebook group.

Discussion

This paper is not about the popularity of neighborhood Facebook groups, per se. Rather, it is about predicting how contextual neighborhood factors are likely to influence patterns of use of a popular social networking tool to connect with a central neighborhood institution and one's fellow neighbors to share, discuss, and otherwise engage with information about neighborhood issues. There are many explanations for the number of followers of a neighborhood association's Facebook page that were not measured in this study. These explanations might include the

history and vitality of the local neighborhood association; the overall number of Facebook users in a community and how actively neighborhood associations have recruited Facebook followers; how successfully neighborhood associations use their Facebook pages to engage residents, etc. That said, that the social context of the neighborhood—racial pluralism specifically—predicted nearly one-fifth the variance in number of local residents who follow their neighborhood association Facebook pages is noteworthy: Local neighborhood social context matters to understanding popularity of Facebook to connect with one's neighborhood.

The existing structural pluralism literature, based on city-level analyses, suggests a linear positive relationship that as structural pluralism—including racial pluralism—increases, so does a community's reliance on mediated communication (Armstrong, 2008; Demers, 1994b; Olien, et al., 1995, Watson, 2016). This paper emphasizes, though, that a switch to thinking about participatory, user-generated media—including how residents use that media to participate in conversations about community issues—requires a shift from city-level to neighborhood-level analyses. After all, the community effects literature suggests that it is the local neighborhood level that is more likely to have a contextual effect on individual users who live in these neighborhoods (Perkins & Taylor, 1996; Sampson, Morenoff, & Gannon-Rowley, 2002; Wen, Hawkley, & Cacioppo, 2006; Woldoff, 2002).

At the neighborhood level, the community effects and communication infrastructure literature hypothesize a linear negative relationship between ethnic heterogeneity and structural pluralism and interpersonal discussion among neighbors. User, participatory-driven mediated communication technologies such as Facebook, however, lie somewhere along a spectrum of interpersonal and mass communication, which suggests a more complicated relationship between racial heterogeneity and underlying social conflict and the number of residents who like their

local neighborhood association's Facebook page. The complicated nature of this relationship is why we need a new approach to modeling participatory "community communication effects," which examines more complex, non-linear relationships between community context and patterns of how residents use participatory, mediated communication technologies to engage with local community affairs.

The fact that the control variables—income, education, and home-ownership—which in the past have predicted individual-level media use were non-significant, in part reflects a small sample size. It may also reflect that what are good individual-level predictors are not necessarily good contextual, neighborhood-level predictors of media use. That said, there are likely to be other contextual, neighborhood-level predictors that might be the subject of future research. This current study, though, focuses one—racial pluralism—because it has a strong tradition in the existing, theoretically-grounded communication literature (Demers, 1994b; Donahue et al., 1985; Griffin & Dunwoody, 1995; 1997; Hindman, 1996; Hindman et al., 1999; Jeffres et al., 2000; McCluskey et al., 2009; Olien et al., 1995; Tichenor et al., 1980). This study, though, hypothesized and found support for the idea that there is a more complicated, non-linear relationship at the neighborhood-level between racial pluralism and patterns of usage of a user-driven, participatory mediated communication platform to share and discuss information about neighborhood issues than would be suggested by the existing structural pluralism literature. That the patterns observed in this study could not be explained by the existing literature again supports the need for a new approach to studying how local, neighborhood-level contextual social factors influence use of similar technologies.

Based on the findings of this study, it appears that some degree of neighborhood heterogeneity and underlying social conflict is necessary to pique interest in neighborhood issues

and spur residents to use mediated communication platforms in place of interpersonal, face-to-face communication with neighbors. But as the probability of one's neighbors looking different than one's self begins to approach 50-50 chance, fewer residents use Facebook (which requires some level of disclosure of personal information) to connect with their increasingly diverse neighbors.

The findings of this study provide practical insights into which types of neighborhoods where user-driven, participatory mediated communication technologies, social networking sites specifically, are likely to be most popular as neighborhood forums. These findings likely apply not only to Facebook specifically, but more generally to other social media forums where residents exchange information, for example, Nextdoor.com. Nextdoor is a quickly-expanding neighborhood-based social networking platform that seeks to assuage some of the security concerns of using Facebook to share and discuss neighborhood issues in that residents have to verify their address in order to participate and most online discussions are visible only to other verified neighbors (Popper, 2016). Findings of this study would suggest that services like Nextdoor would be more popular in semi-urban neighborhoods with some degree of social heterogeneity and underlying social conflict, but not in a city's most diverse, heterogeneous communities. These findings suggest the types of neighborhoods where companies like Nextdoor might focus expansion efforts and expect the greatest impact. Though, it should be emphasized that penetration of neighborhood association's Facebook pages averaged 13%. There are likely other neighborhood Facebook pages and other platforms, such as Nextdoor, where residents connect with their neighbors and share information about and discuss neighborhood issues. But at least for now, a minority of residents are likely to use social networking platforms for these

purposes; thus, other outreach and communication strategies remain essential for inclusive engagement of local neighborhood residents.

This study also provides theoretical insights, particularly concerning structural pluralism. Previous studies have found a positive relationship between the degree of structural pluralism in a city and residents' use of a participatory, civic communication technology. This previous research followed the traditional mass communication, structural pluralism theory, which suggests that as size, heterogeneity, and structural complexity of a community increases, so does reliance on not only mass communication, but all forms of mediated communication. This study, however, found that studying user-driven, participatory technologies requires not only a different level of analysis that recognizes that users are affected by their immediate, local community context, but it is necessary to theorize more complex, non-linear relationships between neighborhood context and residents' use of participatory mediated communication technologies to engage with neighborhood issues.

Future studies might replicate the findings from this study and the need to theorize more complex, non-linear relationships at the neighborhood level using similar data from other cities. Future studies should also examine the effect of neighborhood context influences *how*, *why,* and *to what end* residents use these Facebook pages, not just the number of "likes" they have received. Also, just as the community structure approach has been expanded beyond structural pluralism to examine other city-level variables' effect on news media's coverage of controversial issues, the participatory community communication effects approach likewise should extend beyond structural pluralism, particularly where guided by theory, to examine broadly how local neighborhood context affects how residents use participatory communication technologies to engage with local neighborhood issues. Scholars should be aware, though, that finding data that

has good coverage at the neighborhood level can be challenging depending on the variables of interest and may not be available or may require considerable creativity by the researcher to compile geographic variables—e.g., where individual crimes have occurred—at the neighborhood level. While expanding this approach further, it is also important to keep in mind that other neighborhood-level variables, including more direct measures of social conflict assumed to underlie increased ethnic heterogeneity, might also follow patterns of non-linear effects. Some neighborhood crime, for example, probably stimulates interest in and communication about neighborhood problems, but too much crime likely causes residents to be untrusting of neighbors and cuts off communication. It is also important that negative participatory community communication effects not be treated by scholars as being insurmountable. Scholars and practitioners might also consider how engagement with neighborhood issues/problems, such as crime, might be encouraged through participatory communication technologies even in neighborhoods where contextual factors suggest participatory technologies might not be heavily utilized by residents. For example, can participatory communication platforms be designed in such a way as to reduce perceived social distance in the most affected, high-crime, heterogeneous urban neighborhoods?

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Table 1

Predicting penetration of Minneapolis neighborhood associations' Facebook pages

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-.111	.125		-.882	.381
	Percentage of owner-occupied homes	.105	.083	.219	1.272	.208
	Median household income	3.748E-7	.000	.090	.358	.722
	Percentage of residents with bachelor's degree of higher	.165	.113	.292	1.459	.150
	Racial pluralism	.204	.139	.344	1.469	.147
	R^2 .086					
2	(Constant)	-.391	.153		-2.553	.013
	Percentage of owner-occupied homes	.083	.079	.173	1.054	.296
	Median household income	1.374E-6	.000	.330	1.312	.195
	Percentage of residents with bachelor's degree of higher	.049	.114	.086	.428	.670
	Racial pluralism	1.619	.507	2.735	3.195	.002
	Racial pluralism^2	-1.505	.520	-2.410	-2.891	.005
	ΔR^2 .112					

Notes: Penetration is the number of likes for a neighborhood association's Facebook page divided by that neighborhood's adult population that is 18 years or older; Model 1: $F_{(4,61)}$=.43, p=.234, Model 2: $F_{(5,60)}$=2.96, p=.019; $\Delta F_{(1,60)}$=8.36, p=.005
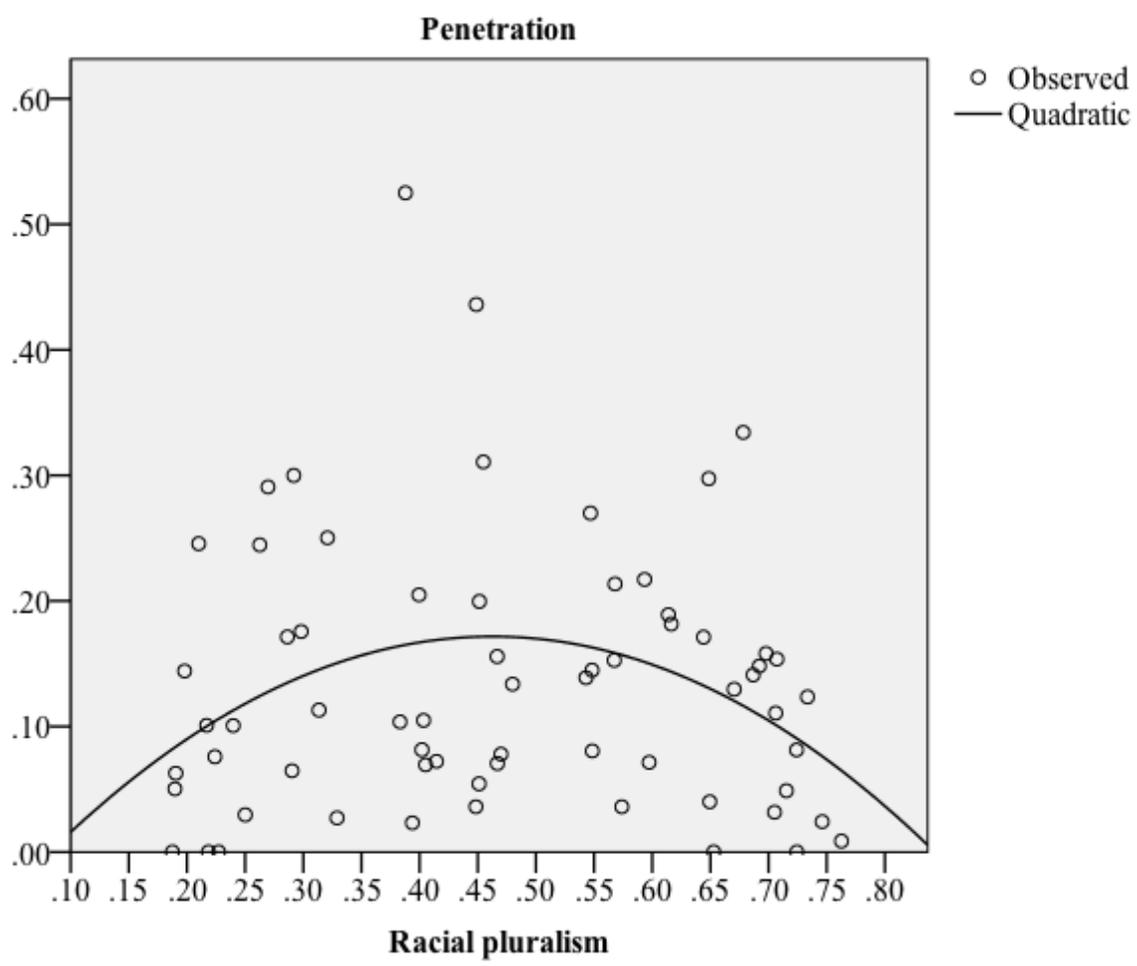
Figure 1. Quadratic equation predicting penetration of Minneapolis neighborhood associations' Facebook pages based on the degree of structural pluralism in a neighborhood