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ORIGINAL ARTICLE

The (In)compatibility of Diversity and Sense of Community

Zachary P. Neal · Jennifer Watling Neal

Abstract Community psychologists are interested in creating contexts that promote both respect for diversity and sense of community. However, recent theoretical and empirical work has uncovered a community-diversity dialectic wherein the contextual conditions that foster respect for diversity often run in opposition to those that foster sense of community. More specifically, within neighborhoods, residential integration provides opportunities for intergroup contact that are necessary to promote respect for diversity but may prevent the formation of dense interpersonal networks that are necessary to promote sense of community. Using agent-based modeling to simulate neighborhoods and neighborhood social network formation, we explore whether the community-diversity dialectic emerges from two principles of relationship formation: homophily and proximity. The model suggests that when people form relationships with similar and nearby others, the contexts that offer opportunities to develop a respect for diversity are different from the contexts that foster a sense of community. Based on these results, we conclude with a discussion of whether it is possible to create neighborhoods that simultaneously foster respect for diversity and sense of community.

Keywords Diversity · Sense of community · Agent-based modeling · Social networks

Introduction

Both respect for diversity and the promotion of a sense of community are longstanding, explicit values of the field of community psychology (e.g. Kelly 1971; Sarason 1974; Townley et al. 2011). Community psychologists view each of these phenomena as vital to thriving contexts noting that "respect and appreciation for diverse identities promotes personal and collective wellness" (Prilleltensky 2001, p. 754) and "the psychological sense of community is the overarching criterion by which one judges any community development" (Sarason 1974, p. 158). However, to simultaneously promote respect for diversity and sense of community in a particular context, it is necessary to understand the relationship between these two phenomena.

Recently, Townley et al. (2011) called attention to a potential "community-diversity dialectic", noting that the contextual conditions that foster respect for diversity often run in opposition to those that foster sense of community (p. 70). That is, diversity and sense of community are negatively related, creating a paradox for community psychologists (Rappaport 1981). Townley et al. (2011) recommended changing the definition of sense of community, but this provides only a semantic, not a practical, solution to the paradox. Thus, the goal of this paper is to understand why the community-diversity dialectic exists in an effort to determine whether and how community

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Z. P. Neal (✉)
Department of Sociology, Michigan State University, 509 E. Circle Drive, Room 316, East Lansing, MI 48824, USA
e-mail: zpneal@msu.edu

J. W. Neal
Department of Psychology, Michigan State University, 316 Physics Road, Room 262, East Lansing, MI 48824, USA

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psychologists can address this paradox. To this end, we begin with a discussion of what fosters respect for diversity and sense of community in one important context: neighborhoods. Using agent-based modeling to simulate neighborhoods and neighborhood social network formation, we explore whether the community-diversity dialectic emerges from two principles of relationship formation: *homophily*, the tendency to associate with similar others, and *proximity*, the tendency to associate with nearby others. We conclude with a discussion of whether it is possible to create neighborhoods that simultaneously foster respect for diversity and sense of community.

Background

Fostering Respect for Diversity in Neighborhoods

Frameworks for diversity within community psychology eschew a deficit model in which differences from the dominant culture are viewed as inferior or deviant, and instead embrace a position of cultural relativity or pluralism where multiple cultures are valued (Harrell and Bond 2006; Rappaport 1977; Ryan 1976; Trickett et al. 1994). Fostering respect for diversity is important for community psychologists and is embedded in the mission statement of the Society for Community Research and Action (SCRA), Division 27 of the American Psychological Association. Specifically, one of the goals of SCRA is "to promote…greater inclusion for historically marginalized groups, and respecting all cultures" (SCRA 2010, p. 13). To this end, community psychologists aim to encourage contexts that facilitate respect for diversity, and view these contexts as promoting individual and collective wellbeing (Prilleltensky 2001).

Directly fostering respect for diversity can be quite challenging, but environmental modifications may provide an indirect route to the extent that some ecological contexts are more likely to promote a respect for diversity than others. In the particular context of neighborhoods, the vast literature on the contact hypothesis suggests that the opportunity for social contact between diverse groups can diminish animosities and stereotypes, and foster tolerance and ideally respect for one another (e.g. Allport 1954; Amir 1969; Hewstone and Brown 1986; Sigelman and Welch 1993; Dixon et al. 2005). To be sure, it would be naïve to view social contact alone as sufficient for promoting a respect for diversity. Indeed, there is some evidence that superficial contact in the absence of more meaningful interactions can lead to intergroup tension (Townley et al. 2011), and others have argued that exposure to diversity may lead to social withdrawal or "hunkering down" (Putnam 2007). However, while contact is surely not a sufficient condition for promoting a respect for diversity, it is likely a necessary condition. That is, one must first have knowledge of and opportunities to interact with diverse others before one can develop a respect for their viewpoints and ways of life. In residentially integrated neighborhoods, people are more likely to come into contact with diverse others, increasing their opportunities for meaningful exposure to and acceptance of diverse perspectives. Therefore, residentially integrated neighborhoods are contexts that offer residents more opportunities to develop a respect for diversity than residentially segregated neighborhoods.

Fostering Sense of Community in Neighborhoods

In addition to valuing respect for diversity, community psychologists have also expressed a desire to foster a sense of community among individuals (e.g. Chavis and Pretty 1999; Riger 1993; Sarason 1974). Here, sense of community is conceptualized as psychological and reflects individual perceptions rather than external states. Community psychologists have struggled to consistently define sense of community (Hill 1996), but have often cited four dimensions outlined by McMillian and Chavis (1986): membership, influence, integration and fulfillment of needs, and emotional connection (see also Long and Perkins 2003; Peterson et al. 2008). As a set, these dimensions speak to individuals' perceptions of belongingness, cohesion, and bond with a group. Neighborhoods are commonly viewed as one context that might foster psychological sense of community, and community psychologists have expressed an interest in understanding what features of neighborhoods facilitate sense of community among residents (see Chavis and Pretty 1999 for review).

Directly fostering a psychological sense of community can be quite challenging, but environmental modifications may provide an indirect route to the extent that some ecological contexts are more likely to promote a psychological sense of community than others. The feelings of belongingness and cohesion associated with a psychological sense of community are often found to be strongest for those with relatively dense personal social networks. This phenomenon has been describing using a range of terms: Coleman (1988) and Burt (2001) refer to the relational density as yielding social "closure," while Granovetter (1973) and Putnam (2001) view it as arising from "strong" or "bonding" ties, respectively. Despite minor differences, these theorists all point to a common mechanism whereby network density generates feelings of belongingness. When one's friends are also friends with one another, a relational feedback loop (what social network theorists call a "cycle") is established. For example, if A is friends with B and C, and B and C are also friends with each other, there is a closed loop or cycle A → B → C → A. In such cases,

when A seeks social support from one friend (e.g. B), other friends (e.g. C) can also learn of her need and can provide assistance as well. In contrast, this sharing of social support cannot occur in *sparse* or *open* personal social networks where, when A seeks social support from one friend, her other friends would remain unaware of her need. Thus, when people have dense personal social networks, we would expect them to have a strong *psychological* sense of community, wherein they view themselves as a member of a strong community able to work together and support one another. By extension, in neighborhoods populated by such people, we would expect to see strong sense of community (see Granovetter 1973, p. 1373; Grannis 2009, p. 38). That is, neighborhoods characterized by dense personal social networks are contexts that are likely to foster sense of community than neighborhoods characterized by sparse and fragmented personal social networks.

The Community-Diversity Dialectic

Community psychologists and others often seek to promote both respect for diversity and a strong sense of community, which begs the question: Are the ecological contexts that afford opportunities to develop a respect for diversity (i.e. residentially integrated neighborhoods) the same ecological contexts that foster a sense of community (i.e. dense personal social networks)? In search of an answer to this question, Townley et al. (2011) recently proposed a "community-diversity dialectic", noting that the ecological contexts that foster respect for diversity may be distinct from those that foster sense of community (p. 70). Supporting this proposition, they review several empirical studies have highlighted an inverse relationship between the integrated conditions that promote respect for diversity and sense of community. Separately, Portes and Vickstrom (2011) offer a similar review, finding that demographic homogeneity has often been linked with higher levels of trust, social cohesion, and belongingness typically thought to compose sense of community.

In the interest of space, we will not duplicate Townley et al.'s (2011) or Portes and Vickstrom's reviews, but do wish to highlight some additional studies that have indicated a negative relationship between the contextual conditions that promote respect for diversity and sense of community. In university settings, White freshman exhibited less racial prejudice but also less relationship satisfaction when they were randomly assigned an African American roommate rather than a White roommate (Shook and Fazio 2008). Similarly in neighborhood settings, diversity was an obstacle to the creation of neighborhood social ties by Italian adolescents (Lenzi et al. 2013), and of neighborhood collective efficacy by American homeowners and renters (Lindblad et al. 2013). Finally, in an ethnographic account, Berryhill and Linney (2006) highlighted the challenges inherent in bringing together a bi-ethnic group of African American and Latino residents to work together on community issues. Of note, they described ethnic tensions associated with the group's diversity that may have dampened resident participation. Notably, these studies were conducted in a range of different settings (e.g. university residence halls, neighborhoods), using a range of methods (e.g. ethnography, controlled experiment), with participants ranging in age (e.g. adolescents, adult homeowners). Thus, taken together with Townley et al.'s (2011) review, they offer strong evidence that the goals of promoting respect for diversity and sense of community may not be compatible.

The community-diversity dialectic presents a paradox for community psychologists because it highlights the conflictual nature of two core values in the field. Townley et al. (2011) argue for an expansion in the definition of sense of community to realign it with the goals of promoting diversity. More specifically, they suggest that sense of community should be redefined to focus on bridging social capital (i.e. ties across diverse groups or communities that facilitate the flow of resources) rather than bonding social capital (i.e. trust, belongingness, social cohesion). This is a semantic solution that calls for a fundamental change in the conceptualization of sense of community. However, in this respect, it dodges rather than addresses the paradox. In this paper, we aim to increase our understanding of the community-diversity dialectic by examining why diversity and sense of community are negatively related. By understanding the mechanisms that place these two values of community psychology in conflict, we are better positioned to understand what, if anything, community psychologists can do about the community-diversity dialectic.

Methods

Agent-based models (ABM) are a powerful methodological tool for building theory by allowing researchers to explore the consequences of different behaviors in different contexts through simulation (Macy and Willer 2002; Hoffer et al. 2009). These models are, by definition, very simple, rooted in the notion that an agent's (e.g. a person's) behavior is driven by following a set of rules that dictate responses to environmental forces and reactions to other agents. Even when agents follow simple behavioral rules, complex phenomena often emerge from these models, highlighting that patterns that may be difficult to understand when viewed at a macroscopic scale (e.g. the community-diversity dialectic) can often be understood as the result of interactions occurring at the microscopic scale (e.g. relationship formation).

Most ABMs consist of two stages: an initial context-setup stage, and an agent-interaction stage. In the context-setup stage, a simulated world (e.g. a neighborhood) with specified characteristics (e.g. level of integration) is created and populated with agents (e.g. residents). In the agent-interaction stage, each agent simultaneously follows a common set of behavioral rules (e.g. homophily) that govern how they respond to their environment, which includes the other agents. After one or more periods of agent interaction, the researcher observes the macroscopic patterns that have emerged in the setting, then repeats the simulation with slightly different contextual characteristics and behavioral rules. By manipulating the characteristics of contexts and the way agents behave within them, which would be impossible in reality, the researcher develops an understanding of their relationships among the variables and their role in producing complex patterns. Thus, agent-based models are particularly promising for building theory in community psychology because they allow researchers to consider phenomena of interest not only in one or two contexts, but in all possible contexts.

In our ABM, developed using the NETLOGO software package (Wilensky 1999), the context-setup stage adapts Schelling's (1969) model of segregation to create simulated neighborhoods that are populated by two types of people. It is important to note that these "types" could represent any kind of socially consequential distinction made by those involved, including race/ethnicity, socio-economic status, or religion; the models presented below should not be viewed narrowly as models of the effect of racial diversity, but as models of diversity on any socially consequential characteristic. Additionally, the "types" are not assumed to be different in any real sense, but only are assumed to be perceived or socially constructed as different by those involved. The neighborhoods are characterized by their level of residential integration among the two types, which we measure by the average percentage of one's neighbors who are dissimilar to oneself. This index ranges from 0 % in a completely segregated neighborhood to 50 % in a completely integrated neighborhood.[1] The top row of Fig. 1 illustrates three simulated neighborhoods with varying levels of residential integration, which we contend is associated with the extent to which they promote a respect for diversity. In the highly integrated neighborhood, light and dark gray households are evenly mixed and the index of integration is 50 %: half of one's neighbors are similar, and half are different, on average. Through exposure to difference, individuals living in this type of neighborhood have opportunities to develop a respect for diversity. In contrast, in the highly segregated neighborhood, households are tightly clustered with others of the same color and the index of integration is only 5 %: on average, nearly all of one's neighbors are similar. Because they live in homogeneous clusters, individuals living in this type of neighborhood have few opportunities to develop a respect for diversity.

In the agent-interaction stage, individual people decide whether or not to form a relationship with one another. Although we intend to use the term "relationship" broadly to cover a range of positive affiliations, for simplicity and clarity we use the terms "friendship" and "friend" below. Many different factors play a role in determining whether two individuals become friends, but in the agent-interaction stage of this model, we focus only on two of the strongest and most widely documented: homophily and proximity. Homophily refers to the tendency for friendships "between similar people [to occur] at a higher rate than among dissimilar people" (McPherson et al. 2001, p. 416) and is the basis of the aphorism that "birds of a feather flock together." A tendency toward homophily is nearly always observed in human populations along such dimensions as race, ethnicity, age, education, social class, and attitudes and beliefs; notably it is also often observed in non-human animal populations also (Lazarsfeld and Merton 1964; McPherson et al. 2001; Fu et al. 2012).[2] In a given setting, the strength of homophily may be very strong (e.g. new immigrants in an ethnic enclave), or may be relatively weak (e.g. students on a university campus), but nonetheless is typically present to some degree. It is important to note that the existence of a tendency toward homophily does not necessarily imply feelings of prejudice or animosity. Instead, homophily can emerge from the simple fact that similar people tend to do similar things, and thus are more likely to have opportunities to form relationships.

The second force of friendship formation included in our model is proximity. Proximity refers to the tendency for friendships to occur between people who live nearby at a higher rate than between people who live far apart. As with

[1] Values greater than 50 % are conceptually possible and describe what is known as dissortative mixing, where a person is surrounded primarily by dissimilar others. In a neighborhood context, this might occur for one or two households (e.g. a single minority household in a majority neighborhood). However, it can occur neighborhood-wide only if minority and majority households are arranged in a very precise "stripe" pattern, which guarantees that any given household has a maximum of only two similar neighbors (i.e. one in one direction, and another in the opposite direction). Such an arrangement is does not seem realistic, so we have excluded it from our simulations. This exclusion does not affect our results, which we find remain the same even if we had also simulated such unrealistic hyper-integrated neighborhoods.

[2] The only widespread example of heterophily, the opposite of homophily wherein relationships are more likely between dissimilar people, is along gender lines in the formation of romantic and sexual relationships among heterosexual individuals: heterosexual men form relationships primarily with women, and not with other men, and vice versa.

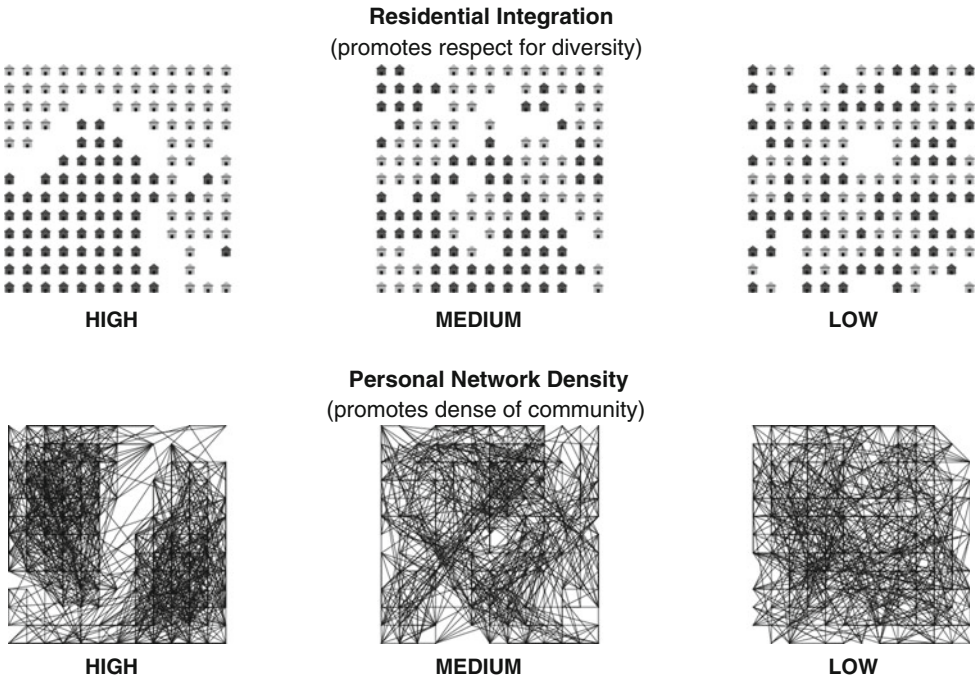

Fig. 1 Examples of simulated neighborhoods

homophily, a tendency toward proximity is nearly always observed in human populations (Moreno 1934; Festinger et al. 1950; Grannis 2009). The strength of a proximity tendency likely depends on the setting (e.g. stronger in a gated community, weaker in a large city) and on available technology (e.g. stronger before phones and cars, weaker with the advent of social media), but nonetheless is typically present to some degree. The existence of this tendency is not the result of an individual's explicit preference for nearby friends, but rather the result of the simple fact that one is more likely to have chance encounters and thus more opportunities to form friendships with those living nearby.

The probability that any two people, i and j, become friends in the model's agent-interaction stage is defined by a logistic selection function

$$Pr(F_{ij} = 1) = \frac{exp\left(\beta_0 + \beta_H \delta_{ij} + \beta_P \mathrm{Dist}'_{ij}\right)}{1 + exp\left(\beta_0 + \beta_H \delta_{ij} + \beta_P \mathrm{Dist}'_{ij}\right)}, \quad \text{where}$$

$$\mathrm{Dist}'_{ij} = \frac{1}{1 + exp\frac{\mathrm{Dist}_{ij} - 5}{.5}} \qquad (1)$$

that depends on whether they are similar ($\delta_{ij} = 1$) or different ($\delta_{ij} = 0$) and the physical distance between them (Dist_{ij}). The β_H parameter controls the direction and strength of the tendency toward homophily in the setting: when it is positive, two people are more likely to be friends when they are similar (i.e. homophily), while when it is negative, they are more likely to be friends when they are different (i.e. heterophily). Likewise, the β_P parameter controls the direction and strength of the tendency toward proximity: when it is positive, two people are more likely to be friends when they live nearby, while when it is negative, they are more likely to be friends when they live far apart. Thus, by adjusting the values of these two parameters, this function allows friendship probabilities to be estimated under different combinations of behavioral tendencies. The intercept, β_0, determines the maximum probability of any relationship forming; throughout all simulations, $\beta_0 = -(\beta_H + \beta_P)$, which sets the maximum probability of a relationship forming at 50 %. To capture the nonlinear effects of distance, we use a generalized logistic transformation of raw physical distance (i.e. Dist $\rightarrow$ Dist′).

A simple example serves to illustrate how this function is used. Imagine a world in which individuals are moderately more likely to become friends with others who are similar and who live nearby. This typical set of behavioral tendencies can be captured by setting $\beta_H = 2.5$ and $\beta_P = 2.5$ in the selection function, which can then be used to estimate probabilities of friendship. Figure 2 illustrates the estimated probability that two people will be friends in a world characterized by these behavioral tendencies. They are most likely to become friends if they are similar and live nearby, and least likely to become friends if they are different and live far apart. Note the nonlinear effect of distance: when it comes to opportunities for forming friendships, there is little difference between a person who lives one house away and a person who lives two houses away, and likewise little

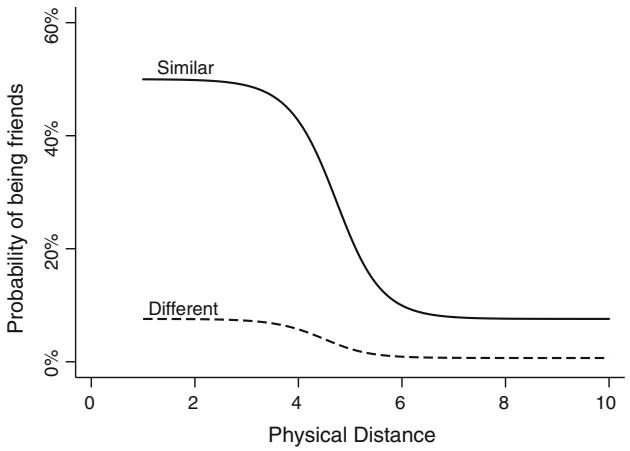

Fig. 2 Friendship selection function when $\beta_H = 2.5$, $\beta_P = 2.5$

difference between a person who lives 10 blocks away and a person who lives 10 miles away. Although the behavioral tendencies described by these probability curves are fairly typical in human communities, friendship formation under different behavioral tendencies can be estimated by changing the values of β_H and β_P, which would yield probability curves with different shapes.

At the end of the agent-interaction stage, after each person has had an opportunity to befriend (or not) every other person in the neighborhood, we examine the average density of residents' personal social networks, or what is known as the clustering coefficient (Watts and Strogatz 1998). The clustering coefficient ranges from 0, when a person's friends are not friends with one another, to 1, when a person's friends are also friends with one another. The bottom row of Fig. 1 illustrates whole neighborhood social networks with varying levels of average personal network density, as indexed by the clustering coefficient, which we contend promotes a sense of community. In the neighborhood where personal social networks are relatively dense on average (CC = 0.33), clusters of relationships around which a sense of community might develop are readily visible (CC = 0.33). Because dense personal social networks facilitate feelings of belongingness and social cohesion, individuals living in this type of neighborhood are most likely to enjoy a psychological sense of community. In contrast, in the neighborhood where personal social networks are relatively sparse on average (CC = 0.22), the fragmented and random neighborhood-level network provides few natural clusters to facilitate the formation of a sense of community. Because sparse personal social networks facilitate feelings of isolation and anomie, individuals living in this type of neighborhood are least likely to enjoy a psychological sense of community.

An interactive version of this model is available at http://www.msu.edu/~zpneal/research/nhoodnet.html or on request from the author. The model allows users to replicate the results described below, and to investigate other patterns in the relationship between diversity and sense of community, in two ways. After setting the simulation's homophily, proximity, and integration parameters using the three sliders, the "Manual" button runs both the context-setup and agent-interaction stages of the simulation using the selected parameter, then plots the neighborhood's level of diversity and sense of community. Alternatively, the "Automated" button repeatedly runs the simulation using the selected homophily and proximity parameters and a randomly selected level of integration, each time plotting the neighborhood's level of diversity and sense of community, yielding a scatterplot like the one shown below in Fig. 4.

Results

Figure 3 schematically illustrates the steps we follow to obtain the results we discuss below; the agent-based model itself appears in steps 2 and 3, while the other steps describe how we vary the model's parameters to explore diversity and sense of community in different contexts. We begin by examining the relationship between diversity and sense of community in a typical world where individuals are more likely to form relationships with similar than dissimilar others (i.e. homophily) and with nearby than distant others (i.e. proximity). Holding the intensity of the behavioral tendencies toward homophily and proximity constant at the moderate levels illustrated in Fig. 2 (step 1), we simulated social network formation in 500 neighborhoods that varied in their level of integration, each time computing the resulting network's clustering coefficient (steps 2–5, the integration loop). Figure 4 plots each neighborhood's opportunity for residents to develop a respect for diversity (as measured by its level of residential integration) and its capacity to foster a sense of community (as measured by its residents' personal network density). A very clear, albeit somewhat non-linear, negative correlation between diversity and sense of community emerges ($r = -0.85$, $p < 0.001$; step 6). Neighborhoods with the greatest opportunity for residents to develop a respect for diversity (i.e. highly integrated neighborhoods) have the least capacity to foster a sense of community. Likewise, neighborhoods with the least opportunity for residents to develop a respect for diversity (i.e. highly segregated neighborhoods) have the greatest capacity to foster a sense of community. This finding suggests that, the values of community psychology notwithstanding, it is not possible to simultaneously promote respect for diversity and sense of community in a typical world where relationship formation is driven by homophily and proximity.

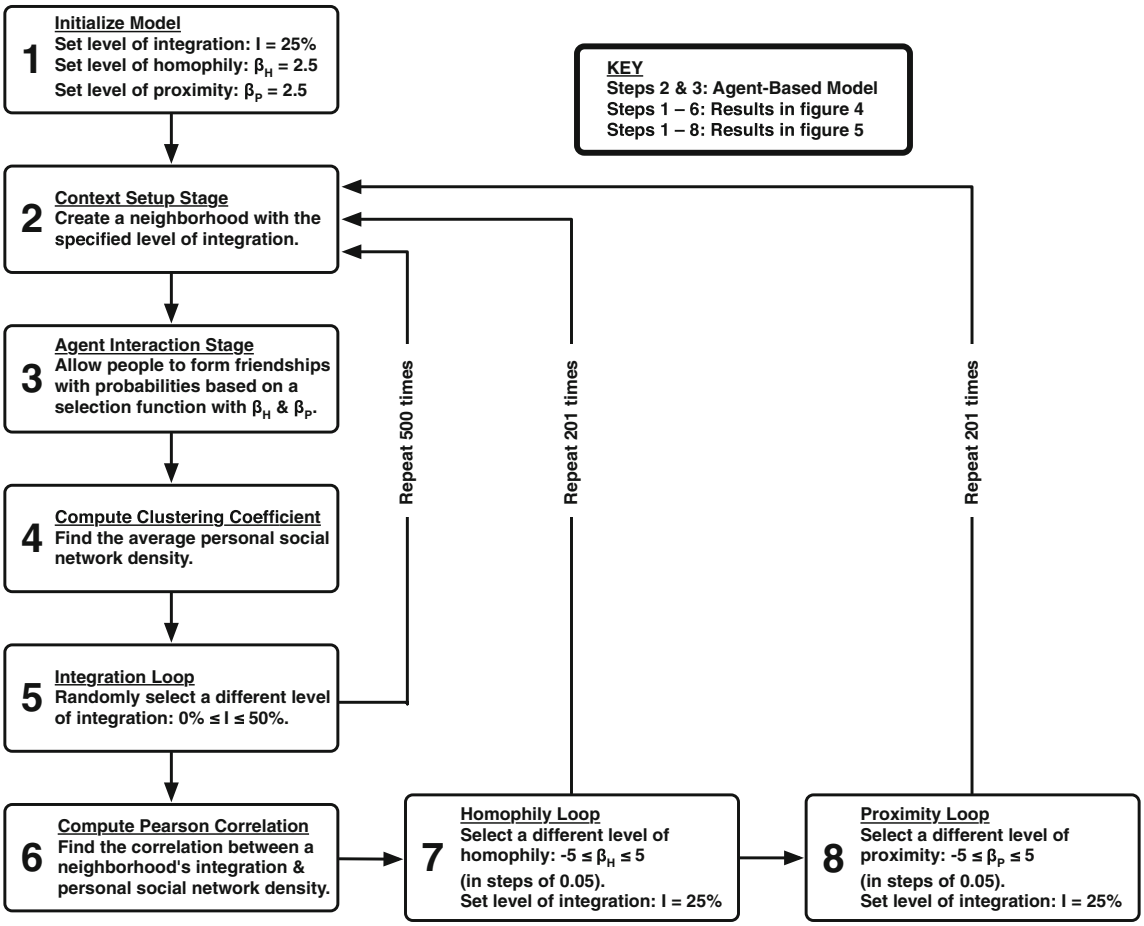

Fig. 3 Schematic of model workflow

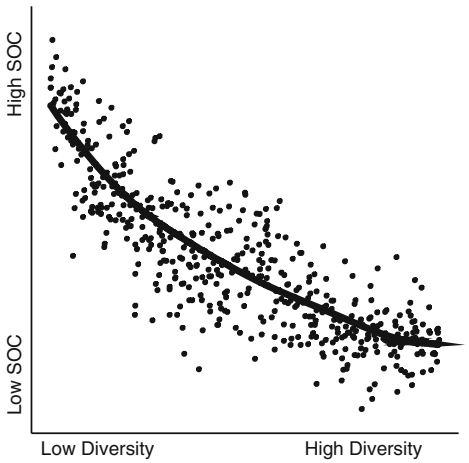

Fig. 4 Relationship between diversity and SOC when $\beta_H = 2.5$, $\beta_P = 2.5$

The results shown in Fig. 4 represent the relationship between diversity and sense of community in a typical world relationship formation is driven by the particular levels of homophily and proximity described by setting $\beta_H = 2.5$ and $\beta_P = 2.5$. But, the relationship between these phenomena may be different when relationship formation is driven by different levels of these social forces. Perhaps it is possible to simultaneously promote diversity and sense of community in a slightly different worlds where behavioral tendencies toward homophily and/or proximity are weaker, or stronger, or even reversed. To consider this possibility, we repeated the analysis shown in Fig. 4 using different levels of homophily and proximity. Specifically, we examined diversity and sense of community in 500 simulated neighborhoods varying in their level of integration (steps 2–6), for every level of homophily between −5 and 5 (in increments of 0.05; step 7) and every level of proximity between −5 and 5 (in increments of 0.05; step 8). This required slightly more that 20 million separate simulations (i.e. 500 neighborhoods × 201 levels of homophily × 201 levels of proximity) and approximately 6,000 processor-hours to complete.

The results of these simulations are shown in Fig. 5 (note: a color version of this figure, which some readers may find easier to interpret, is available as an online supplement or on request from the author). Each point in this heatmap plot represents a distinct world where relationship

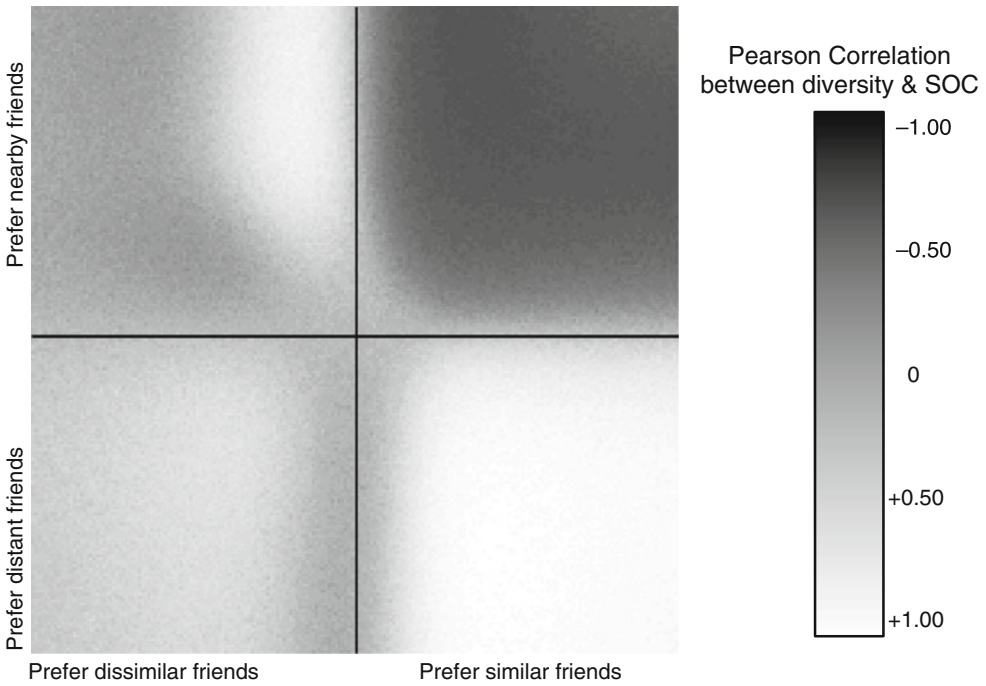

Fig. 5 Relationship between diversity and SOC for all β_H and β_P

formation is governed by a specific level of homophily and proximity. In worlds toward the right, individuals exhibit progressively stronger behavioral tendencies toward forming relationships with similar others (i.e. homophily), while in worlds toward the left, they exhibit progressively stronger tendencies toward forming relationships with dissimilar others (i.e. heterophily). In worlds toward the top, individuals exhibit progressively stronger behavioral tendencies toward forming relationships with nearby others (i.e. proximity), while in worlds toward the bottom, they exhibit progressively stronger tendencies toward forming relationships with distant others. The shading of each point indicates the relationship between diversity and sense of community (as measured by the correlation between integration and network density) in the respective world. Darker points indicate worlds where the particular combination of homophily and proximity behavioral tendencies yields a negative relationship between diversity and sense of community (c.f. Fig. 4). Lighter points indicate worlds where the particular combination of homophily and proximity behavioral tendencies yields a positive relationship between diversity and sense of community.

The findings illustrated in Fig. 5 confirm that the negative relationship between diversity and sense of community observed in Fig. 4 is not simply an artifact of the particular combination of behavioral tendencies toward homophily and proximity (i.e. $\beta_H = 2.5$ and $\beta_P = 2.5$) we initially examined. All points in the upper-right quadrant of Fig. 5 are dark, indicating that all combinations of homophily and proximity yield a negative relationship between diversity and sense of community. That is, in any world where individuals exhibit at least some tendency to form relationships with similar others (i.e. $\beta_H > 0$) and at least some tendency to form relationships with nearby others (i.e. $\beta_P > 0$), diversity and sense of community are negatively related. It is important to note that all studies of human social networks have observed behavioral tendencies toward both homophily and proximity, while none have found worlds where one or both of these behavioral tendencies was missing. Thus, while the findings illustrated in Fig. 4 suggest that diversity and sense of community are negatively related *in a typical world*, those illustrated in Fig. 5 suggest this negative relationship would persist *in all reasonably likely worlds*.

Examining the other quadrants in Fig. 5 allows us to ask: what would need to change about individuals' behavioral tendencies in order for diversity and sense of community to have a positive relationship? That is, in what kind of world could we simultaneously promote diversity and sense of community? Here, our focus shifts to the two light colored regions of the heatmap. One such region appears in the upper-left quadrant, which corresponds to worlds in which individuals tend to form relationships with others who are nearby but dissimilar (i.e. heterophily). Although this type of behavior is conceptually possible, it is highly unlikely and has not been observed in empirical studies of people before. Importantly, a behavioral tendency toward heterophily does not describe what is sometimes called "multiculturalism" in which individuals express no particular tendency toward similar or dissimilar others, but rather describes a situation in which individuals actively avoid similar others and explicitly prefer dissimilar others. More colloquially, our

findings in the upper-left quadrant suggest that diversity and sense of community could be simultaneously promoted in a world where birds of a feather avoid each other.

A second light colored region appears in the lower-right quadrant, which corresponds to worlds in which individuals tend to form relationships with others who are similar but live far away. Again, although this type of behavior is conceptually possible, it is highly unlikely and has not been observed in empirical studies of people before. Indeed, the physical laws of the universe essentially prohibit it. Such a behavioral tendency does not describe what might be called "cosmopolitanism" in which individuals express no particular tendency toward nearby or distant others, but rather describes a situation in which individuals actively avoid nearby others and explicitly prefers distant others. More colloquially, our findings in the lower-right quadrant suggest that diversity and sense of community could be simultaneously promoted in a world where neighbors avoid each other.

Discussion

Statistician George Box famously noted that all models are wrong, but some are useful (1976). This is certainly the case for agent-based models, which strive for parsimony in explaining complex phenomena. In the case of the model we present here, it is "useful" because it demonstrates how the frequently observed negative relationship between diversity and sense of community can emerge from two relatively simple behavioral tendencies, and is "wrong" in the sense that it omits certain complexities that exist in reality. For example, this model considers only a single, binary dimension of diversity: individuals are either light gray or dark gray. But, in reality, any given social distinction comes in many shades (e.g. race), and intersects with other distinctions (e.g. with ethnicity, with social class, etc.). Similarly, this model views relationships between people as either present or absent, when in reality relationships can be stronger or weaker (e.g. best friend vs. neighborly acquaintance). Finally, this simulated neighborhoods in these models do not include social spaces like schools or parks that some have hypothesized may mitigate the effects of homophily or distance by drawing people together (Lenzi et al. 2013). Thus, we view this model as a starting point that provides a baseline understanding of the community-diversity dialectic, and onto which additional complexities may be added by future studies.

Of these simplifications, the omission of individuals' multiple and potentially intersecting statuses and identities may be of greatest concern, and warrants additional comment. The consequences for our model and findings depend on precisely how these statuses intersect. One possibility is that multiple statuses are correlated, as is often the case for race and socioeconomic status in the United States, for example. To the extent that multiple statues are correlated, they collapse into a single status, reinforcing one another. Consistent with Blau's (1977) finding that "strongly correlated parameters consolidate status and group differences and thereby impede intergroup relations" (p. 45), we would expect that incorporating additional and correlated dimensions of difference would intensify our main finding. A second possibility is that multiple statuses are uncorrelated, as for example gender and race. In such cases, two individuals may differ on one dimension and thus have a diminished likelihood of interaction, and yet be similar on another dimension and thus have an increased likelihood of interaction. Consistent with Blau's (1977) finding that "intersecting parameters promote intergroup relations" (p. 45), we would expect that incorporating additional and uncorrelated dimensions of difference would mitigate our main finding.

Still a third possibility is the presence of an additional and nearly universally held status that draws individuals together, as for example when potentially different individuals are united by a common goal (e.g. cleaning up the neighborhood, cheering for the home team). Such unifying characteristics are the stuff that sense of community is made of, and indeed we would expect them to significantly increase the network densities observed in our simulations. However, it is also important to observe that the introduction of a widely held common status, such as a common goal, *ipso facto* reduces the diversity of the community. A community with some rich residents and some poor residents who all support the home team is less diverse than a community with some rich and some poor residents among whom only some support the home team. Thus, we would expect that incorporating additional and near-universal dimensions of difference would have no effect on our main finding.

A final possibility is that multiple statuses are not additive, but instead have unique effects when they are combined in different ways. Intersectionality theory suggests, for example, that the experience of a black woman is not simply the combination of the experience of women and the experience of blacks, but rather something completely unique (Crenshaw 1991). This is likely the most realistic perspective on how individuals' multiple statuses and identities function, but it is also the most complex and the most difficult to model. Here, the challenge is a purely computational not theoretical one: to incorporate intersectionality effects in our model would require a minimum of two additional parameters, one for the additional status and one for the interaction effect, and would require still more if additional statuses were included or if their interactions were non-linear. Together, these possibilities concerning

the operation of multiple statuses and identities in the context of diversity and sense of community highlight some ways that our preliminary model might be extended.

Despite these limitations, these findings we present above help us to understand why the community-diversity dialectic may exist, that is, why it may be so challenging to simultaneously promote a respect for diversity and a sense of community in a single setting. The model demonstrates that this perennial challenge to community psychology praxis can emerge from two relatively simply, but universal behavioral tendencies: homophily and proximity. We find that when tendencies toward homophily and proximity in relationship formation exist, even if in a very weak form, the contexts that foster a respect for diversity are different from the contexts that foster a sense of community. When people behave as they usually do, community programs designed to shape the local ecology into one that fosters a respect for diversity are likely to have a problematic unintended consequence: also shaping the local ecology into one that diminishes a sense of community. Likewise, community programs designed to shape the local ecology into one that fosters a sense of community are likely to also shape it into one that diminishes respect for diversity.

How, then, might community psychologists approach the community-diversity dialectic? One possibility involves seeking to shift behavioral tendencies away from those responsible for the incompatibility between respect for diversity and sense of community. The location of the light regions in Fig. 5 indicate that if behavioral tendencies toward homophily and/or proximity reversed, that is, if people were more likely to form relationships with dissimilar and/or distant others, then the dialectic would evaporate. At first glance, this may appear a promising avenue for future community-based work, but on closer inspection is quite problematic. First, no human population has been observed that did not exhibit at least some tendency toward both homophily and proximity, thus it is not clear how or even whether these tendencies can be reversed. Second, it is important to consider what it would mean "on the ground" to reverse these behavioral tendencies. The worlds in which our model suggests one can simultaneously promote respect for diversity and sense of community are those in which people (a) actively avoid similar others and (b) actively avoid their neighbors. This is, it seems to us, not the kind of world we would want to live in, even if it did allow us to achieve the goals of community psychology.

If we concede that behavioral tendencies toward homophily and proximity, and thus the community-diversity dialectic, are likely here to stay, then engaging with the dialectic requires a different approach. Our finding of a negative relationship between diversity and community suggests that, within each setting, community psychologists and community members must seek to find a contextually-appropriate balance. That is, engaging the community-diversity dialectic involves the generation of multiple, context-dependent solutions, or what Rappaport (1981) calls "divergent reasoning." In some neighborhoods, it may be preferable to promote a respect for diversity, even at the expense of sense of community, while in others, a sense of community may be more beneficial than a respect for diversity. The point is that when it comes to pursuing the goals of community psychology, one is likely to encounter trade-offs and opportunity costs that invite difficult decisions. Ultimately, our model does not provide guidance on the optimum balance between diversity and sense of community in any given, real-world community; this is an important future direction for on-the-ground, non-simulation research. That is, our model suggests that community psychologists shift their focal question from "how can we promote diversity and sense of community in this setting" to "what is the right balance between diversity and sense of community in this setting?"

Although the right approach will be context-dependent and must take into account the needs and viewpoints of community members, we speculate that favoring a respect for diversity over a sense of community may often be preferable. There are few downsides (aside from diminished sense of community) to promoting respect for diversity. Beyond ensuring inclusiveness and reducing opportunities for oppression and marginalization, openness to diverse points of view is essential for creativity (Florida 2002) and lies at the heart of "bridging" or "weak tie" social capital (Granovetter 1973; Coleman 1988; Burt 2001; Putnam 2001). In contrast, there are potential downsides to promoting high levels of cohesion and sense of community beyond simply a diminished respect for diversity. The dense "closed" social networks that facilitate feelings of belongingness also isolate individuals from new ideas and other resources (Portes 1998). For example, residents in a poor inner-city neighborhood with a strong sense of community may benefit from the fact that neighbors provide one another assistance and social support, but are also likely walled off from access to key economic resources outside the community. Here, the dense networks facilitate working together, but also serve to concentrate and reinforce poverty.

Over 30 years ago, Rappaport (1981) noted that "the most important and interesting aspects of community life are by their very nature paradoxical" (p. 20). Such is the case for two of community psychology's core values: promoting contexts that are likely to increase respect diversity and promoting contexts that are likely to increase a sense of community (Townley et al. 2011). Results of our model suggest that this community-diversity dialectic can result from common behavioral tendencies toward

homophily and proximity. Moreover, given the universality of these behavioral tendencies, it is unlikely that community psychologists can shift them sufficiently to simultaneously promote respect for diversity and sense of community. However, through divergent reasoning, community psychologists can seek a contextually-appropriate balance between these two opposing goals that are near and dear to our field.

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