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People in More Racially Diverse Neighborhoods are More Prosocial

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Abstract

Five studies tested the hypothesis that people living in more diverse neighborhoods would have more inclusive identities, and would thus be more prosocial. Study 1 found that people residing in more racially diverse metropolitan areas were more likely to tweet prosocial concepts in their everyday lives. Study 2 found that following the 2013 Boston Marathon bombings, people in more racially diverse neighborhoods were more likely to spontaneously offer help to individuals stranded by the bombings. Study 3 found that people living in more ethnically diverse countries were more likely to report having helped a stranger in the past month. Providing evidence of the underlying mechanism, Study 4 found that people living in more racially diverse neighborhoods were more likely to identify with all of humanity, which explained their greater likelihood of having helped a stranger in the past month. Finally, providing causal evidence for the relationship between neighborhood diversity and prosociality, Study 5 found that people asked to imagine that they were living in a more racially diverse neighborhood were more willing to help others in need, and this effect was mediated by a broader identity. The studies identify a novel mechanism through which exposure to diversity can influence people, and document a novel consequence of this mechanism.

Keywords: diversity; identity; prosocial; socioecological psychology; big data

People in More Racially Diverse Neighborhoods are More Prosocial

Racial diversity is an important aspect of the socioecological landscape that people inhabit (Oishi, 2014; Oishi & Graham, 2010; Uskul & Over, 2014; Uskul, Kitayama & Nisbett, 2008). In 1980, 90% of zip codes in the US were predominantly European American, but only 33% were so by 2010 (Lee, Iceland & Sharp, 2012). A US Census Bureau report projected that non-European Americans would represent a majority of the US population by 2044 (Colby & Ortman, 2015). In the UK, survival rates, fertility, and migration data have predicted that ethnic minorities would grow from 13% of the population in 2001 to 25% by 2051 (Rees, Wohland, Norman & Boden, 2012).

Although there exist innumerable dimensions along which the diversity of a population can be indexed, research in person perception has found that race, gender, and age are the three primary dimensions along which people categorize others (Brewer, 1988; Fiske & Neuberg, 1990; Stangor, Lynch, Duan, & Glass, 1992; Taylor, Fiske, Etcoff, & Ruderman, 1978). Of these, race has primacy over gender—studies measuring brain event-related potentials found that people detect others' race even before they detect others' gender (Ito & Urland, 2003). And gender has primacy over age—when participants were viewing adults' faces, the gender of the face influenced participants' age categorization, but the age of the face did not influence participants' gender categorization (Cloutier, Freeman, & Ambady, 2014). Given that race is one of the primary dimensions of social categorization, it seems reasonable to conclude that racial diversity is likely one of the most important dimensions of neighborhood diversity.

A growing body of research highlights the beneficial effects of racial, ethnic, and socioeconomic diversity (Carter & Phillips, in press; Plaut, 2010; Williams & O'Reilly, 1998). In particular, past research has found that exposure to more diverse groups improves people's cognitive performance because members of more diverse groups bring a greater variety of ideas and perspectives on a problem, and because the presence of diversity makes all group members think more analytically and critically (Galinsky et al., 2015). For example, racially diverse jury groups exchanged more information and thus made better decisions (Sommers, 2006). College students in more racially diverse groups exhibited greater integrative complexity in their thinking style and more thorough information processing (Antonio et al., 2004; Hong & Page, 2004; Sommers, Warp & Mahoney, 2008; see also Levine et al., 2014). Research has also studied the consequences of having culturally diverse experiences in one's lifetime (Leung, Maddux, Galinsky, & Chiu, 2008). For example, people who have lived or worked abroad for a longer period tend to be more creative because they have engaged with a greater diversity of ideas (Maddux & Galinsky, 2009). Similarly, bicultural individuals, who have significant exposure to two or more cultures, are also more creative than monocultural individuals (Benet-Martínez, Lee, & Leu, 2006).

We seek to broaden social psychological understandings about the consequences of diversity beyond the realm of cognitive benefits. Specifically, we

examine whether the benefits of diversity can also accrue through a social psychological mechanism, such as a broader identity. Do people who are chronically exposed to others from more diverse groups have a broader identity that encompasses other groups? We further examine whether such a mechanism can help uncover novel benefits of diversity that are more interpersonal in nature. Specifically, we ask whether a broader identity due to exposure to higher racial diversity makes people more prosocial, that is, more positive, helpful, or altruistic toward others. Two diversity-related theories—conflict theory and contact theory—yield contrasting hypotheses about how exposure to diversity would be associated with identity and prosociality.

Conflict theory

One perspective, *conflict theory*, posits that in more racially diverse areas, there is greater intergroup conflict over communal resources, which leads people to distrust members of other racial groups while showing more solidarity with members of their own racial group. Providing support for this idea, a study analyzing survey responses from 55 countries found that people living in more diverse countries had lower generalized trust—the tendency to trust complete strangers (Delhey & Newton, 2005; see also Alesina & La Ferrara, 2002). Analyzing survey responses across 41 localities in the US, Putnam (2007) found that individuals living in more diverse neighborhoods were less likely to trust their neighbors, members of other races, and also members of their own race (see also Laurence, 2011; Stolle, Soroka & Johnston, 2008). This lower trust was accompanied with a range of detrimental outcomes, including lower trust in the local government, lower civic and community engagement (e.g., voting), less volunteering, smaller social networks, and lower happiness (Putnam, 2007). If people in more racially diverse neighborhoods are less likely to trust others and are less engaged with the community, then one might predict that they would also have a narrower identity and would be less prosocial in general.

However, findings from other studies are inconsistent with Putman's (2007). For example, people living in more ethnically diverse communities in London reported higher, not lower, levels of trust, courtesy, and civic engagement (Sturgis, Brunton-Smith, Kuha & Jackson, 2014). Although not examining neighborhood racial diversity, Cao, Galinsky and Maddux (2014) found that people who had visited more countries, and thus had a greater diversity of experiences, had higher levels of generalized trust. These findings suggest that the relationship between neighborhood racial diversity and trust might be more complex than conceptualized by Putnam (2007) (see also Uslaner, 2010).

Although trust, breadth of identity, and prosociality might seem closely related, they are distinct psychological processes. Trust is based on expectations of reciprocity—people consider whether the trustee would fulfill or betray their trust (Evans & Krueger, 2011; Pillutla, Malhotra & Murnighan, 2003). Breadth of identity depends on the extent to which individuals identify themselves as human beings rather than as

members of smaller tribes (McFarland, Webb, & Brown, 2012). Prosociality is based on a concern for others' well-being, not on expectations of reciprocity. Batson (1987, 2011) argued that the primary motivation behind prosociality is empathy—people help because they are concerned about the other person, not because they want others to come to their assistance when they themselves need help in the future. Thus, even if people in more racially diverse neighborhoods are less likely to trust others, they do not necessarily need to have narrow identities and be less prosocial.

Contact theory

Whereas research on conflict theory has focused on the relationship between community-level diversity and indicators of social capital, such as trust and civic engagement, a parallel literature has examined how interacting with members from other racial groups influences people's intergroup attitudes. This stream of research, called *contact theory*, has found that people who have more face-to-face interactions with members of other groups have more positive attitudes toward other groups (Allport,1954; Dovidio, Gaertner, & Kawakami, 2003; Pettigrew, 1998). This happens because people who have more frequent contact with individuals from other ethnic groups experience less anxiety about intergroup interactions and have more empathy toward outgroup members (Pettigrew & Tropp, 2008). Not only actual intergroup contact but even observed or imagined intergroup contact reduces people's prejudice toward outgroups (Turner, Crisp, & Lambert, 2007). For example, participants who viewed inter-racial friendship interactions had less negative expectations about interracial interactions, which subsequently led to them to make more friends from other races (Mallett & Wilson, 2010). If people in more racially diverse neighborhoods have more intergroup contact and thus have more positive intergroup attitudes, then one might predict that they would also have a broader sense of identity.

Whereas research on contact theory has primarily focused on intergroup attitudes as the key outcome, some research suggests that intergroup contact can increase people's prosociality. In the classic *jigsaw classroom* study, elementary school students who spent part of their day working on interdependent tasks in racially mixed groups (rather than racially homogenous groups) were more likely to help other students during the rest of the day (Aronson, Blaney, Stephan, Sikes, & Snapp, 1978). Students who interacted more frequently with other ethnic groups in recently desegregated junior and senior high schools were more likely to help each other (Weigel, Wiser & Cook, 1975). However, these studies focused specifically on whether extended face-to-face interactions with members from other groups increase people's tendency to help others with whom they regularly interacted, not on whether exposure to members of diverse groups, with or without face-to-face interactions, makes them more prosocial in general. Nevertheless, if people in more racially diverse neighborhoods have a broader identity, they might be more prosocial toward others in general.

Racial Diversity and Prosociality

Despite the contradictory predictions of conflict theory and contact theory, we posit that people living in more racially diverse neighborhoods would have a broader identity and would thus be more prosocial. Some research indicates that people living in more racially diverse neighborhoods perceive more similarity between prototypical members of different groups. For example, British citizens living in more ethnically diverse neighborhoods believed that the typical British person, the typical White person, and the typical Christian person were more similar to each other; consequently, they perceived a smaller social distance between their own ethnic group and other ethnic groups, and exhibited lower ingroup bias (Schmid, Hewstone & Ramiah, 2013). In another study, individuals who knew that other members of their own ethnic group have close relations with ethnic outgroup members were more likely to include the outgroup in their self-concept (Turner, Hewstone, Voci, & Vonofakou, 2008). Building on these findings, we predict that exposure to members of other racial groups might lead people to have a broader, more inclusive identity. Of all identities that people can associate with, identification with all of humanity might be the ultimate in terms of breadth (Sellers, Smith, Shelton, Rowley & Chavous, 1998), “an identity in which the (individuals) define themselves as world citizens” (Sussman, 2000, p. 368). We thus test for the first time whether people living in or exposed to more racially diverse neighborhoods would be more likely to identify with all of humanity.

If people in more racially diverse settings have more inclusive identities, they may be more likely to identify with others as fellow human beings, and therefore, act more prosocially toward others. Indeed, people who were more likely to identify with all of humanity were more concerned about global human rights and humanitarian needs (McFarland, Webb & Brown, 2012, Studies 1-3). In multiple samples, people identifying with all of humanity were more willing to donate to charities, and to help victims of natural disasters (McFarland et al., 2012, Study 10). Therefore, we further hypothesize that people in more racially diverse neighborhoods would be more prosocial in part because they are more likely to identify with all of humanity.

Overview of Studies

We tested our hypotheses in five studies. Study 1 assessed whether people in more racially diverse metropolitan areas are more likely to mention concepts related to prosociality in their tweets posted on Twitter©. Seeking to provide a conceptual replication, Study 2 examined whether people in more racially diverse neighborhoods are more likely to offer help to people stranded by the 2013 Boston marathon bombings. Testing whether the effect generalizes to the national level, Study 3 investigated whether people in more ethnically diverse countries were more likely to report having helped a stranger in the past month. Using a correlational and an experimental design respectively, Studies 4 and 5 tested the mechanism—whether people in more racially

diverse neighborhoods are more likely to identify with all of humanity, and therefore, are more prosocial.

Our key predictor was racial diversity rather than ethnic diversity because past research has found that racial diversity predicts economic outcomes more strongly than does ethnic diversity (Alesina, Baqir & Easterly, 1999, 2000). However, we use country-level ethnic diversity in Study 3 as comprehensive data on country-level racial diversity was not available. This research was approved by the National University of Singapore Institutional Review Board protocols 13-166 (titled *Neighborhood Characteristics and Helping Behavior*) and 12-326 (titled *Attitudes, Decision Making, and Performance*).

Study 1

Extensive research has demonstrated that people's everyday language (e.g., speech, writing) reflects their current state of mind (Pennebaker, Chung, Ireland, Gonzales & Booth, 2007), including their prosociality (Frimer, Aquino, Gebauer & Zhu, 2015). We used a big data source—Twitter©—which provided us with a large and diverse sample of people's everyday language to test whether people living in more diverse metropolitan areas are spontaneously more likely to express prosocial concepts in their everyday communications on electronic media.

Method

Power Analysis. To test our hypothesis, we conducted a hierarchical logistic regression (Raudenbush & Bryk, 2002), examining the effect of metropolitan area-level racial diversity (Level-2) on individuals' prosocial messages (Level-1). Sample size calculation for logistic hierarchical model is typically estimated with simulations. Past simulations have suggested that Level-2 sample size is generally more important than Level-1 sample size, although large Level-1 sample sizes can compensate for a small number of Level-2 units (Maas & Hox, 2005). Our individual-level sample size was 61,399,135, which exceeds the minimum sample size recommendation for even the most conservative expected logistic regression effect sizes (Hsieh, 1989). However, given the importance of Level-2 sample sizes, we also examined the power of metropolitan area-level variables (N = 200). When examining fixed effects in logistic regressions, Monte Carlo simulations indicated that there must be a minimum of 10 positive and negative events per variable to achieve conventional level of Type I and Type II error rates, with recommended sample sizes of at least 10 * k / p, where k represents the number of independent predictors, and p represents the proportion of positive cases in the population (Peduzzi, Concato, Kemper, Holford, & Feinstein, 1996). The proportion of tweets with prosocial content in our dataset was .087, and we have one focal predictor variable (racial diversity), leading to a minimum Level-2 sample size of 115. Thus, we sampled 200 metropolitan statistical areas to have high power.

Sample. Twitter is one of the largest social media websites. People can post short messages (tweets) of 140 characters or fewer describing their daily thoughts, observations, and feelings from any internet-enabled device on Twitter. As of August

2015, Twitter is the 8th most popular website in the world, with over 302 million active monthly users and over 500 million tweets sent per day. We used the *twython* library of the Python programming language to query the Twitter API, which allows researchers to download a sample of tweets meeting pre-defined criteria. We obtained English-language tweets within a 15 kilometer radius of the center latitude and longitude of the 200 most populous metropolitan areas in the United States, determined by the Census Bureau population projections for that year (Colby & Ortman, 2015). The geographic location of a user was determined by the API from the information included either in the user's profile or via their phone's GPS or IP address. Approximately every 15 minutes for 24 hours a day, during a 30-day period (December 21, 2013, to January 19, 2014), an automated script downloaded the 200 most recent tweets matching these criteria. Once our tweet collection was finished, we deleted all duplicates (messages with identical tweet IDs). Our final sample contained 61,399,135 tweets, with a mean of 306,996 tweets per metropolitan area (*SD* = 92,025) and a mean of 2,046,638 tweets per day (*SD* = 172,981). For every metropolitan area, we queried the WolframAlpha® API to obtain the 2012 U.S. American Community Survey (U.S. Census Bureau, 2012) data on the demographic and geographic details of the metropolitan area.

Measures

Prosociality*.* We used the LIWC software (Pennebaker et al., 2007) to assess whether each tweet mentioned prosocial concepts (e.g., charity, helpful, selfless). Our target list of words came from the *LIWC prosocial dictionary* that was previously used to measure prosocial language (Boisjoly, Duncan, Kremer, Levy & Eccles, 2006). In the original paper, the number of prosocial concepts in a participant's text predicted the participant's self-reported desire to help others, *r* =.31, demonstrating the predictive validity of this textual coding. We used a binary coding (whether or not a tweet mentioned prosocial concepts) rather than a continuous coding (number of prosocial concepts mentioned in a tweet) because a big majority of the tweets (91.34%) did not mention prosocial concepts. Further, given length constraints (each tweet had to be 140 characters or less), only a limited number of concepts can be conveyed in one tweet.

Racial diversity*.* From the 2012 estimate of the American Community Survey (U.S. Census Bureau, 2012), we obtained the number of people belonging to seven race categories (Asian American, African American, Hawaiian American, Native American, European American, other, and two or more races) in each metropolitan area in our sample. To convert this information into a unitary measure of racial diversity, we computed the racial diversity index using the formula $1 - \sum_{i=1}^{4} p_i^2$, where p_i refers to the proportion of people in a given metropolitan area belonging to each of the 7 racial groups (Simpson, 1949). A perfectly homogenous neighborhood would have a diversity index of 0, whereas a perfectly diverse neighborhood with all seven races equally represented would have a diversity index of 1.

Control Variables. We obtained data about each metropolitan area's population, land area, median household income, number of men and women, education attainment, and the size of the larger metropolitan area that the metropolitan area was a part of from the American Community Survey for five year estimates from 2007-2011 (U.S. Census Bureau, 2011). We obtained the number of people in each US county adhering to various religious faiths from the U.S. Religion Census 2010 (Grammich et al., 2012). We coded the data according to four main categories of religions: Christians, Judaism, Others, and Non-adherents. We obtained the number of people in each US county who voted for the Republican candidate, the Democratic candidate, and other candidates in the 2012 Presidential election from the 2012 President County Results (Townhall, 2012).

We computed each metropolitan area's population density by dividing its population by its land area. We computed each metropolitan area's gender diversity using the formula "2 X (0.5 - |proportion women – 0.5|)"—a score of 1 would indicate perfect diversity (half men, half women) and a score of 0 would indicate no diversity (either all men or all women). Following Snibbe and Markus (2005), we used people's education attainment as an indicator of their socioeconomic status, distinguishing those who have at least a Bachelor's degree from those who do not. We used education attainment as an indicator of socioeconomic status because it predicts a wide range of outcomes more strongly than income and occupation, the two other indicators of socioeconomic status (see Snibbe & Markus, 2005, p. 706). We computed each metropolitan area's socioeconomic status diversity using the formula "2 X (0.5 - |proportion with at least a Bachelor's degree – 0.5|)." We computed each county's religious diversity and political diversity using Simpson's (1949) formula. We matched each metropolitan area with the county that it was located in to obtain an estimate of each metropolitan area's religious and political diversity.

Results

First, we examined the relationship between prosocial concepts and racial diversity without including any covariates. The dependent variable in the analysis was whether an individual tweet mentioned prosocial concepts. The predictor variable, racial diversity, was at the metropolitan-level. Given the model's cross-level nature and the potential for non-independency in the data, we ran a cross-classified multilevel logistic regression treating individuals as simultaneously nested within metropolitan areas and days (we had 30 days in our sample; Raudenbush & Bryk, 2002). We found that tweets originating from more racially diverse metropolitan areas were more likely to mention prosocial concepts, $B = 0.026$, 95% $CI = [0.022, 0.031]$, $\beta = 0.027$, $z = 11.1$, $p < .001$.

We ran a second analysis after controlling for the metropolitan area's median household income, population density (people per square mile), size of the metropolitan area (in square miles), gender diversity, socioeconomic diversity, religious diversity, and political diversity. These alternative diversity measures showed mixed effects with

prosociality. Gender diversity (B = 0.55, p <.001) and socioeconomic status diversity (B = 0.053, p <.001) were both positively related to prosocial language. Political ideology (B = -0.27, p <.001) and religious diversity (B = -0.15, p <.001), however, have negative associations with prosocial language. Thus, not all diversity measures have positive relationships with prosocial language, and the effect is domain-specific. Even after controlling for these variables, we still found that tweets originating from more racially diverse metropolitan areas were more likely to mention prosocial concepts, B = 0.062, p <.001 (see Table 1 for detailed results).

<Insert Table 1>

Discussion

Study 1 found that people living in more racially diverse metropolitan areas were more likely to mention prosocial concepts in their everyday tweets. The finding is consistent with our hypothesis that people in more racially diverse neighborhoods would be more prosocial. The control variables help rule out alternative explanations. It is not the case that people in richer/poorer metropolitan areas, denser/sparser metropolitan area, or larger/smaller metropolitan area are more likely to express prosocial concepts, and these areas just happen to be more racially diverse; racial diversity predicted prosociality even after controlling for the metropolitan area's size, median household income, and population density. Similarly, the results of racial diversity on prosociality holds even after controlling for differences in gender diversity, socioeconomic status diversity, political diversity, and religious diversity.

Study 2

Whereas Study 1 examined whether people in more racially diverse metropolitan areas use more prosocial concepts in their everyday language, Study 2 tested whether residents of more racially diverse neighborhoods are more likely to offer to help people in the aftermath of a disaster. Specifically, we investigated people's spontaneous prosociality using a novel dataset—people who offered to help individuals stranded after the 2013 Boston marathon bombing.

Method

Sample. On April 15, 2013, two bombs exploded near the finish line of a marathon in Boston, killing three people and injuring hundreds. This emergency left thousands of runners, spectators, visitors, and friends and family of the injured stranded because the police cordoned off the area near the bombing and evacuated several hotels along the running route. To help the stranded, the Boston Globe© newspaper set up a website where individuals could offer to host stranded visitors in their homes. Volunteers could add their information (e.g., location, contact information, type of help offered) to a document containing a running list of volunteers. We downloaded the document at 4.00 am EDT on 16th April, 2013, at which point it contained 4945 help offers, before the newspaper took it down. Thus, the statistical power of this study

comes from analyzing a large sample of spontaneous help offers in response to a disaster.

Identifying volunteers' zipcodes. Volunteers were asked to fill in the following fields: *Name*, *Phone Number*, *E-mail Address*, *Neighborhood* and *Other Info*. To determine whether the help offers were genuine and unique entries, we filtered out empty entries, duplicate entries, and non-helping entries, which were identified by scanning details provided in the *Other Info* field (e.g. sample non-helping entry: "(a complaint) this page has been reported numerous times;" sample helping entry: "I have food and shelter for any people who need assistance…"). We ended up with a final sample of 4,502 usable help offers. We analyzed the data at the level of individual zip codes rather than cities because we were able to identify volunteers' zip codes using Intelius©, an online name-address database. Given that neighborhoods within cities can vary in their racial diversity, a zip code-level analysis presented a more accurate estimate of the amount of diversity that people are exposed to in their day-to-day lives compared to a city-level analysis.

For each entry on the Boston Globe© website's volunteer page, we identified any residential information provided by each volunteer in the *Other Info* and *Neighborhood* fields. For example, one volunteer stated "I live on 40 St. Botolph St. I have a couch, blankets and plenty of floorspace if needed" (under *Other Info*), and "Behind Marriot Copley" (under *Neighborhood*). We searched Google Maps© for 40 St. Botolph St. and checked if it was behind Marriot Copley. If so, we recorded the zip code provided by Google Maps©. However, most volunteers only indicated the neighborhood they stayed in, not their specific residential address. In those cases, we checked whether the indicated neighborhood only consisted of one zip code using www.unitedstateszipcodes.org.

If the neighborhood had more than one zip code, we input each volunteer's *Name* and *Neighborhood* in the Intelius® search query, which generated a list of *hits* defined by name, residential address, contact number, and e-mail address. The results generated by the search query fell under one of five scenarios: (1) a single hit that matches the volunteer's *Name* and *Neighborhood* as they indicated on Boston Globe©; (2) multiple hits in the same zip codes that match the volunteer's *Name* and *Neighborhood* as they indicated on Boston Globe©; (3) single or multiple hits across different zip codes that do not match the volunteer's *Name* and *Neighborhood* information; (4) no hits; (5) multiple hits across different zip codes that match the volunteer's *Name* and *Neighborhood* information.

We took the following actions for each scenario listed above: (1) recorded zip code of single hit; (2) recorded identical zip code across multiple hits; (3) given hits across multiple zip codes, we searched further using the volunteer's *E-mail Address*, followed by *Phone Number*, and noted the zip code if we found a match with the more detailed search; (4) as there are no hits with *Name* and *Neighborhood*, we searched

further using the volunteer's *E-mail Address*, followed by *Phone Number*, and noted the zip code if we found a match ; (5) recorded zip code of hit that had a similar e-mail address as that provided by the volunteer as determined by identical *local* parts of the e-mail address (e.g., Connie.Chan@example.com and Connie.Chan@sample.org). If there were no hits with similar e-mail addresses, we conducted a new search using the e-mail address provided in the help entry, followed by the phone number, if any. If no neighborhood was provided, we searched further using the volunteer's *E-mail Address*, followed by *Phone Number*, and noted the zip code if we found a match. If no zip code was identified using name, neighborhood, e-mail, and phone number, we could not accurately determine the volunteer's zip code and thus coded the volunteer as missing data. The entire procedure is reflected in Figure 1.

<Insert Figure 1>

As there were offers to help from people located in places as far as Texas, we created a geographical bound on the viable radius of helping. We only included offers to help from zip codes within a realistic distance of 100 miles from the location of the bomb blasts, as 100 miles represented the outer limit of a reasonable distance that someone stranded in Boston might be expected to travel to reach a volunteer. This narrowed the dataset to 3,520 help offers distributed across 236 zip codes. To avoid sampling on the dependent variable, our analysis included all 744 zip codes that were within a 100-mile radius from the bombing site.

Measures

Prosociality. Given that our key question is how neighborhood racial diversity is associated with prosociality, we computed the percentage of households in each zip code who offered help on the Boston Globe website. The percentage was computed by dividing the number of help offers in a given zip code by the total number of households in that zip code (obtained from the American Community Survey 2007 – 2011 conducted by the U.S. Census Bureau, 2011). The number of help offers across zip codes ranged from 0 to 276 across all zip codes in the sample, with percentages ranging from 0% to 18%.

Racial diversity. Similar to Study 1, we obtained the number of people belonging to seven different racial categories living in each zip code from the American Community Survey 2007-2011 (U.S. Census Bureau, 2011). To convert this information into a unitary measure of racial diversity, we computed the racial diversity index using Simpson's formula as in Study 1.

Control Variables. We obtained data about each zip code's median household income, population, land area, number of men and women, number of people with and without a Bachelor's degree from the American Community Survey 2007-2011 (U.S. Census Bureau, 2011). We conducted a mean replacement for 13 zip codes for which there was no median household income information in the American Community Survey database. As in Study 1, we obtained county-level data on religion and political voting

patterns from the U.S. Religion Census 2010 (Grammich et al., 2012) and the 2012 President County Results (Townhall, 2012), respectively. We computed each zip code's population density, gender diversity, socioeconomic diversity, religious diversity, and political diversity using the same method as in Study 1. We matched each participant's zip code with the county that their zip code was located in to obtain an estimate of each zip code's religious and political diversity.

We included two additional control variables in this study given the nature of the data. First, we calculated the distance of each zip code from the bomb site using Microsoft Map Point©, which computes the distance between the center of two zip codes. Second, as people's access to the internet would directly impact their ability to offer help on the Boston Globe website, we estimated the internet penetration rate of each zip code. We used data from the 2012 and 2013 Current Population Survey (CPS), downloaded from the Integrated Public Use Microdata Series (Flood, King, Ruggles & Warren, 2015). Each CPS respondent was asked: "Do you/Does anyone in this household) use the Internet at home?" Participants' responded either *yes* or *no*. Each respondent (N = 228,106) also reported their Metropolitan Statistical Area (MSA). We used the *pygeocode library* (Yu, 2014) to compute the center latitude and longitude of each zip code and each MSA. We then computed the great-circle distance (to account for the curvature of the Earth) between each zipcode and each MSA. For each zip code, the closest MSA's internet penetration rate was used as the internet penetration rate of the zip code.

Results

Table 2 reports the means, standard deviations, and correlations among all study variables. As no households offered help in a large percentage of the zip codes, we ran a Tobit regression with percentage of households offering help as the dependent variable (censored at zero; McDonald & Moffitt, 1980; Tobin, 1958), and racial diversity of the zip code as the predictor. In the first analysis, we did not include any covariates. We found that in more racially diverse zip codes, a greater proportion of households offered to help victims of the disaster, B = 2.97, 95% CI = [2.24, 3.69], SE = .37, β = 0.35, $t(742) = 8.04$, $p < .001$, 523 left-censored observations.

To assess the robustness of this effect, we ran another Tobit regression while controlling for the distance of the zip code center from the bombing site, and the zip code's population density, median household income, internet penetration rate, gender diversity, socioeconomic status diversity, religious diversity, and political diversity. Once again, we found that in more racially diverse zip codes, a greater proportion of households offered to help victims of the disaster, B = 1.73, $p < .001$ (see Table 3 for detailed results). Given that the standard deviation of the percentage of households offering help within a 100-mile radius was .69, the effect of neighborhood ethnic diversity was more than two standard deviations of the dependent measure, representing a substantial effect (Prentice & Miller, 1992). Contrary to Study 1's finding,

zip codes' socioeconomic status diversity was negatively associated with people's likelihood of offering help, B = -.98, p < .001. Further, gender diversity, p = .74, religious diversity, p = .08, and political diversity, p = .27, were nonsignificant predictors (see Table 3).

The effect of racial diversity was robust even if we re-ran this analysis while restricting the sample to zip codes within a radius of 20 miles, 30 miles, 40 miles, and 50 miles from the bombing site, p's < .01. The effect of racial diversity was statistically significant even when we reran this analysis while censoring the zip code with the highest percentage of help offered (18%), which was the zip code in which the bombing occurred, B = 1.74, 95% CI = [0.90, 2.58], SE = .43, β = 0.19, $t(734) = 4.08$, p < .001, 523 left-censored observations, 1 right-censored observation (the percentage of households offering help in the other zip codes ranged from 0% to 2.05%).

<Insert Table 2>

<Insert Table 3>

Discussion

Study 2 found that people living in more racially diverse neighborhoods were more likely to offer to make their homes available to people displaced by a bombing. The finding is consistent with our hypothesis that people in more racially diverse neighborhoods would be more prosocial.

The control variables help rule out alternative explanations. Neighborhood racial diversity predicted people's likelihood of offering help even after controlling for distance from the bombing site, and hence, it is not the case that people in neighborhoods closer to the bombing site were more likely to offer help because of their proximity, and these neighborhoods simply happened to be more diverse. Similarly, although poorer and denser neighborhoods might be expected to be more diverse, we found a significant effect of racial diversity even after controlling for each zip code's household income median and population density. It was also not the case that neighborhoods with greater internet penetration rates happened to be more diverse, as neighborhood racial diversity predicted help offers even after controlling for internet penetration rates. Similarly, between-neighborhood differences in gender diversity, religious diversity, and political diversity did not predict people's likelihood of offering help. However, people in more socioeconomically diverse neighborhoods were less likely to offer help, which was conceptually inconsistent with Study 1's finding that people in more socioeconomically diverse cities use more prosocial language.

One limitation of this study is that we measured people's public commitment to help but could not verify whether people actually helped those who were stranded by the bombings. However, even though some people might not eventually follow through on their commitments for a variety of reasons, making a public commitment to help is a significant indicator of prosociality.

Study 3

Study 3 built upon Studies 1 and 2 in three key ways. First, the samples of Studies 1 and 2 were both from the United States, so it is possible that the findings are not culturally generalizable (Henrich, Heine, & Norenzayan, 2010). Second, in Studies 1 and 2, it is possible that more prosocial people might have chosen to live in more diverse neighborhoods, thus it might not be the case that neighborhood diversity promotes prosociality (Motyl, Iyer, Oishi, Trawalter, & Nosek, 2014). Third, Studies 1 and 2 measured people's use of prosocial language and their help offers, not helping behaviors. To address these concerns, Study 3 tested our hypothesis at the country level, which allows us to test our hypotheses using samples from countries other than the US. Further, people's self-selection into more or less diverse neighborhoods is unlikely to be a significant concern in this study as only few people have the option to decide which country to live in—immigrants compose only 3.2% of the world's population (World Migration in Figures, 2013). Finally, we used a dataset containing people's self-reports of whether they helped others in the past month. We tested whether people in more diverse countries are more likely to report having helped a stranger in the recent past.

Method

Participants. The data for this study was obtained from (1) the World Giving Index© 2012, a report based on a subset of questions asked in the Gallup® World Poll (2012), which provided data about prosociality across countries; (2) the CIA World Factbook (Central Intelligence Agency, 2013), which reported country-level ethnicity data; (3) the World Bank database (The World Bank, 2012), which reported the national economic and demographic indicators of each country; and (4) the Association of Religion Data Archives (2011), which reported the number of religious adherents for each major religion in each country. The final sample consisted of 128 countries for which we had data from all four sources. This study had high statistical power given that it analyzed prosociality data from over a hundred thousand individuals across a large number of countries.

Prosociality*.* The World Giving Index (Gallup World Poll, 2012) survey asked over 155,000 individuals in 146 countries to respond "Yes" or "No" to the question, "In the past month, have you helped a stranger, or someone you did not know who needed help?" We took the percentage of individuals in the Gallup® poll who said that they had helped a stranger as the dependent measure (range 19% to 81%). Of these 146 countries, there was no ethnicity data in the CIA World Factbook (Central Intelligence Agency, 2013) for 12 countries, no per capita gross national income data in the World Bank (2012) database for 5 countries, no percentage of population living in urban areas and gender information in the World Bank database for 1 country, so these 18 countries automatically dropped out from the analysis. The final sample size consisted of 128 countries.

Ethnic diversity. We were unable to locate data on the proportion of individuals belonging to different races across a large number of countries. However, we obtained information about the proportion of individuals from different ethnicities in each country from the CIA World Factbook (Central Intelligence Agency, 2013). We used the Simpson's formula as in Study 1 to compute a measure of ethnic diversity for each country.

Control variables. Instead of controlling for each country's median household income, we controlled for each country's per capita gross national income adjusted for purchasing power parity as this variable is more appropriate for cross-national comparisons. Further, instead of controlling for each country's population density, we controlled for each country's urban population percentage as some countries have large areas of uninhabited land (e.g., Russia, Canada, China, Australia).

We obtained information about each country's per capita gross national income, urban population percentage, and number of men and women from the World Bank (The World Bank, 2012). From the Association of Religion Data Archives (2011), we retrieved the number of people in each country belonging to 18 different religions: Baha'i, Buddhist, Chinese Universalist, Christian, Confucianist, Ethnoreligionist, Hindu, Jain, Jewish, Muslim, Shintoist, Sikh, Spiritist, Taoists, Zoroastrian, Neoreligionist, atheist, and agnostic. Data on education attainment (available for 50 countries) and political party preference (available for 46 countries) was not available for a large majority of countries in our samples, so these variables were not controlled for in the main analyses in order to retain statistical power (see supplementary online materials for additional information on these variables). We computed each country's gender diversity index and religious diversity index using the same formulae as in the previous studies.

Results

Table 4 reports the means, standard deviations, and correlations among all study variables. We found a significant zero-order correlation between racial diversity and self-reported helping during the past month, $r = .18$, 95% *CI* [.010, .0346], $p = .04$. Next, we ran a regression with self-reported helping as the dependent variable, ethnic diversity as the independent variable, and per capita gross national income, urban population percentage, gender diversity, and religious diversity as control variables. We found that in more ethnically diverse countries, a greater percentage of individuals indicated that they had helped a stranger in the past month, $B = 10.30$, $p = .03$ (see Table 5 for detailed results). Countries' gender diversity, $p = .45$, and religious diversity, $p = .09$, were not significantly associated with the proportion of people who helped a stranger in the past month (see Table 5).

<Insert Table 4>

<Insert Table 5>

Discussion

Study 3 conceptually replicated the findings of Study 2 at the level of nations: People in more ethnically diverse countries were more likely to have helped strangers in the past month. This study helps generalize the key relationship between diversity and prosciality beyond the US. Further, as very few people get to choose which country to live in, the current study does not suffer from a key alternative explanation for the findings of Studies 1 and 2, that more prosocial people chose to live in more diverse neighborhoods. Finally, this study replicated the key findings of Studies 1 and 2 using people's self-reports of their past helping behaviors.

As with any correlational study, there is the possibility that unmeasured factors could account for the relationship between national ethnic diversity and self-reported past prosocial behavior. One such candidate is religiosity, as people in more religious countries might be more likely to engage in prosocial behavior (Saroglou, Pichon, Trompette, Verschueren & Dernelle, 2005; Shariff & Norenzayan, 2007). An additional candidate is individualism, as one might expect people in more individualistic and less collectivistic countries to be less likely to help others (Triandis, Bontempo, Villareal, Asai & Lucca, 1988). However, of the 128 total countries in our sample, individualism scores were available for only 58 countries from Hofstede's dataset (Hofstede, 2001; Hofstede, Hofstede & Minkof, 2010), and religiosity scores were available for only 51 countries from the World Values Survey (World Values Survey Wave 6 2010-2014, 2015). Thus, existing country-level datasets of individualism and religiosity would lead to a significant reduction in our sample size (but see supplementary materials for additional analyses controlling for these variables).

Further, it would be informative to investigate whether country-level ethnic diversity is related to greater or lower interpersonal trust. A measure of trust was not included in the Gallup World Poll (2012) from which our measure of prosociality was derived. However, of the total 128 countries in our sample, generalized trust scores were available for 52 countries, and trust in neighborhood for 51 countries, from the World Values Survey (2015). With these 51 countries, we conceptually replicated Putman's (2007) finding that in more ethnically diverse countries, people had lower trust in their neighborhood (see supplementary materials for full results).

Study 4

Studies 1 to 3 provided converging evidence about the link between racial diversity and prosociality. The goal of Study 4 was to identify the mechanism underlying this relationship. We hypothesized that people in more racially diverse neighborhoods are more prosocial because they are more likely to identify with all humanity.

Of the three dimensions of the identification scale (McFarland et al., 2012), identification with all humanity is the broadest, followed by identification with Americans and identification with one's community. We would expect that people who identify more with their community would be more prosocial toward their community members, those who identify more with Americans would be more prosocial toward Americans, and

those who identify more with humanity would be more prosocial toward people in general. McFarland et al. (2012) found that people who identify with all humanity are more likely to support human rights, a general principle with non-specific targets, whereas those who identify with Americans are less likely to support human rights. A number of our studies measured general prosociality toward non-specific targets who might not be members of one's community or even one's country. For example, Study 2 examined people's likelihood of offering to help individuals stranded by the Boston marathon bombing, who were unlikely to be Boston-area residents (as Boston-area residents could just return to their homes). In fact, 63% of all runners were Americans from states other than Massachusetts, and 19% were from other countries (Boston Marathon Statistics, 2013). Thus, we would expect the broadest form of identity—identification with all humanity—to be the strongest predictor of prosociality.

Method.

Power analysis. Based on the effect size r = 0.18 (from zero-order correlations in Study 3), power = 80%, α = .05 (two-tailed), the recommended sample size was 237. To ensure high power, we targeted a sample size of 500 US residents from Amazon Mechanical Turk.

Participants. Surveys seeking 500 US residents on Amazon Mechanical Turk elicited 529 complete responses (273 women, 256 men; mean age 33.40 years). Of these, we excluded eight participants who indicated that they were not currently living in the US, and four who reported zip codes with no information in the American Community Survey 2007-2011 (U.S. Census Bureau, 2011). The final sample consisted of 517 participants (266 women, 251 men; mean age 33.32 years).

Prosociality. The dependent variable was a measure of self-reported helping used in the Gallup® Poll survey (see Study 3), "In the past month, have you helped a stranger, or someone you did not know who needed help?" (Response options: *yes* or *no*).

Identification with All Humanity. Participants completed the *identification with all humanity* (IWAH) scale, which includes ten three-part items (McFarland, et al., 2012). A sample item is, "How much do you identify with (that is, feel a part of, feel love toward, have concern for) each of the following? (a) People in my community (b) Americans (c) All humans everywhere." Participants answered the questions on a 5-point scale ranging from 1=*not at all* to 5=*very much.* We averaged each participant's responses across the 10 items, using their responses to part (a) to compute their *identification with community* score, α=.92, responses to part (b) to compute their *identification with Americans* score, α=.90, and responses to part (c) to compute their *identification with all humanity* score, α=.90. No other potential mediators were measured.

Racial diversity. We asked participants for the zip code that they were currently living in. Following the same procedure as in Study 2, we obtained the number of people belonging to seven race categories in each zip code from the American

Community Survey 2007-2011 (U.S. Census Bureau, 2011). We computed the racial diversity index using the same formula used in the previous studies.

Control Variables. We obtained data about the zip code's median household income, population, land area, number of men and women, number of people with and without a Bachelor's degree from the American Community Survey 2007-2011 (U.S. Census Bureau, 2011). As in Studies 1 and 2, we obtained county-level data on religion and political voting patterns from the U.S. Religion Census 2010 (Grammich et al., 2012) and the 2012 President County Results (Townhall, 2012), respectively. We computed each zip code's population density, gender diversity, socioeconomic diversity, religious diversity, and political diversity using the same method as in Studies 1 and 2. Data on median household income was not available for the zip codes reported by two participants, so we replaced these missing values with the average median household income in our dataset.

Results

Table 6 reports the means, standard deviations, and correlations among all study variables. We found a marginally significant zero-order correlation between racial diversity and self-reported helping during the past month, r = .08, 95% *CI* [-.009, .162], p = .08. We conducted a logistic regression analysis with self-reported helping as the dependent variable, racial diversity as the independent variable, and median household income, population density, gender diversity, socioeconomic diversity, religious diversity, and political diversity as control variables. We found that participants living in more racially diverse zip codes were more likely to report that they had helped a stranger in the past month, B = 1.43, p = .01 (see Table7). None of the other diversity variables had a significant relationship with self-reported helping (p's > 0.10, see Table 7).

Next, we conducted a regression with identification with all humanity as the dependent variable, racial diversity as the independent variable, and the same control variables as above. We found that participants living in more racially diverse zip codes were more likely to identify with all humanity, B = 0.42, p =.03 (see Table 8). None of the other diversity variables had a significant relationship with identification with all humanity (p's > 0.10; see Table 8).

Finally, we added identification with all humanity to the logistic regression with self-reported helping as the dependent variable. We found that people who were more likely to identify with all humanity were more likely to report having helped a stranger in the past month, B = 0.63, p < .001 (see Table 9). Once identification with all humanity was controlled for, the relationship between racial diversity and self-reported helping was weaker in magnitude, B = 1.26, p = .03, whereas the effect of identification with all humanity was significant, B = 0.61, p < .001 (see Table 9).

<Insert Table 6>

<Insert Table 7>

<Insert Table 8>

<Insert Table 9>

To determine whether identification with all humanity significantly mediates the effect of racial diversity on self-reported helping, we conducted a bootstrapped indirect effect analysis using Hayes' (2013) PROCESS macro. The indirect effect of neighborhood racial diversity on self-reported helping through identification with all humanity was significant, *indirect effect* = 0.26, *SE* = 0.14, 95% *CI* = [0.029, 0.59] (see Figure 2). The reverse mediation was not significant, 95% *CI* [-.0002, .015]. Identification with all Americans (95% *CI* = [-0.18, 0.045]) and identification with one's community (95% *CI* = [-0.37, 0.014]) did not mediate the relationship between neighborhood racial diversity and self-reported helping.

<Insert Figure 2>

Discussion

Study 4 identified a mechanism explaining why people in more diverse neighborhoods are more prosocial: because they have a broader identity. Participants living in more diverse neighborhoods were more likely to identify with all of humanity, which explained why they were also more likely to report having helped a stranger in the past month.

One limitation of Studies 3 and 4 is that the dependent variables were self-reports of past helping, which might be inflated if participants have a desire to respond in a socially desirable manner (Crowne & Marlowe, 1960). Nevertheless, it is unlikely that such a bias would vary as a function of both country-level and zip code-level ethnic / racial diversity.

Study 5

Although Study 4 provided evidence for the proposed mechanism, the correlational designs of Studies 1 to 4 prevent us from making any causal claims. The ideal study to test the current hypothesis would be to randomly assign people to live in homogenous versus diverse neighborhoods and to measure their prosocial behavior. However, such a study is not feasible. Therefore, we manipulated neighborhood diversity in a hypothetical experimental scenario based on the idea that simulating same-race vs. cross-race interactions has similar psychological effects as in-person same-race vs. cross-race interactions (Crisp & Turner, 2009). Whereas the first wave of research on intergroup contact manipulated face-to-face contact (Pettigrew & Tropp, 2006), recent research has found that observing or simulating intergroup contact has similar effects as actual intergroup contact (Stathi & Crisp, 2008). A meta-analysis of 70 studies found that imagining intergroup contact improves people's intergroup attitudes (Miles & Crisp, 2014). Thus, we investigated whether there is a causal effect of exposure to racial diversity in an experimental context on people's prosocial behavioral intentions, and whether this effect is mediated by a broader identification with all humanity.

Method

Power analysis. A meta-analysis of the experiments manipulating imagined intergroup contact found an average effect size of Cohen's *d* = .35 (Miles & Crisp, 2014). A power analysis based on this effect size with power = 80% and α = .05 (two-tailed) indicated that we would need to recruit 260 participants. To avoid confounds associated with majority-minority status, we decided to only include European Americans in this study. To ensure that we have a sufficient number of European American participants after excluding any racial minorities who take our survey, we targeted 400 US residents.

Participants. Surveys seeking 400 US residents were posted on Amazon Mechanical Turk. In response, 405 individuals (147 women, 256 men, 2 did not report gender; mean age = 35.5 years) completed the survey. Of these, five participants indicated that they were not currently living in the United States, and thus were excluded from the analyses. Given that the experimental manipulation contrasted homogenous all-European American neighborhoods with diverse multi-racial neighborhoods, an additional 98 participants who were either racial minorities (74 participants) or multi-racial (24 participants) were excluded from the analysis. The final sample size was 302 (107 women, 193 men, 2 unreported; mean age 36.06 years).

We decided to include only European Americans in the analyses because in our homogenous neighborhood condition, racial minority participants but not European American participants are likely to experience social identity threat. Specifically, in the homogenous condition, all six hypothetical neighbors that participants were exposed to were European American. Whereas European American participants would experience this hypothetical neighborhood as an own-race homogenous neighborhood, racial minority participants would experience it as an other-race homogenous neighborhood. If a racial minority participant thought that they would be the only non-European American living in the neighborhood, they would probably experience significant social identity threat (Steele, 1997), but European American participants in the same condition would not experience any social identity threat. One way to avoid this issue would be to measure participants' race at the start of the study and then expose them to either an own-race homogenous neighborhood or a diverse neighborhood. However, this would have alerted participants that the study has something to do with race. Nevertheless, we reported the results including all participants in the supplementary materials.

Procedure. Participants were randomly assigned to the *homogenous neighborhood* or the *diverse neighborhood* conditions. All participants were shown a picture of a US suburb with a row of houses and asked to imagine that they were living in that suburb. Next, they were presented with pictures of six of their neighbors in this hypothetical suburb. In the homogenous neighborhood condition, all six neighbors were European Americans. In the diverse neighborhood condition, the neighbors were two European Americans, one African American, one Latin American, one East Asian

American, and one South Asian American. We presented information about each neighbor's first name, last name, age, occupation, and hobbies, which were held constant across conditions (except for the neighbors' last names, which varied by race).

We designed the dependent variable based on the Boston marathon bombing incident (see Study 2). Participants were asked to imagine that there was a bomb blast during a parade in the city close to the suburb that they were living in. The dependent variable was a three-item measure of helping intentions: "How likely will you be to offer to (a) host people stranded by the bombing in your home? (b) help provide transportation to people stranded by the bombing? (c) help provide food to people stranded by the bombing?", α=.83. Participants responded on 7-point scales ranging from 1=*extremely unlikely* to 7=*extremely likely*.

Finally, participants were asked to complete the Identification scale (McFarland, et al., 2012). We computed participants' scores for identification with their community, α = .93, identification with Americans, α = .91, and identification with all humanity, α = .90, as in Study 4. No other potential mediators were measured.

Suspicion Check. We asked participants to indicate what they thought the purpose of the study was, in order to check whether they were able to guess the relationship between the racial diversity manipulation and intentions to help.

Results

A regression found that as hypothesized, participants who imagined living in a racially diverse neighborhood reported greater willingness to help people compared to those who imagined living in a racially homogenous neighborhood, *B* = 0.33, *p* = .05, *d* = .23 (see Table 10). Another regression found that participants who imagined living in more diverse neighborhoods were more likely to identify with all humanity, *B* =0.18, 95% *CI* = [.01, .35], SE = .09, *β* = .12, *p* = .04, *d* = .23. A third regression found that participants who were more likely to identify with all humanity reported greater willingness to help people, *B* = 0.90, *p* < .001, but that once identification with all humanity was controlled for, the relationship between the neighborhood diversity manipulation and willingness to help was no longer statistically significant, *p* > .25 (see Table 10).

<Insert Table 10>

To assess whether IWAH significantly mediates the effect of the racial diversity manipulation on helping intentions, we conducted a bootstrapped indirect effect analysis using Hayes' (2013) PROCESS macro. The indirect effect of neighborhood racial diversity on helping intentions through identification with all humanity was significant, *indirect effect* = 0.16, *SE* = 0.08, 95% *CI* = [0.0052, 0.3238] (see Figure 3). The reverse mediation was not significant, 95% *CI* = [-0.0325, 0.1477]. Identification with one's community did not mediate the effect of diversity on helping intentions, 95% *CI* = [-.0339, 0.2517], and neither did identification with all Americans, 95% *CI* = [-0.0068, 0.2691].

None of the participants were able to guess the relationship between the racial diversity manipulation and intentions to help. Seven participants mentioned “race”, and one participant mentioned “ethnicity”. Excluding these participants did not substantially alter the results (see supplementary materials for analyses excluding these participants).

<Insert Figure 3>

Discussion

Study 5 provided experimental evidence for our hypothesis by showing that people who imagined living in a racially diverse neighborhood indicated that they were more likely to identify with all of humanity and were more willing to help people than those who imagined living in a racially homogeneous neighborhood. We found that identification with all humanity mediated the effect of the racial diversity manipulation on helping intentions.

One limitation of this study is that we measured the mediator (identification with all humanity) after the dependent variable (willingness to help). We did this to maximize the chances that we would observe an effect of the experimental manipulation on the dependent variable. Whereas the dependent measure was assessed using three items, the measure of the mediator contained a total of 30 items. Had we measured the mediator before the dependent variable, it would have decreased our chances of finding a direct effect of the experimental manipulation on prosociality, which was the key outcome variable in this research.

Another limitation of this study is that we measured intentions to help, instead of actual helping behavior. However, extensive research shows that intentions are a strong predictor of actual subsequent behavior (Brandstätter, Lengfelder, & Gollwitzer, 2001; Bowman & Fishbein, 1978; Brinberg, 1979; Sheppard, Hartwick, & Warshaw, 1988; Zuckerman & Reis, 1978). Students’ intentions to engage in behaviors at their new schools (exercising, watching TV, reading newspapers) were highly correlated (r = .49 - .66) with their eventual behaviors (Wood, Tam, & Witt, 2005). Mothers’ intentions to breastfeed their infants accounted for almost 60% of the variance in actual breastfeeding behaviors (Manstead, Proffitt, & Smart, 1983). In particular, the theory of planned behavior (Ajzen, 1991) states that “when behaviors pose no serious problems of control, they can be predicted from intentions with considerable accuracy” (p.186). Therefore, Study 5 shows that exposure to racially diverse neighborhoods can increase prosocial intentions, which would then likely increase prosocial behavior.

General Discussion

Analyzing diverse sources of data, such as tweets, volunteer posts, national polls, surveys, and experiments, five studies found that people living in or exposed to more racially diverse neighborhoods are more prosocial. Study 1 found that people living in more racially diverse metropolitan areas were more likely to express prosocial

concepts in their everyday tweets on Twitter. Study 2 found that people living in more racially diverse zip codes were more willing to spontaneously offer their homes or other forms of help to individuals stranded by a bombing. Study 3 found that this relationship generalizes beyond the US—people in more ethnically diverse countries were more likely to report having helped a stranger in the past month. Study 4 provided evidence for the underlying mechanism: people in more racially diverse zip codes were more likely to report having helped a stranger in the past month because they were more likely to identify with all humanity. Finally, Study 5 provided causal evidence for the idea that racial diversity increases prosociality—people who imagined living in a racially diverse neighborhood were more willing to help someone stranded by a bombing than people who imagined living in a racially homogenous neighborhood, in part because they were more likely to identify with all humanity. The findings suggest the possibility that everything else being equal, demographic shifts toward increasing diversity may increase people's prosociality.

Theoretical implications

Extensive research on the benefits of racial diversity has identified a cognitive mechanism—people in more diverse groups think more critically and analytically, which has a host of positive consequences of individual and group decision making and performance (Carter & Phillips, in press; Galinsky et al., 2015). The current research contributes to this literature by identifying a novel social psychological mechanism through which the benefits of diversity can run—broader identity. Further, we documented one consequence of this novel mechanism—greater prosociality. Future research can investigate whether additional non-cognitive consequences of exposure to greater racial diversity that have already been documented, such as more positive intergroup attitudes (Pettigrew & Tropp, 2006), also stem from the broader identity mechanism identified in the current work. More generally, the current research suggests that diversity might have a number of different benefits that run through multiple mechanisms .

Our Study 3 provided a conceptual replication of Putman's (2007) finding, as we found that people in more ethnically diverse countries had lower trust in their neighborhood. Nevertheless, we did not find evidence for a prediction that can be derived from conflict theory (Putnam, 2007), that lower trust and lower social capital in more racially diverse neighborhoods would make people less likely to help each other. The current findings indicate that even if the key findings of conflict theory hold, the range of negative outcomes associated with diversity are unlikely to involve lower prosociality. Future research needs to examine the inter-relationships between outcomes studied by conflict theory researchers, such as trust and social capital, and outcomes studied in the current research, such as prosociality and identification with all humanity.

Our work extends contact theory by arguing that exposure to diversity not just alters intergroup relations but also impacts people's breadth of identity and general prosociality. Notably, Studies 3-4 asked people whether they had helped a complete stranger, who could be either an ingroup or an outgroup member, in the past month. Thus, we can conclude that diversity is associated with greater prosociality without reference to specific targets. Further, we confirm speculations that people in more diverse neighborhoods have broader identities (e.g., Schmid et al., 2013) by showing that people in more diverse neighborhoods are more likely to identify with all humanity, which has been shown to predict a number of positive outcomes (McFarland et al., 2012). Thus, the beneficial effects of intergroup contact appear to be broader than currently conceptualized in contact theory and extend well beyond intergroup relations.

The key focus of the current research was on the effects of racial diversity, given that race is the primary dimension of person perception (Cloutier et al., 2013; Ito & Urland, 2003). Nevertheless, our conceptual arguments can be applied to other forms of diversity. Therefore, in our studies, we assessed whether neighborhood diversity on other important dimensions, such as gender, socioeconomic status, religion, and political party preference, have similar effects as racial diversity. We found that none of these other forms of diversity were consistently associated with prosociality. Of all these variables, gender is most similar to race in that it is easily visible. However, there is likely variance and range restriction on gender diversity, and most neighborhoods probably have about equal numbers of men and women, thereby attenuating any relationship between gender diversity and prosociality. People can probably infer others' socioeconomic status from visible cues to some extent (Bjornsdottir & Rule, in press; Christopher & Schlenker, 2000), although not as easily and accurately as they can infer others' race and gender. However, neighborhoods are likely quite segregated by socioeconomic status because property prices in a neighborhood tend to be spatially correlated (Basu & Thibodeau, 1998), so residents in a neighborhood are likely to be of similar socioeconomic status, again leading to variance and range restriction. Others' religion and political party preference are probably more difficult to infer, and thus have a smaller impact than racial diversity. Future research can examine in more detail why racial diversity is associated with broader identity and prosociality but not these other forms of diversity.

Limitations and future directions

One concern with Studies 1, 2, and 4 is that of self-selection: perhaps more prosocial people select to move in more diverse neighborhoods, and that less prosocial people select to move out of more diverse neighborhoods. However, the Panel Study of Income Dynamics that surveyed over 67,000 individuals between 1977-2005 found that 60% of movers choose to move to neighborhoods that are similar in ethnic composition to their original neighborhood (Crowder, Pais, & South, 2012). Therefore, only a minority of people self-select to move into more or less diverse neighborhoods. Further, self-

selection is unlikely to apply to Study 3, which measured nation-level diversity, or Study 5, which is an experiment.

Although a majority of our studies were conducted in the US, Study 3 analyzed data from over 120 countries and found that people in more diverse countries were more likely to have helped a stranger in the past month. Although this study provides support for the idea that the hypothesized relationship between diversity and helping holds beyond the US, it did not specifically examine neighborhood-level diversity. Instead, we assumed that people in more diverse countries are more likely to live in more diverse neighborhoods. However, it is possible that in some countries, national-level racial diversity does not translate to neighborhood-level diversity, as neighborhoods can be highly segregated. Thus, future research needs to examine whether people in more diverse neighborhoods are more prosocial using neighborhood-level analyses conducted in non-Western countries.

Our final experimental study demonstrated that exposure to members of other racial groups is the key feature of diverse communities that leads people to have broader identities and to be more prosocial. Future research can test this idea in the field, and also assess whether exposure to or contact with people from other groups mediates the effect of neighborhood diversity on identification and prosociality. Further, future research can test the causal effect of diversity in the field, such as whether moving people from a less diverse to a more diverse neighborhood would increase their level of prosociality. If the findings hold, policymakers can explicitly encourage more neighborhood diversity. One prominent example of nationally enforced neighborhood diversity is Singapore's racial quotas in public housing (Sim, Yu & Han, 2003).

People's willingness to help unrelated others in times of need is a defining feature that transforms a group into a community. One question left open by the current set of studies is whether neighborhood diversity would differentially impact people's tendency to help ingroup versus outgroup members. We examined people's willingness to help others irrespective of the other person's race. Although the self-reported measures of helping in Studies 3 and 4 could primarily reflect help offered to ingroup members, in Studies 2 and 5 with the bombing scenario, people who reported offering help to individuals stranded by the bombing would not know in advance whether those accepting their help would be ingroup or outgroup members. Therefore, the findings suggest that diversity increases generalized prosociality.

Finally, all our statistical analyses assumed that race is a categorical variable. We made this assumption because all available sources of data on race and ethnicity treat these variables as discrete categories. Nevertheless, although race is a social category in the eyes of perceivers (Ito & Urland, 2003), it is not a scientific category (Feldman, 2010). Instead, genes and physical features associated with race vary continuously, not categorically, across contiguous human populations. Thus, biologically, race is defined by a gradual continuum (Feldman, 2010). Nevertheless, to

the extent the government and the people of a country define race in terms of categories, these categories become “real” psychologically and have important consequences for individuals and society (Moya & Markus, 2010).

Conclusion

A debate has raged on in the social sciences on the positive versus negative effects of racial diversity on society. Much of the research on the interpersonal consequences of racial diversity has argued that diversity has negative effects, such as lowering people’s trust in others. This view stands in contrast with an idea that ancient seers in the East proposed to minimize conflict: fostering a feeling that the whole world is but one family (Thakar, 1990). The present research suggests that exposure to diversity does indeed help one see the world as a family and thus makes people more prosocial.

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Figure 1. Flowchart illustrating the procedure for coding volunteers' zipcode from the local newspaper's volunteer page

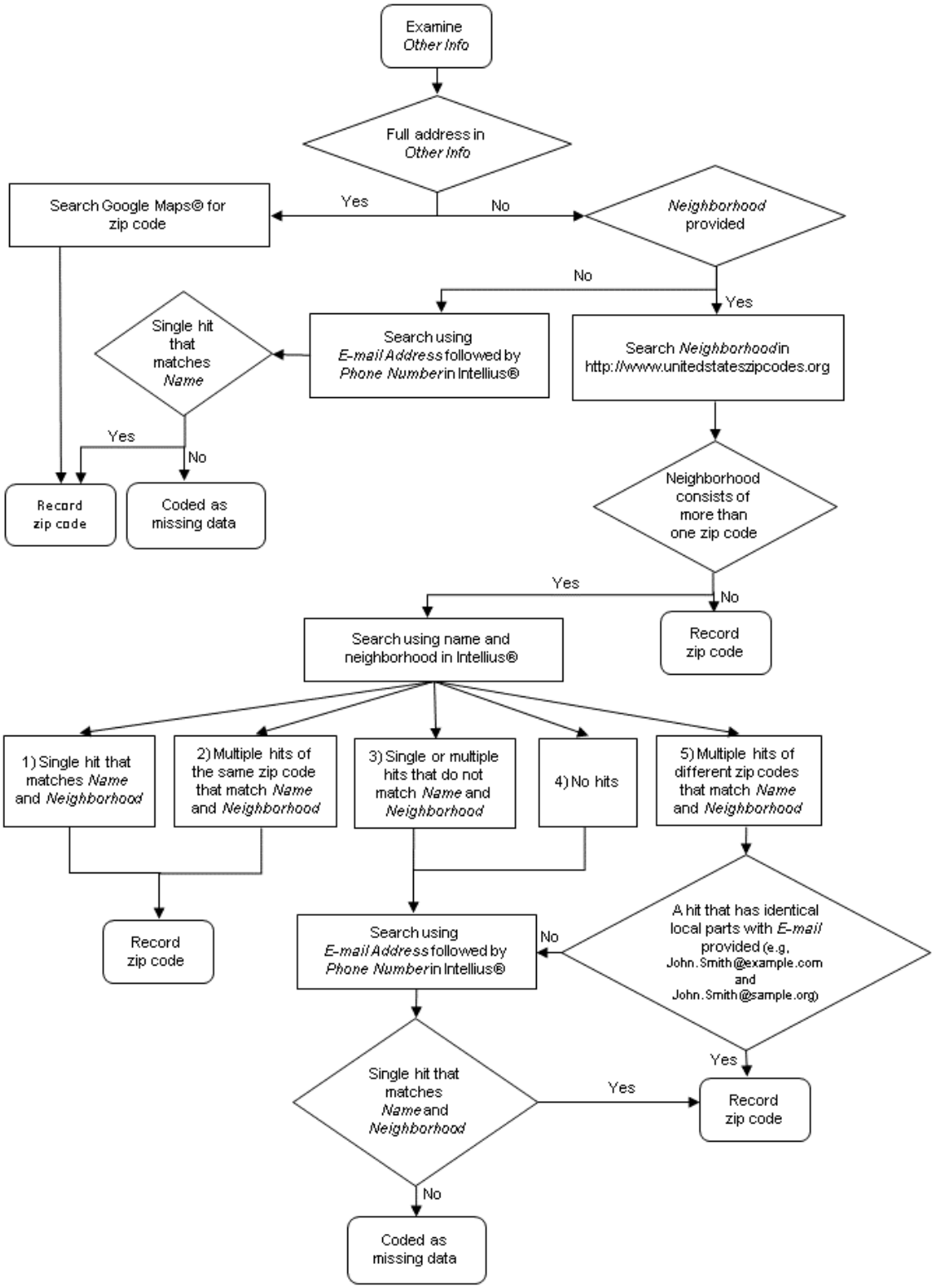
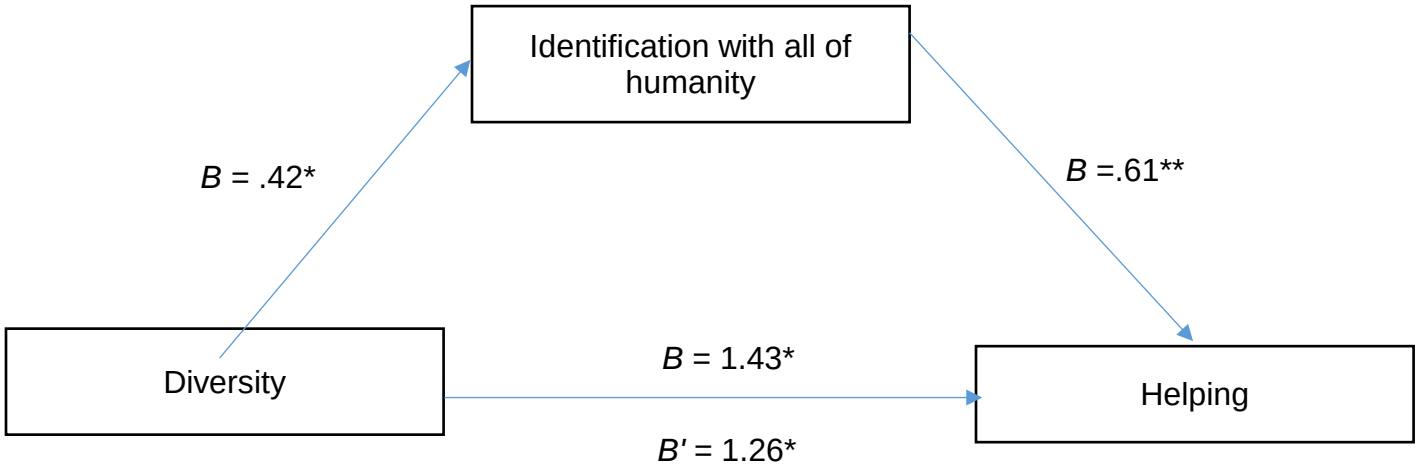
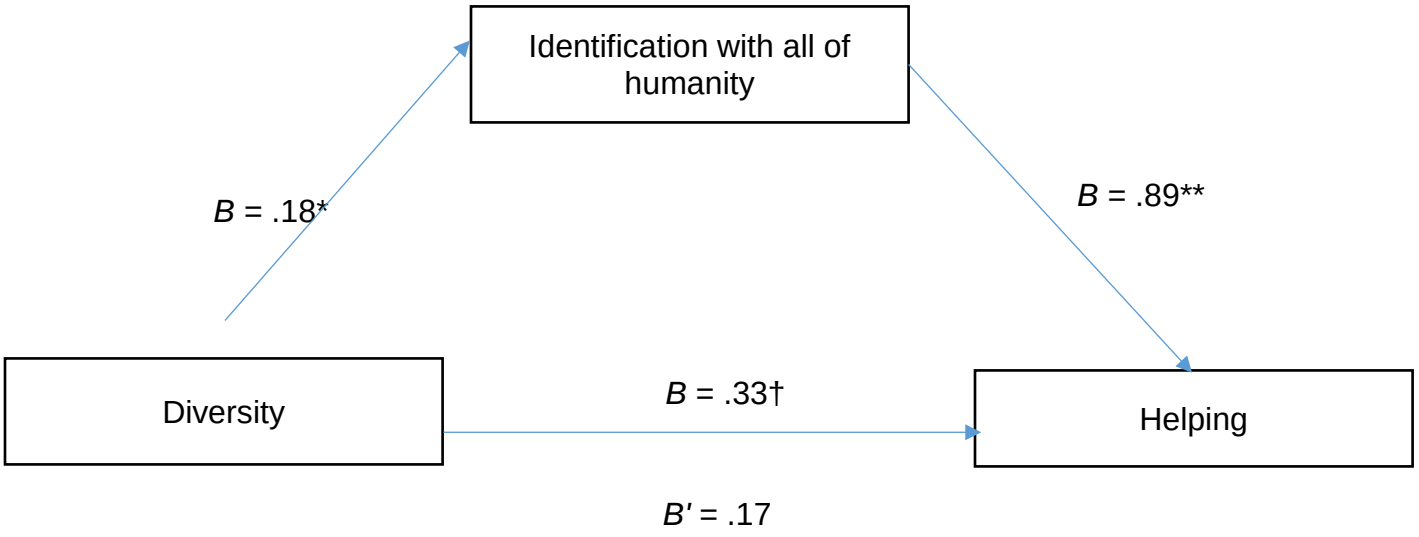


Figure 2. Illustration of the mediation model identified in Study 4.



Note. † $p < .10$, * $p < .05$, and ** $p < .01$ (two-tailed).

Figure 3. Illustration of the mediation model identified in Study 5.



Note. † $p < .10$, * $p < .05$, and ** $p < .01$ (two-tailed).

Table 1. Results of logistic regression with mention of prosocial concepts in tweet as dependent measure (Study 1).

Variables	*B*	*β*	*Odds Ratio*	*SE*	*z*	*p*	95% CI
Constant	-2.43**			.0025	-1185.40	.00	[-2.44,-2.43]
Control Variables							
Median Household Income	-3.23E-06**	-.17	0.99	2.42E-07	-13.30	.00	[-3.70E-06, -2.75E-06]
Population Density	2.74E-06	.037	1.00	1.81E-06	1.50	.13	[-8.07E-07, 6.28E-06]
Metropolitan Area	2.16E-05	.0094	1.00	5.02E-05	0.40	.67	[-7.68E-05, 1.20E-04]
Gender Diversity	0.55**	.035	1.73	.0022	491.50	.00	[.54, 56]
SES Diversity	0.053**	.032	1.054	.0020	26.60	.00	[.050, .057]
Religious Diversity	-0.15**	-0.020	0.86	.0023	-64.50	.00	[-0.15, -0.14]
Political Diversity	-0.27**	-0.058	0.76	0.0020	-135.10	.00	[-0.27, -0.26]
Predictor Variable							
Racial diversity	.062**	.064	1.06	.0020	31.60	.00	[.058, .066]

Note. † $p < .10$, * $p < .05$, and ** $p < .01$ (two-tailed). N = 61,399,135.

Table 2. Means, standard deviation, and correlations among variables (Study 2).

	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Helping	0.08	0.70	-								
2. Household Income Median	73276.53	26447.62	0.25**								
3. Population density	2596.69	5634.96	0.19**	-0.18**							
4. Distance from bomb	55.12	27.72	-0.18**	-0.32**	-0.43**						
5. Internet Penetration	0.87	0.04	0.09*	0.14**	0.14**	-0.47**					
6. Gender diversity	0.94	0.10	-0.11**	0.03	0.01	-0.05	-0.03				
7. Socioeconomic status diversity	0.50	0.23	0.02	0.57**	0.01	-0.34**	0.20**	0.12**			
8. Religious diversity	0.49	0.04	0.03	0.13**	0.17**	-0.36**	-0.06†	-0.04	0.08*		
9. Political diversity	0.49	0.04	-0.09*	0.17**	-0.55**	0.25**	0.04	0.01	-0.01	-0.09*	
10. Racial diversity	0.17	0.17	0.17**	-0.23**	0.52**	-0.37**	0.02	-0.02	-0.08*	0.26**	-0.37**

Note. † $p < .10$, * $p < .05$, and ** $p < .01$ (two-tailed). $N = 744$.

Table 3. Results of Tobit regression with proportion of households who offered help as dependent measure (Study 2).

Variables	B	*β*	SE	t	p	95% CI
Constant	-1.55**		.12	-12.44	0.000	[-1.79, -1.30]
Control Variables						
Household Income Median	.000022**	.38**	2.74E-06	7.91	0.000	[.000016, .000027]
Population density	.000034**	.13**	0.000011	3.03	0.000	[.000012, .000056]
Distance from bomb	-.026**	-.48**	0.0043	-6.07	0.000	[-.035, -.018]
Internet Penetration	-0.072	-.0021	2.04	-0.04	0.972	[-4.07, 3.93]
Gender diversity	-0.21	-.014	0.63	-0.34	0.736	[-1.44, 1.02]
Socioeconomic status diversity	-0.98**	-.15**	0.33	-3.02	0.003	[-1.61, -.34]
Religious diversity	-4.05†	-.093†	2.34	-1.73	0.084	[-8.64, .54]
Political diversity	1.95	.046	1.77	1.10	0.271	[-1.52, 5.42]
Predictor Variable						
Racial diversity	1.73**	.19**	.44	3.97	0.000	[.88, 2.59]

Note. † $p < .10$, * $p < .05$, and ** $p < .01$ (two-tailed). Control variables were mean-centered. $N = 744$ (523 left-censored and 221 uncensored).

Table 4. Means, standard deviation, and correlations among variables (Study 3).

	Mean	SD	(1)	(2)	(3)	(4)	(5)
1. Helping	45.37	13.67	-				
2. Gross national income per capita purchasing power parity	16439.98	18121.78	0.09				
3. Urban population percentage	0.57	0.23	-0.02	0.68**			
4. Gender diversity	0.97	0.07	-0.05	-0.57**	-0.27**		
5. Religious diversity	0.32	0.21	-0.09	0.10	-0.06	-0.01	
6. Racial diversity	0.39	0.26	0.18*	-0.05	-0.17†	-0.10	0.13

Note. † $p < .10$, * $p < .05$, and ** $p < .01$ (two-tailed). $N = 128$.

Table 5. Results of regression with proportion of people who helped a stranger in the past month as the dependent variable (Study 3).

	Helped a stranger					
Variables	B	*β*	SE	t	p	95% CI
Constant	41.34**		2.17	19.05	0.000	[37.05, 45.64]
Control Variables						
Gross national income per capita purchasing power parity	.00021†	.27†	.00011	1.87	0.063	[-.000012, .00042]
Urban Population Percentage	-9.60	-.16	7.59	-1.27	0.208	[-24.63, 5.42]
Gender Diversity	17.47	.08	23.01	0.76	0.449	[-28.08, 63.02]
Religious Diversity	-10.16†	-.15†	5.95	-1.71	0.090	[-21.94, 1.62]
Predictor Variable						
Ethnic diversity	10.30*	.20*	4.66	2.21	0.029	[1.08, 19.52]

Note. † $p < .10$, * $p < .05$, and ** $p < .01$ (two-tailed). Control variables were mean-centered. $N = 128$.

Table 6. Means, standard deviation, and correlations among variables (Study 4).

	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Helping a stranger	0.70	0.46	-							
2. Identification with all of humanity	2.97	0.77	0.21**							
3. Household Income Median	57565.05	21835.43	-0.00	-0.03						

4. Population density	4657.55	13232.37	-0.03	-0.03	-0.14**					
5. Gender diversity	0.96	0.04	-0.05	-0.04	0.10*	-0.15**				
6. Socioeconomic status diversity	0.42	0.22	-0.01	-0.01	0.65**	0.02	0.05			
7. Religious diversity	0.49	0.05	-0.05	-0.00	0.11*	0.23**	-0.03	0.19**		
8. Political diversity	0.47	0.07	-0.02	0.01	0.05	-0.43**	0.08†	-0.09†	-0.13**	
9. Racial diversity	0.33	0.19	0.08†	0.08†	-0.07†	0.29**	0.03	0.03	0.27**	-0.13**

Note. † $p < .10$, * $p < .05$, and ** $p < .01$ (two-tailed). $N = 517$.

Table 7. Results of logistic regression with having helped a stranger as the dependent measure (Study 4).

	Helped a stranger					
Variables	B	Odds Ratio	SE	z	p	95% CI
Constant	.37†	1.45	.21	1.80	0.073	[-.03, .78]
Control Variables						
Household income median	2.33E-06	1.00	6.10E-06	0.38	0.703	[-9.62E-06, .00001]
Population density	-.00001	1.00	8.51E-06	-1.31	0.189	[-.00003, 5.49E-06]
Gender diversity	-3.78	.02	2.86	-1.32	0.186	[-9.38, 1.82]
Socioeconomic status diversity	-.16	.85	0.60	-0.26	0.791	[-1.33, 1.01]
Religious diversity	-3.49	.03	2.31	-1.51	0.130	[-8.01, 1.03]
Political diversity	-1.47	.23	1.74	-0.85	0.396	[-4.88, 1.93]
Predictor Variable						
Racial diversity	1.43*	4.16*	.58	2.45	0.014	[.29, 2.56]

Note. † $p < .10$, * $p < .05$, and ** $p < .01$ (two-tailed). Control variables were mean-centered. $N = 517$.

Table 8. Results of regression with identification with all humanity as the dependent measure (Study 4).

	Identification with all humanity					
Variables	B	*β*	SE	t	p	95% CI
Constant	2.86**		.07	38.17	0.000	[2.68, 2.97]

Control Variables						
Household income median	-9.84E-07	-.03	6.31E-06	-0.47	0.640	[-5.12E-06, 3.15E-96]
Population density	-4.20E-06	-.07	3.02E-06	-1.39	0.165	[-.00001, 1.74E-06]
Gender diversity	-.84	.05	.79	-1.06	0.290	[-2.40, .72]
Socioeconomic status diversity	.03	.01	0.21	0.12	0.901	[-.38, .43]
Religious diversity	-.23	-.02	.72	-0.32	0.749	[-1.64, 1.18]
Political diversity	-.07	-.01	.57	-0.12	0.908	[-1.19, 1.06]
Predictor Variable						
Racial diversity	.42*	.10*	.20	2.15	0.032	[.04, .81]

Note. † $p < .10$, * $p < .05$, and ** $p < .01$ (two-tailed). Control variables were mean-centered. $N = 517$.

Table 9. Results of logistic regression with having helped a stranger in the past month as the dependent measure (Study 4).

	Helped a stranger					
Variables	B	Odds Ratio	SE	z	p	95% CI
Constant	-1.35**	0.26**	.43	-3.14	0.002	[-2.19, -.51]
Control Variables						
Household income median	3.26E-06	1.00	6.31E-06	0.52	0.605	[-9.10E-06, .000016]
Population density	-9.66E-06	1.00	9.07E-06	-1.06	0.287	[-.000027, 8.12E-06]
Gender diversity	-3.83	.022	3.09	-1.24	0.216	[-9.89, 2.23]
Socioeconomic status diversity	-0.22	.80	0.62	-0.36	0.718	[-1.44, .99]
Religious diversity	-3.63	.03	2.38	-1.53	0.127	[-8.30, 1.03]
Political diversity	-1.59	.20	1.81	-0.88	0.380	[-5.13, 1.96]
Mediating Variable						
Identification with all humanity	.61**	1.85	0.13	4.57	0.000	[.35, .88]
Predictor Variable						
Racial diversity	1.26*	3.52	0.59	2.13	0.033	[.099, 2.42]

Note. † $p < .10$, * $p < .05$, and ** $p < .01$ (two-tailed). Control variables were mean-centered. $N = 517$.

Table 10. Results of regression with willingness to help as the dependent measure (Study 5).

Variables	Willingness to help a stranger								
	Model 1			Model 2			Model 3		
	B (SE)	*β*	95% CI	B (SE)	*β*	95% CI	B (SE)	*β*	95% CI
Constant	5.01 (.12)		[4.78, 5.24]	2.38 (.31)		[1.78, 2.98]	2.34 (.31)		[1.73, 2.94]
Mediating Variable									
Identification with all humanity				.90** (.10)	0.48**	[.71, 1.09]	.89** (.10)	0.47**	[.70, 1.08]
Predictor Variable									
Ethnic diversity	.33† (.17)	.11†	[-.00076, .65]				.17 (.15)	0.06	[-.12, .46]

Note. † $p < .10$, * $p < .05$, and ** $p < .01$ (two-tailed). Standard errors are in parentheses. Control variables were mean-centered. $N = 302$.