



Structuring local environments to avoid racial diversity: Anxiety drives Whites' geographical and institutional self-segregation preferences[☆]

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ABSTRACT

The current research explores how local racial diversity affects Whites' efforts to structure their local communities to avoid incidental intergroup contact. In two experimental studies ($N = 509$; Studies 1a-b), we consider Whites' choices to structure a fictional, diverse city and find that Whites choose greater racial segregation around more (vs. less) self-relevant landmarks (e.g., their workplace and children's school). Specifically, the more time they expect to spend at a landmark, the more they concentrate other Whites around that landmark, thereby reducing opportunities for incidental intergroup contact. Whites also structure environments to reduce incidental intergroup contact by instituting organizational policies that disproportionately exclude non-Whites: Two large-scale archival studies (Studies 2a-b) using data from every U.S. tennis ($N = 15,023$) and golf ($N = 10,949$) facility revealed that facilities in more racially diverse communities maintain more exclusionary barriers (e.g., guest policies, monetary fees, dress codes) that shield the patrons of these historically White institutions from incidental intergroup contact. In a final experiment ($N = 307$; Study 3), we find that Whites' anticipated intergroup anxiety is one driver of their choices to structure environments to reduce incidental intergroup contact in more (vs. less) racially diverse communities. Our results suggest that despite increasing racial diversity, White Americans structure local environments to fuel a self-perpetuating cycle of segregation.

1. Introduction

Racial demographics are changing. According to national census projections, the U.S. will become a "minority White" country by 2045 (Frey, 2018). This demographic shift has important implications for race relations, which a majority of Americans believe have worsened in recent years (Horowitz, Brown, & Cox, 2019). Indeed, previous research has found that when Whites learn about or experience changing racial demographics in the U.S., they express more negative attitudes toward diversity, more strongly prefer to interact with other Whites over minorities, experience more group status threat, and display more implicit and explicit racial bias (Burrow, Stanley, Sumner, & Hill, 2014; Craig & Richeson, 2014a, 2014b; Danbold & Huo, 2015; Fossett & Kiecolt, 1989; Knowles & Tropp, 2018; Outten, Schmitt, Miller, & Garcia, 2012; Rae, Newheiser, & Olson, 2015).

We build on this work by considering the effects of local racial diversity on Whites' efforts to structure local environments to reduce incidental intergroup contact, i.e., fleeting exposure to members of

different racial groups that emerge in the context of ordinary activities. Specifically, we investigate how Whites construct and maintain barriers in their local geographical and institutional environments, which in turn reduce their chances for incidental intergroup contact. We find evidence that these choices are motivated, at least in part, by intergroup anxiety which Whites anticipate feeling in response to experiencing more (vs. less) contact with non-Whites. This highlights a troubling dilemma: In seeking to avoid sharing physical spaces and institutional access with non-Whites in the face of increasing local racial diversity, Whites may avoid crucial opportunities for incidental intergroup contact which otherwise may have debiasing effects (Binder et al., 2009; Paluck, Porat, Clark, & Green, 2021). Moreover, racial minorities may have fewer opportunities to access crucial material and social capital. Our results combine to suggest that by engaging in practices and supporting policies that reduce even incidental forms of intergroup contact, Whites fuel a self-perpetuating cycle of segregation and bias. We begin by situating the current manuscript in the broader historical context before subsequently unpacking each element of our proposed model.

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2. A brief history of Whites' efforts to racially self-segregate

Du Bois' (1939, 2017, p. 626) seminal examination of the post-Civil War South emphasized the role of Whiteness as "a sort of public and psychological wage" distinct from one's economic wage, the benefits of which include being "admitted freely with all classes of [W]hite people to public functions, public parks, and the best schools."¹ To continue reaping the benefits of this wage, Whites maintained policies and structures that denied Black people and other racial minorities access to sources of social capital, including home ownership (Rothstein, 2017), education (Hallinan, 2001), and banking (Baradaran, 2019).² Whites protected their privileges by effectively suppressing minority organizations and rights in ways that prohibited racial minorities from gaining access to valuable social and material resources.

The consequences of these historical decisions continue to permeate throughout American society today. For example, housing discrimination perpetrated by Whites—a major contributor to the racial wealth gap (da Costa, 2019)—persists despite heightened legislative efforts aimed at addressing this problem (for reviews, see Hannah-Jones, 2012; Rothstein, 2017). Today, housing discrimination is often precipitated by more "clandestine" acts (Massey, 2015, p. 582; Massey & Denton, 1993; Rugh & Massey, 2014; Blank, Dabady, & Citro, 2004; Charles, 2003; Hartman, & Squires, G. D. (Eds.), 2013; Yinger, 1986), such as largely White-run institutions electing to steer prospective non-White homeowners away from White neighborhoods, construct highways, railroads, and polluting facilities in and through Black communities, denying Black people access to public utilities and parks, or re-zoning properties to prevent Black people from living in the same communities as Whites (Bonam, Bergsieker, & Eberhardt, 2016; Rothstein, 2017). This pattern of segregation and exclusion also extends to other non-White groups, such as Latinos (Gaddis, 2017; Rothstein, 2017; Yinger, 1995) and Asians (Turner, Ross, Bednarz, Herbig, & Lee, 2003).

Indeed, although within-metropolitan racial segregation has decreased since 1990, racial segregation *between* places (e.g., city-suburb or suburb-suburb) has *increased* (Lichter, Parisi, & Taquino, 2015). For instance, progress toward integration in some areas coincides with increasing self-segregation among Whites, who "may be hunkering down in all-white neighborhoods, affluent gated communities, or unincorporated housing developments at the exurban fringe" (Lichter et al., 2015, pg. 846). In particular, the comparatively higher wealth and income enjoyed by Whites (Chetty, Hendren, Jones, & Porter, 2020) "buys residential isolation from minorities in diverse cities and suburbs" (Lichter, Parisi, & Taquino, 2017, pg. 250), such that even in diverse communities, most Whites live on all-White or predominantly White blocks (Hall, Tach, & Lee, 2016). Importantly, race-based residential self-segregation among Whites persists even after disentangling associations between race and social class (Krysan, Couper, Farley, & Forman, 2009). Consistent with these patterns, three quarters of Whites report not having any non-White friends (Ingraham, 2014).

Collectively, such behaviors contribute to what Weyeneth (2005, p. 11) calls "the architecture of racial segregation," and highlight "the power of infrastructure itself to segregate" (Badger & Cameron, 2015; Bonam, Taylor, & Yantis, 2017). These trends thus promote a "cycle of

segregation" (Krysan & Crowder, 2017) that persists despite increasing levels of racial diversity at the national level (Enos, 2017). Such forms of structural discrimination directly contribute to the persistence of segregated public schools and the racial achievement gap (Denton, 1995; Hannah-Jones, 2014; Rothstein, 2015; Shedd, 2015) as well as racial gaps in wealth, health, and other life outcomes, reflecting a broader "race discrimination system" that touches nearly every corner of modern society (Reskin, 2012, pg. 17).

3. Structuring environments to reduce incidental intergroup contact

For a variety of reasons, not all Whites live in communities that are geographically isolated from non-Whites, particularly as local diversity increases. When some amount of racial integration is unavoidable, Whites may avoid intergroup contact in other ways: In particular, we focus on practices that promote *institutional* exclusion and segregation. For example, scholars have documented discriminatory practices and outcomes in labor markets (Bertrand & Mullainathan, 2004), the sharing economy (Edelman, Luca, & Svirsky, 2017), the healthcare system (Smedley, Stith, & Nelson, 2003), and even academia (Milkman, Akinola, & Chugh, 2012). Indeed, despite some civil rights progress over time, discriminatory trends in hiring (Quillian, Pager, Hexel, & Midtbøen, 2017) and promotion decisions (Baldi & McBrier, 1997; Castilla, 2008; Landau, 1995) have largely persisted, creating an organizational landscape that is highly racialized (Ray, 2019). As Merck CEO Kenneth Frazier (one of only four Black CEOs of a Fortune 500 company) recently mentioned in an interview, "Even though we don't have laws that separate people on the basis of race anymore, we still have customs, we still have beliefs, we still have policies and practices that lead to inequities."³ Functionally, the discriminatory practices that perpetuate these inequities may be motivated by Whites' desire to self-segregate, thereby perpetuating racial segregation in elite institutions by preventing "other individuals from gaining access to coveted outcomes by keeping group boundaries closed" (Jetten, & Peters, K. (Eds.), 2019, pg. 278).

This is particularly problematic because Whites serve as the gatekeepers to most elite institutions (e.g., Ivy League universities, private country clubs, etc.) which are "major contributors to the pipeline for influential public and private leadership positions" (Allen & Regassa, 2019, pg. E-3; Byrd, 2017). This view is consistent with the observation that advantaged majority group members inhabit environments that are more likely to be created and maintained by members of the advantaged social group (Aday & Schmader, 2019). Taken together, Whites may structure their environments to reduce incidental intergroup contact both through geographical self-segregation and through institutional segregation which is made possible by Whites' disproportionate access to and control over important institutions within society.

As the United States becomes more racially diverse, identifying the psychological contributors to persistent, structural forms of racism—including understanding Whites' efforts to self-segregate both geographically and institutionally—takes on increased importance. We address this challenge in the present research in two ways. First, and reflecting the historical patterns reviewed above, we suggest that Whites respond to higher levels of local racial diversity by geographically self-segregating when possible, i.e., by structuring cities such that self-relevant spaces are predominantly populated by other Whites. Second, even when opportunities for geographical segregation are limited, we propose that higher levels of local racial diversity prompt Whites to endorse and institute exclusionary institutional practices that reduce the opportunity for incidental intergroup contact. More formally, we propose the following two hypotheses:

Hypothesis 1. White participants will express a preference for less

¹ Bonilla-Silva (1997) further clarifies that the beneficiaries of this wage "... receive greater economic remuneration and access to better occupations and/or prospects in the labor market, [occupy] a primary position in the political system, [are] granted higher social estimation (e.g., [are] viewed as 'smarter' or 'better looking'), often [have] the license to draw physical (segregation) as well as social (racial etiquette) boundaries between itself and other races..." (p. 469).

² This perspective aligns with Ray's (2019, p. 26) view of organizations as racial structures in which "Whiteness is a credential providing access to organizational resources, legitimizing work hierarchies, and expanding White agency."

³ See Lucas (2020): <https://www.cnbc.com/2020/06/01/merck-ceo-george-floyd-could-be-me.html>

local racial diversity (vs. more) in spaces that are more personally relevant (e.g., the participant's home, work, and children's school) compared to spaces that are less personally relevant (e.g., a public library) or when the personal relevance of the space is unknown.

Hypothesis 2. Institutions that are disproportionately controlled by Whites in more (versus less) racially diverse communities will maintain more exclusionary policies that serve to insulate Whites from incidental contact with racial outgroup members.

4. Intergroup anxiety is one driver of whites' structural preferences

Why might Whites structure environments to reduce opportunities for incidental intergroup contact? Different drivers have been identified across the social sciences, including realistic group competition (e.g., Bobo, 1983; Putnam, 2007), symbolic (e.g., Stephan et al., 2002) and status threats (e.g., Craig & Richeson, 2014a, 2014b), racial animus (Dovidio, Gaertner, Kawakami, & Hodson, 2002; Vorauer, Hunter, Main, & Roy, 2000), supremacy beliefs and social dominance (e.g., Sidanius & Pratto, 1999), in-group favoritism (e.g., DiTomaso, 2013, 2015), and even pluralistic ignorance (Granovetter & Soong, 1988). It is likely that each of these contributes to Whites' structural decisions.

Importantly, many of these explanations psychologically involve a sense of "threat," which itself should heighten intergroup anxiety, or the anxiety that people experience when anticipating or engaging in intergroup interactions (Stephan, 2014; Stephan & Stephan, 1985). For instance, intergroup anxiety is positively correlated with physiological threat (Page-Gould, Mendoza-Denton, & Tropp, 2008), negative stereotypes (Aberson & Haag, 2007; Stephan et al., 2002), and outgroup friendship avoidance (Barlow, Louis, & Hewstone, 2009). Explicit racist beliefs also correlate with intergroup anxiety: those higher in animus often experience more anxiety in intergroup interactions (Dovidio et al., 2002; Vorauer, Hunter, Main, & Roy, 2000). In fact, Barlow, Sibley, and Hornsey (2012) argue that "[intergroup anxiety] is a necessary ingredient in creating majority group prejudice" (p. 169; emphasis in original).

Overall, then, intergroup anxiety is likely to be one mechanism (of many) linking local racial diversity and exclusionary attitudes and behaviors. In the current work, we focus on measuring intergroup anxiety as one proximal mechanism that might spur Whites' choices to structure environments in a way that prevents incidental intergroup contact.⁴

Hypothesis 3. Intergroup anxiety will mediate the effect of local racial diversity on Whites' preference to structure their environments to reduce incidental intergroup contact.

5. Whites' structural preferences result in less incidental intergroup contact

Our predictions are particularly relevant given the increasing numbers of non-Whites in American society. According to intergroup contact theory, "as actual diversity in meaningful local environments increases, so too should positive contact experiences," which in turn can have debiasing effects (Craig, Rucker, & Richeson, 2018, pg. 190). For instance, a meta-analysis of studies revealed a negative relationship between intergroup contact and prejudice (Pearson's $r = -0.21$; Pettigrew & Tropp, 2006; see also Allport, 1954; Islam & Hewstone, 1993; Paolini, Hewstone, Cairns, & Voci, 2004; Voci & Hewstone, 2003). Thus, ideally, greater racial diversity—which offers more opportunities for intergroup contact—would improve intergroup attitudes. Local racial diversity in particular offers the potential for incidental intergroup contact, which may be an important first step to reducing bias among Whites. That is, even though most Whites do not have meaningful and deep personal relationships with outgroup

members (Ingraham, 2014), Whites may nonetheless accumulate a critical mass of benign intergroup interactions that, over time, may function to attenuate negative intergroup attitudes and stereotypes (MacInnis & Page-Gould, 2015; see also Blascovich et al., 2002; Page-Gould et al., 2008). Thus, positive interactions, however fleeting, can create a virtuous cycle of increasing intergroup contact.

Past work has provided evidence in support of this view. For instance, Schindler and Westcott (2017) found that, during World War II, incidental intergroup contact between African American soldiers in the U.K. and the local population reduced anti-minority prejudice among locals. Indeed, even modern-day residents of communities in which more (vs. fewer) African American soldiers were stationed during WWII continue to express less implicit and explicit racial prejudice. Likewise, a recent study of Catholics and Protestants in Belfast, Ireland, found that those who had more positive intergroup contact experiences in the past were more likely to visit public spaces in areas dominated by outgroup members (Dixon et al., 2020). Additionally, Laurence, Schmid, Rae, and Hewstone (2019) found that communities that are racially diverse and *segregated* exhibited elevated prejudice, while communities that are racially diverse and *integrated* exhibited stable, or somewhat improving, intergroup relations. The negative effect within segregated communities was driven by both lower positive intergroup contact and higher perceived threat (Laurence et al., 2019; see also Albrecht, Ghidoni, Cettolin, & Suetens, 2020; Rocha & Espino, 2009; Zingher & Steen Thomas, 2014). Taken together, these studies combine to suggest that the benefits of incidental intergroup contact are both direct and indirect and can go a long way in encouraging "members of advantaged racial groups to become psychologically invested in the perspectives, experiences, and welfare of members of disadvantaged racial groups" (Tropp & Barlow, 2018, pg. 194; see also Christ et al., 2014; Kauff, Green, Schmid, Hewstone, & Christ, 2016).

Unfortunately, our predictions suggest that merely living in a racially diverse community may not lead to incidental intergroup contact, and thus may be insufficient to improve Whites' racial attitudes. As Al Ramiah and Hewstone (2013, pg. 534) point out, "[d]iversity without contact may well result in negative outcomes" (see also Stolle, Soroka, & Johnston, 2008). Indeed, our predictions suggest that Whites may instead structure their environments so as to *avoid* crucial opportunities for intergroup contact which, over time, could contribute to improved intergroup attitudes. For these reasons, Whites' preferences and support for policies that structure incidental intergroup contact in racially diverse communities are especially important to study and can contribute to a better understanding of how micro-level attitudes and actions (e.g., racial animus and intergroup anxiety) connect to and shape macro-level structures (e.g., economic, legal, and educational systems; Coleman, 1994).

6. Overview of studies

We test our predictions across five studies using a mix of experimental, archival, and survey data. In Studies 1a and 1b (pre-registered), we demonstrate that even in highly racially diverse local environments, Whites exhibit a preference to racially self-segregate when making decisions about the structure of a city. In Studies 2a and 2b, we explore Whites' decisions to institute organizational policies that disproportionately exclude non-Whites, thereby reducing opportunities for incidental intergroup contact. Specifically, we use data from every tennis and golf facility in the United States to examine how the gatekeepers of historically White institutions restrict access in more versus less racially diverse communities by maintaining private (vs. public) access, higher monetary barriers, and stricter dress codes. In Study 3 (pre-registered), we experimentally manipulate the racial composition of a fictitious city, and find that Whites who imagined living in a more (versus less) racially diverse city again endorse more exclusionary policies in their institutions

⁴ In the General Discussion, we review this mechanism alongside potential additional mechanisms.

Table 1
Summary of studies in current research.

Study/sample	Key Finding
Study 1a: Exploratory correlational study with 203 White participants recruited via MTurk	Within locally diverse cities, Whites prefer to geographically segregate in personally-relevant spaces (vs. less personally-relevant spaces), keeping these spaces less racially diverse.
Study 1b: Pre-registered experimental study with 306 White participants recruited via MTurk	
Study 2a: Data from every U.S. tennis facility ($N = 15,023$)	As local racial diversity increases, elite White institutions erect more exclusionary barriers.
Study 2b: Data from every U.S. golf facility ($N = 10,949$)	
Study 3: Pre-registered experimental study with 307 White participants recruited via MTurk	

and report elevated stress, effects which are statistically mediated by feelings of intergroup anxiety. In all of our studies, we report all measures, manipulations, and exclusions. Table 1 provides a summary of studies.⁵

Overall, we document when and why Whites structure their environments to reduce incidental intergroup contact using multiple experiments and large-scale datasets. Our findings highlight the ways Whites actively self-segregate in an increasingly diverse society, offering insights into how “durable inequality” (Tilly, 1998) may be perpetuated.

7. Study 1a: Whites prefer personally relevant spaces be occupied by other Whites

In Study 1a, we developed a novel paradigm to test our first hypothesis by asking White participants to imagine living in a new city and assessing the extent to which they indicated a preference for having other Whites live geographically closer to the areas of the city in which they indicated they would spend more (vs. less) time. This paradigm allowed us to explore Whites’ preferences for structuring a racially diverse space, in a controlled experimental setting, thus complementing the sociological work reviewed above. In this way, we could assess the extent to which participants were willing to create opportunities for incidental intergroup contact.

7.1. Method

7.1.1. Sample

Two hundred and three White individuals participated via Amazon’s Mechanical Turk in exchange for \$0.40. We excluded thirty-three participants who failed an attention check question, resulting in a final sample of one hundred and seventy ($M_{age} = 37.32$, $SD_{age} = 10.92$, 44% female). This sample size allowed us to achieve 80% power to detect a small correlational effect ($r = 0.21$) effect size (at $\alpha = 0.05$).

7.1.2. Scenario

We asked participants to imagine living in a new city and informed them that they would have an opportunity to customize different aspects of the city layout based on their personal preferences. Then, we presented participants with information about their new city including the average age of residents (36.2 years), the gender breakdown of residents (50.2% female, 49.8% male), the racial breakdown of residents (35% White, 31% Black, 24% Hispanic, 6% Asian, and 4% Other), the percent of residents with a BA degree or higher (33.7%), and eight different city landmarks that we described as relevant to their life in the city including: Your Home, Your Work, Country Club, Your Children’s School, Shopping Mall, Community Park, Public Library, and Bank. Although we chose not to specify certain city-level or group-specific status indicators (e.g., income), we note that White Americans have been shown to exhibit strong race-status associations (RSAs; Dupree,

Torrez, Obioha, & Fiske, 2021) which may have influenced participants’ perceptions in our experimental studies.

7.1.3. Measures

We asked participants to rank order the eight locations “based on how much time you and your family would likely spend at each location.” On the next screen, participants viewed a map of the city made up of 100 individual squares arranged in a 10×10 grid with the eight landmarks displayed in different locations on the map (see Fig. 1) and read, “First, you will decide where different people will live in the city. White people represent 35% of the city’s population. Indicate where these people will live in the city by clicking on exactly 35 different squares” (for a similar approach see Krysan, Carter, & Van Londen, 2017).⁶ We programmed this question using the Hot Spot question type in Qualtrics and included 100 equally-sized clickable regions. After making their selections, participants completed an attention check question and were told the study was over.

We predicted that White participants would assign more White residents to the squares immediately surrounding the landmarks at which they anticipated spending more (vs. less) time. In other words, we predicted that a negative correlation would emerge between participants’ ranking of the landmarks (lower values indicate more anticipated time spent there) and the number of squares participants assigned to White residents immediately surrounding the landmarks. The city grid paradigm we created for this study (and Study 1b) thus allowed us to assess an important behavioral measure related to intergroup attitudes.

7.2. Results

To test our hypothesis, we first defined a 3×3 grid for each of the eight city landmarks within the larger 100×100 square map. Each 3×3 grid included the focal square (i.e., the square occupied by the landmark) and the eight squares immediately bordering that focal square. For example, the 3×3 grid around “Your Home” in Fig. 1 included the first three squares in each of the first three rows of the map. Importantly, the 3×3 grids surrounding the eight landmarks did not overlap at all. Then, we counted the number of squares in each 3×3 grid that participants assigned to White residents. Thus, for each landmark, participants could have assigned White residents to between 0 and 9 squares.

On average, participants indicated that they would spend the most time at home ($M_{rank} = 1.78$, $SD_{rank} = 1.73$), followed by work ($M_{rank} = 3.26$, $SD_{rank} = 1.88$), their children’s school ($M_{rank} = 4.16$, $SD_{rank} = 1.92$), the community park ($M_{rank} = 4.57$, $SD_{rank} = 1.84$), the shopping mall ($M_{rank} =$

⁵ Data, code, and study materials for Studies 1a, 1b, and 3 are available on our OSF project page here: https://osf.io/564bc/?view_only=7a171a6dd2d34e95b93c2e15523220d1

⁶ To account for the possibility that participants may naturally attend to some parts of the map more than others, half of the participants saw the landmarks arranged as they are in Figure 1. The other half of participants saw a version of the map in which each location was replaced by the location in parentheses: Your Home (Bank), Your Work (Library), Your Children’s School (Shopping Mall), Community Park (Country Club), Country Club (Community Park), Shopping Mall (Your Children’s School), Library (Your Work), and Bank (Your Home). The reported results hold when controlling for the version of the map participants saw.

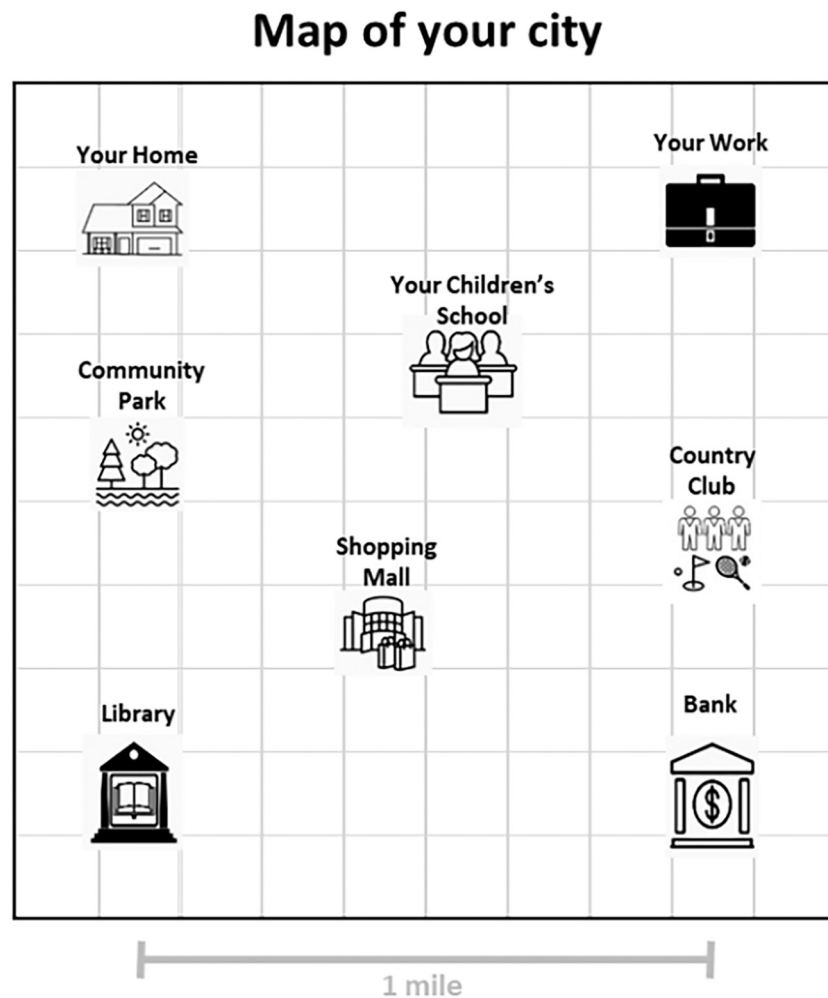


Fig. 1. Map of the Hypothetical City that Participants Saw (Study 1a).

5.16, $SD_{rank} = 1.84$), the library ($M_{rank} = 5.22$, $SD_{rank} = 1.86$), the country club ($M_{rank} = 5.90$, $SD_{rank} = 2.01$), and the bank ($M_{rank} = 5.95$, $SD_{rank} = 1.91$). These results are reported in the top panel of Fig. 2.

Next, we assessed the number of squares in each 3×3 grid that participants assigned to White residents (out of 9 possible squares for the 3×3 grid surrounding each landmark). On average, participants assigned the most White residents to the areas surrounding their home ($M_{squares} = 4.48$, $SD_{squares} = 2.96$), followed by their children's school ($M_{squares} = 3.56$, $SD_{squares} = 2.18$), their work ($M_{squares} = 3.44$, $SD_{squares} = 2.73$), the community park ($M_{squares} = 3.14$, $SD_{squares} = 2.25$), the shopping mall ($M_{squares} = 2.91$, $SD_{squares} = 1.95$), the country club ($M_{squares} = 2.83$, $SD_{squares} = 2.24$), the bank ($M_{squares} = 2.58$, $SD_{squares} = 2.13$), and the library ($M_{squares} = 2.52$, $SD_{squares} = 2.23$). These results are reported in the bottom panel of Fig. 2.

To test our hypothesis, we conducted multilevel analysis using Stata's "xtmixed" command to account for the fact that the ratings of the eight landmarks were nested within participants. As predicted, there was a statistically significant and negative relationship between participants' rankings of their anticipated time spent at each landmark and the number of squares they assigned to White residents in the areas immediately surrounding the landmarks, $b = -0.217$, $SE = 0.028$, $z = -7.73$, $p < 0.001$. That is, the more time participants anticipated spending at a landmark, the greater the number of squares they assigned to White residents in the areas immediately surrounding that landmark.

7.3. Discussion

Study 1a revealed that, in a racially diverse city, White participants indicated a preference to distribute a fixed number of White residents closer to areas of the city that they indicated they would spend more (vs. less) time. Using a simple and novel experimental paradigm to assess Whites' preferences for structuring a racially diverse space, Study 1a provides initial support for Hypothesis 1 that Whites prefer to avoid members of racial outgroups in favor of surrounding themselves with similar others when their local environment is highly racially diverse. This finding offers preliminary evidence that Whites are likely to geographically construct environments that shield themselves from even incidental intergroup contact. However, these findings are only correlational, and the dependent variable we used is somewhat coarse. We address these two limitations in our next study, which is a pre-registered experiment that leverages a more precise dependent variable.

8. Study 1b: experimental evidence of Whites' preference to self-segregate

Study 1b was a pre-registered experiment (our pre-registration document is available here: <https://aspredicted.org/blind.php?x=6xi2r6>) in which we tested our intergroup avoidance hypothesis (H1) using a similar paradigm to the one used in Study 1a. We asked White participants to imagine living in a new city and assessed their preferred geographical

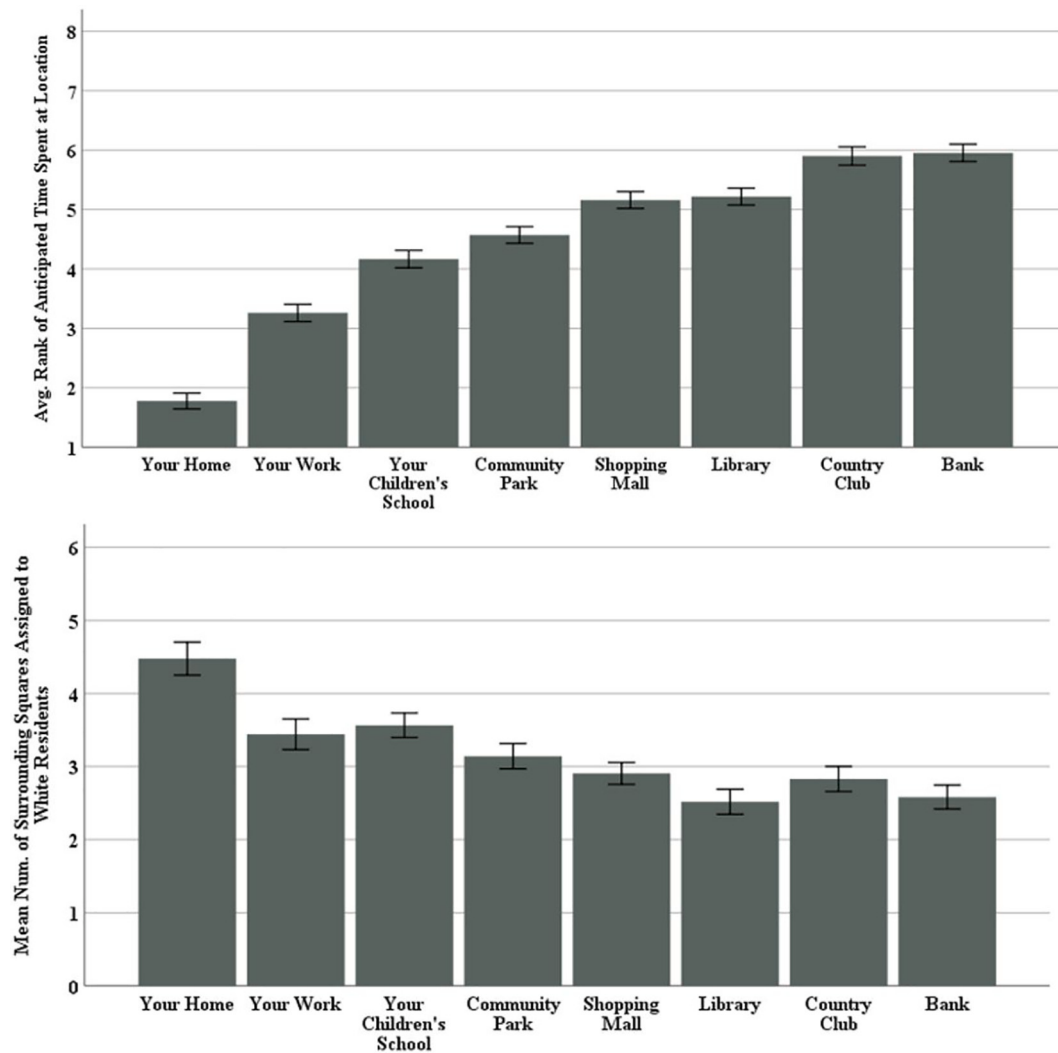


Fig. 2. Average Rank of Anticipated Time by Location (top panel) and Mean Number of Surrounding Squares Assigned to White Residents (bottom panel). *Note.* The top panel shows the average rank of anticipated time spent at location. Lower numbers signify a “higher” rank (i.e., where participants anticipated spending more time). The bottom panel shows the mean number of squares assigned to white residents. Higher numbers signify a greater number of White residents. Error bars reflect ± 1 SE.

distribution of residents by race based on their knowledge (or lack of knowledge) of where they lived in the hypothetical city.

8.1. Method

8.1.1. Sample

Three hundred and six White individuals participated via Amazon’s Mechanical Turk in exchange for \$0.40. We excluded thirty-eight participants who failed an attention check question as outlined in our pre-registration document, resulting in a final sample of two hundred and sixty-eight ($M_{\text{age}} = 37.70$, $SD_{\text{age}} = 12.45$, 39% female). Participants were randomly assigned to one of three conditions in a between-subjects design, such that each of our focal comparisons would have 80% power to detect a $d = 0.40$ effect size ($\alpha = 0.05$; two-tailed). Although our final sample after applying our exclusion criteria was lower than our pre-registered sample size ($N = 300$), we note that post hoc power analyses revealed that our two main analyses reported below achieved sufficiently high power (0.86 and 0.85 based on two separate focused t -tests, difference between two groups).

8.1.2. Manipulation

As in Study 1a, we asked participants to imagine living in a new city and informed them they would have an opportunity to customize different aspects of the city based on their personal preferences. Then, participants read the same city information as in Study 1a (i.e., average age of residents, gender breakdown, percent with a BA degree or higher, the racial breakdown of the city, and a description of the same eight city landmarks). Below this information was a map of the city made up of 100 individual squares arranged in a 10×10 grid.

In the *home-location-known* condition, the only landmark depicted on the map was the participant’s home. In the *library-location-known* condition, the only landmark depicted on the map was the public library. In the *no-locations-known* condition, no landmarks were depicted on the map. As described in our pre-registration document, we counter-balanced the location of the focal square (i.e., where the participant’s home, the library, or no information was provided) to account for the possibility that participants may naturally attend to some parts of the map more than others. In half of the cases, the focal square was located two squares down and two squares to the right from the top left corner of the grid. In the other half of the cases, the focal square was located two

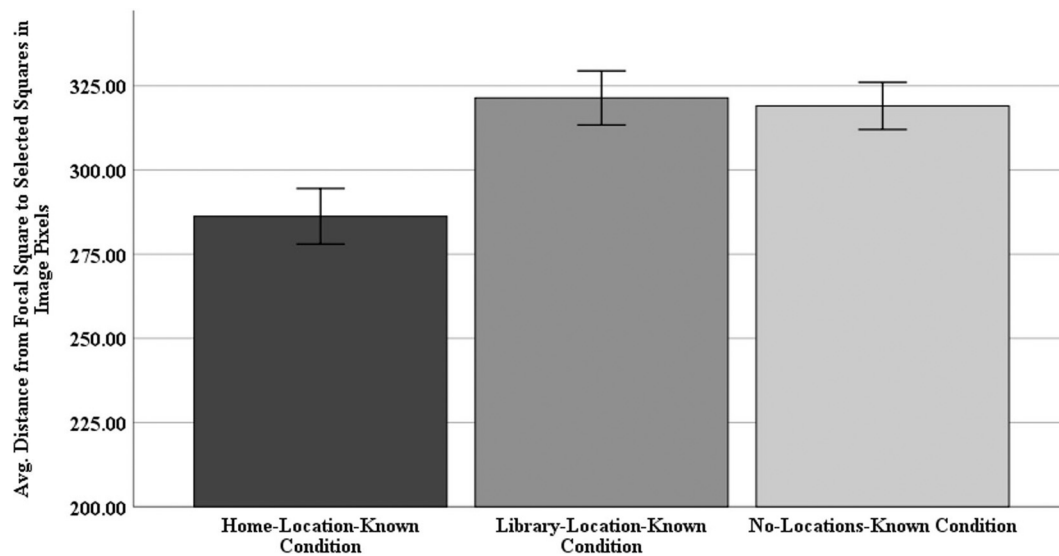


Fig. 3. Differences in Average Distance by Condition in Study 1b.

Note. Participants in the *home-location-known* condition assigned White residents to live geographically closer to the focal location in comparison to participants in the *library-location-known* or *no-locations-known* conditions. Error bars reflect ± 1 SE.

squares up and two squares to the left from the bottom right corner of the grid. The focal square location was pre-determined in this way due to the construction of our dependent variable which we describe below. Participants in all three conditions then read, “Now, you will add more information to the map based on your preferences” and were instructed to “Continue to the next screen to begin customizing your city.”

8.1.3. Dependent Variable

On the following screen, participants were shown the same map and read, “First, you will decide where different people will live in the city. White people represent 35% of the city’s population. Indicate where these people will live in the city by clicking on exactly 35 different squares.” After making their selections, participants completed an attention check question and were told the study was over.

We predicted that when the focal location on the map depicted the participants’ home (in the *home-location-known* condition) versus a less personally relevant landmark (in the *library-location-known* condition) or no landmark at all (in the *no-locations-known* condition), they would assign the city’s White residents (described as 35% of the city’s population) to live geographically closer to the focal location. By choosing to assign White residents to parts of the city closer to (vs. farther from) the focal location when their home location was known (versus unknown in the other two conditions), White participants would reveal a preference to structure their environment to reduce incidental intergroup contact because participants were told that the remaining 65% of the city’s population was comprised of non-White individuals.

We followed our pre-registered analysis plan by calculating the average distance (in image pixels) of the 35 selected residential regions from the focal square. Specifically, we calculated the distances from the center of the focal square to the centers of each of the 35 selected residential regions on the map using the computer program ImageJ (Schneider, Rasband, & Eliceiri, 2012) and then averaged those values. Lower averaged values reflect participants’ preference for White residents to live closer to (vs. farther from) the focal square.⁷

⁷ For reference, the total distance in image pixels from top left corner to the bottom right corner of the map image is 758 pixels. The smallest possible average distance from the focal square is 153.31 pixels and the largest possible average distance from the focal square is 462.61 pixels.

8.2. Results

Participants assigned White residents to live geographically closer to the focal location when the focal location depicted participants’ own home (*home-location-known* condition, $M = 286.25$, $SD = 78.48$) compared to when the focal location depicted the library (*library-location-known* condition, $M = 321.39$, $SD = 71.82$), $t(168) = -3.03$, $p = 0.003$, $d = 0.47$, or no landmark (*no-locations-known* condition, $M = 319.02$, $SD = 69.34$), $t(186) = -3.04$, $p = 0.003$, $d = 0.44$. Participants in the *library-location-known* condition and the *no-locations-known* condition did not differ in their preferred geographical distribution of White residents, $t(176) = 0.22$, $p = 0.82$, $d = 0.03$ (see Fig. 3).⁸

In an exploratory analysis, we also defined three residential zones of increasing size around the focal square and tested whether participants differed in the number of squares they assigned to White residents within each residential zone based on condition (see Fig. 4). The residential zones built on each other such that Zone 3 (25 squares in total) included all of the squares in Zones 1 and 2. Similarly, Zone 2 (16 squares in total) included all of the squares in Zone 1 (9 squares in total).

When considering only the 9 squares that comprise Zone 1, participants populated more of the residential blocks around the focal location with White residents when the focal location depicted participants’ own home (*home-location-known* condition, $M = 4.43$, $SD = 3.28$) compared to when the focal location depicted the library (*library-location-known* condition, $M = 2.42$, $SD = 2.73$), $t(168) = 4.30$, $p < 0.001$, $d = 0.66$, or no landmark (*no-locations-known* condition, $M = 3.11$, $SD = 2.98$), $t(186) = 2.89$, $p = 0.004$, $d = 0.42$. Participants in the *library-location-known* condition and the *no-locations-known* condition did not differ in the number of residential blocks around the focal location they populated with White residents, $t(176) = -1.59$, $p = 0.11$, $d = 0.24$. We found similar results when considering only the 16 squares that comprise Zone 2 and when considering only the 25

⁸ The standard deviation of distances of the 35 selected residential regions from the focal square was lower in the *home-location-known* condition ($M = 156.77$, $SD = 36.04$) compared to the *library-location-known* condition ($M = 170.08$, $SD = 31.25$), $t(168) = -2.56$, $p = 0.011$, $d = 0.39$, and the *no-locations-known* condition ($M = 170.54$, $SD = 29.14$), $t(186) = -2.89$, $p = 0.004$, $d = 0.42$. Participants in the *library-location-known* condition and the *no-locations-known* condition did not differ with respect to standard deviation, $t(176) = -0.10$, $p = 0.92$, $d = 0.02$.

squares that comprise Zone 3 (see Fig. 5).⁹

8.3. Discussion

The results of Study 1b provide further evidence that—when given the opportunity to do so—Whites prefer to geographically structure their environments in ways that minimize contact with members of racial outgroups. Specifically, when we presented White participants with a map that only included information about the location of their home (compared to a map that only included information about the location of the library or no information at all), they indicated a preference to surround that focal location with more White residents, providing support for Hypothesis 1. These findings suggest that Whites choose to geographically self-segregate when they are afforded the discretion to do so, shielding them from incidental intergroup contact. In the next two studies, we consider how Whites respond when geographical self-segregation is more difficult for Whites to achieve. Specifically, we turn our attention to documenting institutional policies in the real world that facilitate intergroup avoidance among Whites.

9. Studies 2a and 2b: evidence of exclusionary policies within elite White institutions in diverse communities

In Studies 2a-b, we examine whether institutions that have been historically controlled by White people maintain exclusionary barriers that function to exclude members of racial outgroups. We tested this hypothesis in the context of every U.S. tennis and golf facility.

Both tennis and golf are predominantly White institutions that have been plagued by long histories of racism (Newman, 2018; Sandomir, 2008).¹⁰ According to the United States Tennis Association (USTA, 2018), “access to quality courts, equipment and consistent instruction in many diverse neighborhoods is still a challenge.”¹¹ At the professional level, only four of the top one hundred players in the Association of

Tennis Professionals (ATP) were non-White in 2009, and this ratio has not meaningfully changed over the past decade.¹² Similarly, of the roughly 28,000 Professional Golf Association (PGA) club professionals who collectively act as gatekeepers to the sport, only 0.003% (i.e., 85 individuals in total) were Black as of 2011. Importantly, these racial discrepancies have implications that transcend mere leisure, because access to tennis and golf institutions has historically facilitated the development and maintenance of valuable social and professional capital (Ceron-Anaya, 2010; Ridgeway & Fisk, 2012).

Across both studies, we predicted that an increased presence of non-White individuals—operationalized as the degree of racial diversity in the zip code that the tennis/golf club is located—would be associated with more exclusionary practices.

9.1. Methods for Study 2a

9.1.1. Sample

Four different types of tennis courts were represented in our sample which we acquired from www.globaltennisnetwork.com: Club, Private, Public, and School. Given the nature of our hypotheses, we excluded from our analyses all tennis courts associated with schools. We also excluded courts for which there were missing data for our variables of interest, resulting in a final sample of 15,023.

9.1.2. Local racial diversity (independent variable)

To construct our local racial diversity predictor variable, we calculated the estimated percent of the total population in each zip code tabulation area (ZCTA) that was White (not Hispanic or Latino), Black or African American, Hispanic or Latino, Asian, and Other by dividing the estimated number of people in each group by the total estimated population (Branton & Jones, 2005; Weber, Lavine, Huddy, & Federico, 2013) based on 2017 estimates (which is the most recent year for which data are available). We then subtracted the sum of the five squared percentages from one. Higher values indicate more racial diversity (see formula below).

$$Diversity_k = 1 - \sum_{k=1}^n group_k^2$$

9.1.3. Private court (versus public court)

We constructed a binary variable distinguishing private courts, which are only open to select members of the community and are typically maintained by exclusive residential communities or country clubs that do not permit outsider access (coded 1), from public courts (coded 0) which are open to anyone in the community ($M = 0.251$, $SD = 0.433$).¹³

9.1.4. Fee to access court

We assessed a second exclusionary barrier by distinguishing courts that charge an access fee to use them (coded 1) from courts that are free to use (coded 0) ($M = 0.248$, $SD = 0.432$).

9.1.5. Control variables

At the court-level, we controlled for the total number of courts at the facility, the total number of indoor courts at the facility, as well as dummy variables indicating whether or not the court(s) had a hard surface, grass surface, clay surface, carpet surface, outdoor lighting, water fountain, pro shop, bathrooms, and a backboard (used for solo practice). We also controlled for several relevant zip-code-level

⁹ When considering only the 16 squares that comprise Zone 2, participants populated more of the residential blocks around the focal location with White residents when the focal location depicted participants' own home (*home-location-known* condition, $M = 8.20$, $SD = 5.42$) compared to when the focal location depicted the library (*library-location-known* condition, $M = 4.96$, $SD = 4.43$), $t(168) = 4.23$, $p < 0.001$, $d = 0.65$, or no landmark (*no-locations-known* condition, $M = 5.55$, $SD = 4.85$), $t(186) = 3.54$, $p = 0.001$, $d = 0.51$. Participants in the *library-location-known* condition and the *no-locations-known* condition did not differ in the number of residential blocks around the focal location they populated with White residents, $t(176) = -0.84$, $p = 0.40$, $d = 0.13$. When considering only the 25 squares that comprise Zone 3, participants populated more of the residential blocks around the focal location with White residents when the focal location depicted participants' own home (*home-location-known* condition, $M = 11.94$, $SD = 7.52$) compared to when the focal location depicted the library (*library-location-known* condition, $M = 8.11$, $SD = 6.15$), $t(168) = 3.61$, $p < 0.001$, $d = 0.56$, or no landmark (*no-locations-known* condition, $M = 8.39$, $SD = 6.33$), $t(186) = 3.52$, $p = 0.001$, $d = 0.51$. Participants in the *library-location-known* condition and the *no-locations-known* condition did not differ in the number of residential blocks around the focal location they populated with White residents, $t(176) = -0.29$, $p = 0.77$, $d = 0.04$.

¹⁰ In 1975, Clifford Roberts who was the co-founder of Augusta National Golf Club (home to The Masters Tournament) remarked, “As long as I’m alive, golfers will be white, and caddies will be black.” Clifford Roberts died in 1977. Augusta National Golf Club did not approve its first Black member until 1990. Additionally, it took fifteen years after Tiger Woods’ debut on the Professional Golf Association (PGA) tour in 1996 for a second Black player to debut on the tour (Joseph Bramlett in 2011; Denney, 2020; see <https://www.pga.com/story/timeline-of-african-american-achievements-in-golf>). See here for additional demographic statistics for golfers (Pringle, 2014): <https://www.americangolf.com/blog/mulligans/the-demographics-of-golf-inside-the-mind-of-a-golfer/>

¹¹ https://www.usta.com/content/dam/usta/pdfs/usta-aa_toolkit.pdf

¹² See Tangirala (2009): <https://bleacherreport.com/articles/181775-race-and-color-in-tennis-whither-diversity>

¹³ When including “Club” courts in our definition of “Private”, we obtain similar results, ($b = 1.375$, $p < 0.001$). Club courts are typically associated with larger athletic clubs or facilities and may also be considered “private.”

Zone 1	Zone 1	Zone 1	Zone 2	Zone 3					
Zone 1	Focal Square	Zone 1	Zone 2	Zone 3					
Zone 1	Zone 1	Zone 1	Zone 2	Zone 3					
Zone 2	Zone 2	Zone 2	Zone 2	Zone 3					
Zone 3	Zone 3	Zone 3	Zone 3	Zone 3					
					Zone 3	Zone 3	Zone 3	Zone 3	Zone 3
					Zone 3	Zone 2	Zone 2	Zone 2	Zone 2
					Zone 3	Zone 2	Zone 1	Zone 1	Zone 1
					Zone 3	Zone 2	Zone 1	Focal Square	Zone 1
					Zone 3	Zone 2	Zone 1	Zone 1	Zone 1

Fig. 4. Post-hoc Residential Zones Surrounding the Focal Square (Study 1b).

Note. The focal square was in the northwest part of the city for half of the participants and the southeast part of the city for the other half of participants.

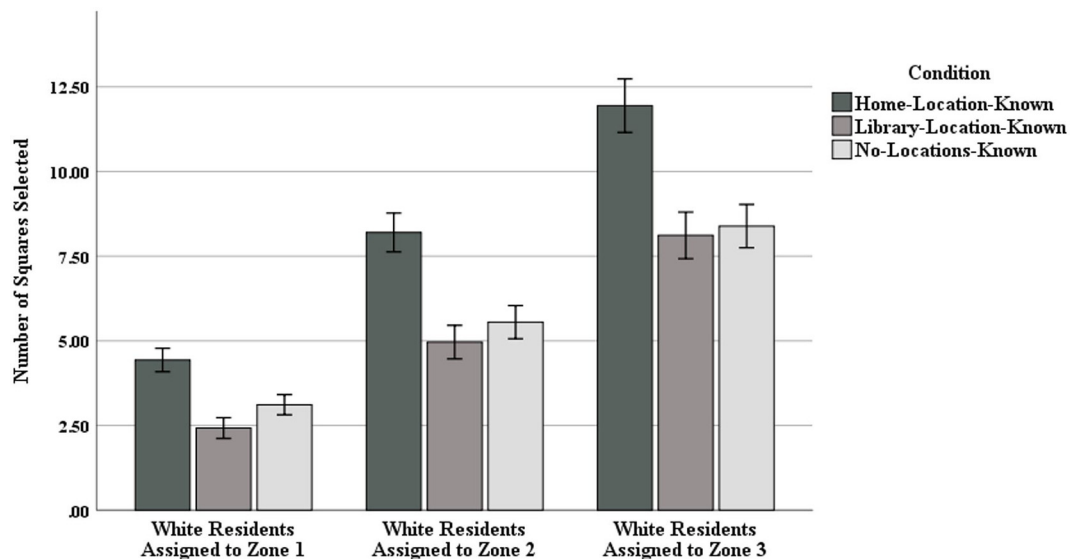


Fig. 5. Residential blocks assigned to White Residents by Zone and Condition (Study 1b).

Note. Participants populated more of the residential blocks around the focal location with White residents when the focal location depicted participants' own home (*home-location-known condition*) compared to when the focal location depicted the library (*library-location-known condition*), or no landmark (*no-locations-known condition*). These results are robust to the "residential zone" operationalization we tested. Error bars reflect ± 1 SE.

variables including median household income (logged), economic inequality (i.e., Gini coefficient), population (logged), population density, educational attainment (percent of residents over 25 with a BA

degree), and 2016 presidential voting results by zip code (higher values indicate larger margin of victory for the Republican candidate; see Katz & Quealy, 2018) (see Table 2).

Table 2
Descriptive Statistics for and Correlations among all Variables used in Study 2a (Tennis Court Data).

Variables	Mean	SD	N	1	2	3	4	5	6	7	8
1 Court Type (1 = Private, 0 = Public)	0.25	0.43	7403								
2 Court Type (1 = Private or Club, 0 = Public)	0.47	0.50	10,544	1.000**							
3 Court Fee (1 = Yes, 0 = No)	0.25	0.43	15,023	0.201**	0.665**						
4 Diversity Index	0.41	0.18	15,023	0.021	−0.031**	−0.013					
5 Median Household Income (logged)	11.13	0.40	15,023	−0.016	0.090**	0.131**	−0.041**				
6 Gini	0.45	0.05	15,023	0.048**	0.127**	0.162**	−0.034**	−0.085**			
7 Population (logged)	10.19	0.70	15,023	−0.072**	−0.101**	−0.070**	0.397**	−0.027**	−0.067**		
8 Population Density	0.00	0.00	15,023	−0.076**	−0.128**	−0.042**	0.363**	0.003	0.071**	0.321**	
9 % Residents W/ BA Degree	0.23	0.09	15,023	0.044**	0.125**	0.169**	−0.058**	0.766**	0.190**	−0.002	0.086**
10 Election Voting Results	−10.59	35.35	15,023	0.077**	0.109**	0.048**	−0.395**	0.013	−0.184**	−0.222**	−0.399**
11 Number of Total Courts	4.78	3.83	15,023	−0.054**	0.219**	0.327**	0.008	0.071**	0.136**	0.017*	0.007
12 Number of Indoor Courts	0.22	1.24	15,023	0.041**	0.177**	0.269**	−0.046**	0.057**	0.054**	−0.012	−0.004
13 Hard Court Surface (1 = Yes, 0 = No)	0.95	0.22	15,023	−0.081**	−0.239**	−0.340**	0.048**	−0.076**	−0.160**	0.087**	0.018*
14 Grass Court Surface (1 = Yes, 0 = No)	0.00	0.06	15,023	0.013	0.047**	0.071**	−0.008	0.017*	0.050**	−0.024**	−0.002
15 Clay Court Surface (1 = Yes, 0 = No)	0.09	0.28	15,023	0.082**	0.327**	0.479**	−0.042**	0.105**	0.186**	−0.090**	−0.026**
16 Carpet Court Surface (1 = Yes, 0 = No)	0.00	0.04	15,023	0.011	0.002	0.022**	−0.026**	−0.011	−0.003	−0.021**	−0.013
17 Lighted Court(s) (1 = Yes, 0 = No)	0.43	0.50	15,023	0.081**	0.173**	0.255**	0.094**	−0.081**	0.032**	0.069**	−0.004
18 Water Fountain(s) (1 = Yes, 0 = No)	0.27	0.44	15,023	−0.069**	0.287**	0.560**	−0.030**	0.036**	0.116**	−0.058**	−0.039**
19 Pro Shop (1 = Yes, 0 = No)	0.03	0.16	15,023	0.043**	0.153**	0.270**	−0.014	0.012	0.047**	−0.007	−0.019*
20 Bathrooms (1 = Yes, 0 = No)	0.27	0.44	15,023	−0.070**	0.285**	0.558**	−0.031**	0.034**	0.112**	−0.056**	−0.040**
21 Backboard(s) (1 = Yes, 0 = No)	0.05	0.23	15,023	−0.050**	−0.052**	−0.005	0.046**	0.011	−0.005	0.026**	0.033**

* $p < 0.05$.

** $p < 0.01$

	9	10	11	12	13	14	15	16	17	18	19	20
	-0.088**	0.003	0.316**	0.011	-0.084**	0.111**	0.026**	0.016	0.256**	0.265**	0.173**	0.074**
	0.115**	-0.021*	-0.136**	0.022*	-0.717**	0.088**	0.136**	0.040**	0.149**	0.960**		
	0.090**	-0.058**	0.347**	0.110**	-0.105**	0.022**	0.022**	0.068**	0.260**	0.071**		
	-0.075**	0.000	-0.003	0.034**	-0.056**	0.088**	0.136**	0.040**	0.256**			
	0.026**	0.053**	0.203**	0.145**	-0.263**	0.022**	0.022**	0.068**	0.149**			
	0.121**	0.009	0.081**	0.181**	-0.119**	0.051**	0.051**	0.039**	0.260**			
	-0.005	0.057**	0.194**	0.282**	-0.261**	0.082**	0.345**	0.054**	0.054**			
	-0.024**	0.062**	0.268**	0.189**	0.011	0.051**	0.027**	0.044**	0.054**			
	0.067**	0.026**	0.198**	0.024**		0.022**						
	0.062**	0.064**	0.117**									
	0.064**	-0.003										
	0.003											

9.2. Methods for Study 2b

9.2.1. Sample

Seven different golf course types were included in our dataset (i.e., military, municipal, private, public, resort, semi-private, or university) which we compiled from two different databases that we purchased (<http://golf-course-database.com> & <http://www.coursedatabase.com/>). We excluded military, resort, semi-private, and university courses from all analyses because they did not allow for a straightforward test of our hypotheses. Our final sample included 10,949 golf courses.

9.2.2. Local Racial Diversity (Independent Variable)

We used the same racial diversity predictor variable that we used in the previous study.

9.2.3. Private Course (versus Public Course)

We constructed a binary variable distinguishing private courses (e.g., country clubs; coded 1) that do not allow non-members to use the course, from public/municipal courses (coded 0) which are open to anyone in the community ($M = 0.367$, $SD = 0.482$).

9.2.4. Green Fee

The second exclusionary barrier that we considered was the green fee charged by public/municipal courses—i.e., the cost to play a round of golf—based on the average of weekend, weekday, and twilight green fees for each course ($M = \$29.985$, $SD = \$20.689$).

9.2.5. Dress Code Strictness

The third exclusionary barrier that we considered was the strictness of the dress code enforced by the golf course. We coded the dress codes according to the following ordinal scale of increasing strictness: 1 = *no dress code*, 2 = *shirt and shoes required*, 3 = *no tank tops or cutoffs allowed*, 4 = *collared shirt required; denim allowed*, and 5 = *collared shirt required; no denim allowed* ($M = 2.723$, $SD = 1.148$).¹⁴ We note that combining “no dress code” and “shirt and shoes required” into the same category does not substantially affect the results.

9.2.6. Control Variables

At the course level, we controlled for the year in which the course opened and par for the course (i.e., the expected number of shots needed to complete a round of golf) as well as whether or not the course had each of the following characteristics (coded 1 = *present*, 0 = *absent*): driving range, putting green, chipping green, practice bunker, motor carts, pull carts, golf club rental, golf club fitting, pro shop, golf lessons available, caddie for hire, restaurant on site, reception hall on site, changing room on site, and lockers on site. We also included a series of dummy variables indicating the course type (i.e., desert, links, mountain, or parkland). Additionally, we controlled for the same zip-code-

¹⁴ Originally, the dataset we purchased included seven dress code categories. We treated “collared shirt, no other requirements” and “collared shirt, no cut-offs, denim OK” as being the same level of strictness (i.e., a code of “4”) because the requirement to wear a collared shirt (i.e., the common feature of these two categories) is a stricter requirement than is the prohibition of cutoff clothing. Similarly, we treated “No denim, collared shirt required” and “No denim, collared shirt and bermuda shorts required” as being the same level of strictness (i.e., a code of “5”) because the additional mention of bermuda shorts in the latter category merely specifies the type of shorts that one is required to wear if one chooses to wear shorts, but does not universally require or prohibit a specific type of clothing. When using seven dress code categories (instead of five), we were unable to achieve proper model fit with the ordered logistic regression procedure. However, the same pattern of results that we report in the main text emerged when running a fixed effects OLS regression and using the seven-category dependent variable. Other modifications to the ordinal scale (e.g., combining “no dress code” and “shirt and shoes required” into the same category) do not substantially affect the results.

level variables that we included in the previous study. See Table 3 for descriptive statistics for and correlations among all variables used in Study 2b.

9.3. Results for Studies 2a and 2b

We aimed to explore the hypothesis that predominantly White-controlled institutions in more versus less racially diverse communities will maintain more exclusionary policies in both data sets. First, in the context of tennis, while controlling for relevant zip-code-level and tennis-court-level variables, we found that tennis courts located in more versus less racially diverse communities were more likely to be private (versus open to the public), $b = 2.159$ (95% CI: 1.541, 2.778), $SE = 0.316$, $p < 0.001$, and more likely to charge a fee for accessing the court, $b = 1.348$ (95% CI: 0.882, 1.814), $SE = 0.238$, $p < 0.001$ (see Table 4). In the SOM document, we also report the results of an econometric matching method, known as Nearest Neighbor matching, as a robustness check to improve causal inference. Using this method allowed us to estimate the average treatment effect (ATE) of local racial diversity on our dependent variables of interest in Studies 2a, 2b, and 4.

Second, we replicated these two effects in the context of golf courses and tested our predictions using a third dependent measure. Specifically, while controlling for relevant zip-code-level and golf-course-level variables, we found that golf courses located in more versus less racially diverse communities were more likely to be private (versus open to the public), $b = 3.225$ (95% CI: 2.453, 3.997), $SE = 0.394$, $p < 0.001$, were more expensive to access based on the green fee charged to players, $b = 13.901$ (95% CI: 10.345, 17.457), $SE = 1.814$, $p < 0.001$, and enforced stricter dress codes, $b = 2.186$ (95% CI: 1.468, 2.904), $SE = 0.366$, $p < 0.001$ (see Table 5).

9.4. Discussion

In Studies 2a-b, we constructed rich datasets from archival information about every tennis and golf facility in the United States. Our findings revealed that in more versus less racially diverse communities, the gatekeepers to these historically White institutions maintain stricter barriers to entry in the form of private membership requirements, higher monetary fees to access the facilities, and stricter dress codes. Collectively, these policies serve to shield Whites from incidental intergroup contact. While we are able to account for potential unobserved heterogeneity using the Nearest Neighbor matching method—as reported in the Supplementary Information—we are unable to conclusively establish that higher levels of local diversity caused gatekeepers to structure their institutional policies to inhibit intergroup contact. To provide causal evidence, we next conducted a pre-registered experimental study, which also provides evidence for one underlying mechanism.

10. Study 3: Whites' preference to structure their environment to reduce incidental intergroup contact is driven by intergroup anxiety

Study 3 was a pre-registered experiment (our pre-registration document is available here: <https://aspredicted.org/blind.php?x=de57ta>) that tested intergroup anxiety as one potential mechanism driving the effect of diversity on Whites' preference to structure their environments to reduce incidental intergroup contact (Hypothesis 3). Prior to running the current version of this study, we ran a pilot experiment using a similar paradigm, which provides converging evidence in support of our hypotheses (see SOM for more details).

10.1. Method

10.1.1. Sample

Three hundred and seven White individuals participated via Amazon's Mechanical Turk in exchange for \$0.40. We excluded twenty-three

Table 3
Descriptive Statistics for and Correlations among All Variables used in Study 2b (Golf Course Data).

Variables	Mean	SD	N	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1. Course Type (1 = Private, 0 = Public)	0.53	0.50	N/A																										
2. Course Fee (\$)	29.69	20.69	5,184																										
3. Dress Code Stringency	3.41	1.40	8,322	.668**	.441**																								
4. Diversity Index	0.32	0.19	10,949	.123**	.123**	.180**																							
5. Median Household Income (logged)	11.05	0.37	10,949	.172**	.233**	.264**	-.025*																						
6. Gini	0.44	0.05	10,949	.258**	.039**	.215**	.174**	.086**	.139**																				
7. Population (logged)	9.70	1.03	10,949	.153**	.063**	.212**	.465**	.086**	.139**	.139**																			
8. Population Density (logged)	10.40	0.85	10,949	.164**	.068**	.212**	.465**	.086**	.139**	.139**	.139**																		
9. % Population White	0.27	0.09	10,949	.258**	.238**	.314**	.083**	.268**	.146**	.202**	.193**																		
10. Election Voting Results	0.07	0.27	10,949	.091**	.057**	.148**	.069**	.064**	.064**	.064**	.064**	.064**																	
11. Par	62.06	16.11	10,949	.184**	.399**	.337**	.070**	.124**	.055**	.163**	.015	.142**	-.062**																
12. Course Age	53.53	29.42	10,949	.223**	.239**	.055**	.043**	.043**	.105**	.170**	.009	.177**	-.013	-.225**															
13. Driving Range (1 = Yes, 0 = No)	0.90	0.30	10,949	.100**	.156**	.183**	.035**	.116**	.042**	.101**	.044**	.136**	-.069**	.207**	-.062**														
14. Putting Green (1 = Yes, 0 = No)	0.97	0.17	10,949	.044**	.077**	.050**	.079**	.079**	.079**	.079**	.079**	.079**	-.074**	.072**	-.044**	.158**													
15. Clubhouse (1 = Yes, 0 = No)	0.97	0.17	10,949	.044**	.077**	.050**	.079**	.079**	.079**	.079**	.079**	.079**	-.074**	.072**	-.044**	.158**	.158**												
16. Changing Rooms (1 = Yes, 0 = No)	0.44	0.50	10,949	.016	.099**	.113**	.043**	.066**	.022**	.112**	.000	.092**	-.017	.185**	-.095**	.093**	.153**	.153**											
17. Motor Cart (1 = Yes, 0 = No)	0.83	0.37	10,949	.028**	.121**	.065**	.073**	.045**	.038**	.005	.044**	.064**	-.004	.204**	-.004	.435**	.086**	.119**	.136**										
18. Pull Cart (1 = Yes, 0 = No)	0.99	0.10	10,949	.015	.055**	.044**	-.003	.011	-.002	-.006	-.021*	.013	.005	.125**	.030**	.084**	.0017	.041**	.058**	.206**									
19. Golf Club Rental (1 = Yes, 0 = No)	0.93	0.26	10,949	.068**	.104**	.042**	.049**	.092**	.014	.097**	.074**	.106**	-.094**	.137**	-.033**	.196**	.603**	.116**	.163**	.298**	.181**								
20. Golf Club Fitting Service (1 = Yes, 0 = No)	0.76	0.43	10,949	.047**	.086**	.038**	-.086**	.043**	-.094**	.009	-.047**	.066**	-.024**	.209**	-.034**	.202**	.305**	.113**	.222**	.596**	.474**								
21. Pro Shop (1 = Yes, 0 = No)	0.84	0.37	10,949	.014	.113**	.090**	-.022**	.075**	-.021*	.051**	.030**	.088**	-.036**	.231**	.014	.240**	.351**	.152**	.272**	.600**	.164**	.488**							
22. Caddy for Hire (1 = Yes, 0 = No)	0.97	0.13	10,949	.013	.062**	.012	.012	.012	.012	.012	.012	.012	.012	.012	.012	.012	.012	.012	.012	.012	.012	.012							
23. Caddy for Hire (1 = Yes, 0 = No)	0.09	0.28	10,949	.004	.018	.024	-.032**	.013	-.026**	.026**	-.038**	-.011	.021*	.085**	.011	.023*	.053**	.364**	.332**	.053**	.024*	.078**	.146**	.124**	.126**				
24. Restaurant (1 = Yes, 0 = No)	0.97	0.18	10,949	.011	.090**	.099**	.057**	.081**	.011	.076**	.066**	.082**	.081**	.103**	-.013	.147**	.604**	.098**	.118**	.108**	.017	.496**	.265**	.290**	.317**	.063**			
25. Reception Hall (1 = Yes, 0 = No)	0.79	0.41	10,949	.115**	.103**	.200**	.096**	.102**	.041**	.142**	.065**	.129**	-.054**	.127**	-.077**	.024*	.273**	.293**	.363**	.130**	.047**	.160**	.086**	-.008	-.020*	.155**	.321**		
26. Changing Rooms (1 = Yes, 0 = No)	0.84	0.36	10,949	.032**	.062**	.061**	-.157**	.012	-.054**	-.015	-.078**	.036**	.006	.173**	.004	.126**	.223**	.061**	.137**	.556**	.211**	.352**	.696**	.578**	.653**	.116**	.312**	-.067**	
27. Lockers (1 = Yes, 0 = No)	0.43	0.50	10,949	.490**	.014	.380**	-.019*	.069**	.120**	.099**	-.005	.152**	-.021*	.240**	.085**	.049**	.107**	.207**	.440**	.212**	.079**	.157**	.329**	.308**	.297**	.333**	.146**	.321**	.307**

* $p < 0.05$.

** $p < 0.01$.

participants who failed an attention check question as outlined in our pre-registration document, resulting in a final sample of two hundred and eighty-four ($M_{age} = 39.39$, $SD_{age} = 11.62$, 43% female). Participants were randomly assigned to one of three conditions in a between-subjects design, such that our focal comparison (i.e., the two high-diversity conditions vs. the low-diversity condition) would have 80% power to detect a $d = 0.40$ effect size ($\alpha = 0.05$; two-tailed). Although our final sample after applying our exclusion criteria was lower than our pre-registered sample size ($N = 300$), we note that post hoc power analyses revealed that our main analyses achieved sufficiently high power for three of the four focused t -tests we report below (0.86, 0.68, 0.92, and 0.80 based on separate focused t -tests, difference between two groups).

10.1.2. Local racial diversity manipulation

Participants were shown a map of a city we created and asked to imagine that they lived in this city. Seven different locations were highlighted on the map that were relevant to participants' imagined lives: Home, Work, Bank, Shopping Mall, Library, Country Club, and School. Furthermore, the map included details about the racial demographics of different parts of the city which we adapted from the Racial Dot Map maintained by the Demographics Research Group (2021; <http://racialdotmap.demographics.coopercenter.org/>).

In the *high-diversity/high-segregation* condition, the map revealed that roughly 50% of residents were Black or Hispanic while the remaining residents were White, and the city was highly segregated by race. In the *high-diversity/low-segregation* condition, the city was similarly diverse, but the racial distribution of the city was highly integrated (vs. segregated). In the *low-diversity/high-segregation* condition, the map revealed that roughly 10% of residents were Black or Hispanic while the remaining residents were White, and the city was highly segregated by race. The racial composition and distribution were the only map details that varied by condition (see Fig. 6).

We predicted that participants in the two high diversity conditions (vs. the low-diversity condition) would report higher levels of anxiety and be more likely to structure their environment to reduce incidental intergroup contact. We report differences between the two high-diversity conditions (coded 1) and the low-diversity condition (coded 0) because we did not expect the potential benefits associated with living in a diverse and integrated (vs. segregated) community to emerge in the context of a scenario in which we asked participants to imagine living in a *new* city.¹⁵ We do, however, report the focused contrasts specified in our pre-registration document in the SOM.

10.1.2.1. Anticipated Intergroup Anxiety (mediator). Prior to viewing the map, participants read the following instructions: "In this study, we will ask you to imagine living your life in a different environment. Please read the material on each screen carefully and really try to imagine what your life would be like if you were living the life that will be described to you." Then, participants advanced to the next screen and read the following: "Imagine that you live in the city depicted below. A number of locations that are relevant to you are depicted on the map below. Take a minute to study the map and really try to visualize what it would be like to live your life in this environment."

After viewing the map, participants read the following question: "To what extent would you feel each of the following ways when living your life in the city depicted above?" and then responded to five items that capture our hypothesized mediator, anticipated intergroup anxiety (i.e., nervous, afraid, scared, jittery, and distressed, $\alpha = 0.95$), nested within

the full 20-item positive and negative affect schedule (PANAS; Watson, Clark, & Tellegen, 1988) to disguise our primary interest in participants' feelings related to anxiety. Since we measured instead of manipulated anxiety and used a relatively non-specific measure of anxiety drawn from a larger scale, we treat our mediation analysis reported below as preliminary and note the need for future research to more precisely identify the various mechanisms that contribute to Whites' preference to structure their local environments in ways that minimize intergroup contact.

Dependent Variable #1 (preference for private country club). Participants then advanced to the next screen where they read the following:

You and your family have a membership at the country club depicted on the map above. Your family enjoys spending time at the country club, using the tennis and golf facilities, and participating in club social events. Think about your experiences at the club and indicate whether you prefer the club to be public (i.e., open to everyone in the surrounding community) or private (i.e., open only to club members).

Participants indicated their preference on a 7-point scale (from 1 = *Strong preference for facilities to be public* (i.e., open to anyone in the surrounding community) to 7 = *Strong preference for facilities to be private* (i.e., only open to members)).

Dependent Variable #2 (preference for private school). Participants subsequently moved to the next screen where they read the following:

Imagine that you have school age children and must decide whether to send them to the public school or the private school marked on the map (which are next door to each other). You may assume that you can afford the cost of the private school tuition.

Participants indicated which school they preferred to send their children to (from 1 = *I strongly prefer to send my children to the public school* to 7 = *I strongly prefer to send my children to the private school*).

Dependent Variable #3 (job commute stress). Participants advanced to the next screen where they read the following description of their job:

Your home and place of work are both along a public bus route, which is depicted by the black line above. Even though you own a car, you have been taking the public bus to work because there is very limited parking where you work.

Importantly, the only difference was that in the two high-diversity conditions, participants saw that they worked in a highly racially diverse part of the city, whereas in the low-diversity condition, participants saw that they worked in a homogenous and White part of the city. Participants indicated how stressful their work commute would be (from 1 = *Not stressful at all* to 7 = *Very stressful*).

Dependent Variable #4 (shopping mall visit frequency). While viewing the map, participants were asked how frequently they would visit the library, do their banking in person, and shop at the shopping mall (from 1 = *Very infrequently* to 7 = *Very frequently*). As described in our pre-registration document, the first two items were included to disguise the purpose of the study and were not relevant to our hypotheses because in the high-diversity/high-segregation and low-diversity/high-segregation conditions these locations were in a similarly White part of the city. However, the racial composition of the area surrounding the shopping mall was highly diverse in the two high-diversity conditions, but was exclusively White in the low-diversity condition. We reverse-coded this item to reflect a preference to avoid shopping at the shopping mall.

Overall, we predicted that participants would report a stronger preference for the country club facilities to be private, report a stronger preference to send their children to the private school,¹⁶ report feeling

¹⁵ We note, however, that we would expect White individuals who *actually* live in a diverse and integrated (vs. segregated) community to have more opportunities for, and eventually more experiences with, intergroup contact, which could have debiasing effects over time. In the current study, responses between the two high-diversity conditions did not differ for any of our mediator or outcome variables (all $ps > 0.30$).

¹⁶ We base this prediction on the fact that private schools in the U.S. often maintain strict admissions and tuition criteria which serve to disproportionately favor the admission of White students over students of color, thus resulting in less diverse student populations than are typically observed in public schools (Miller, 1957).

Table 4

Local racial diversity is associated with more exclusionary policies in tennis (Study 2a).

	DV = Private Court		DV = Fees to Access Court	
	(1 = Yes, 0 = No)		(1 = Yes, 0 = No)	
	Model 1		Model 2	
Diversity Index	2.159***	(0.316)	1.348***	(0.238)
Median Household Income (logged)	−0.821***	(0.211)	0.543***	(0.157)
Gini	1.905	(1.003)	3.692***	(0.774)
Population (logged)	−0.317***	(0.070)	−0.209***	(0.058)
Population Density	−319.212***	(64.860)	−139.581**	(46.131)
% Residents W/ BA Degree	5.881***	(0.922)	2.965***	(0.714)
Election Voting Results	0.008***	(0.002)	0.003*	(0.001)
Number of Total Courts	−0.100***	(0.020)	0.104***	(0.010)
Number of Indoor Courts	0.278***	(0.061)	0.462***	(0.049)
Hard Court Surface (1 = Yes, 0 = No)	−0.536	(0.430)	−0.195	(0.289)
Grass Court Surface (1 = Yes, 0 = No)	0.188	(1.013)	0.436	(0.504)
Clay Court Surface (1 = Yes, 0 = No)	1.000**	(0.369)	3.160***	(0.231)
Carpet Court Surface (1 = Yes, 0 = No)	−0.085	(0.878)	−0.597	(0.827)
Lighted Court(s) (1 = Yes, 0 = No)	0.389***	(0.088)	0.631***	(0.066)
Water Fountain(s) (1 = Yes, 0 = No)	−0.470	(0.278)	1.660***	(0.187)
Pro Shop (1 = Yes, 0 = No)	1.400***	(0.383)	1.595***	(0.367)
Bathrooms (1 = Yes, 0 = No)	−0.376	(0.273)	1.221***	(0.186)
Backboard(s) (1 = Yes, 0 = No)	−0.618**	(0.199)	−1.438***	(0.165)
Constant	8.777***	(2.505)	−10.072***	(1.953)
Observations	7418		15,023	

Models were run using mixed effects logistic regression (melogit) command in Stata with tennis courts nested within zip codes.

* $p \leq 0.05$.** $p \leq 0.01$.*** $p \leq 0.001$.

more stressed about their work commute, and report wanting to visit the shopping mall less frequently in the two high-diversity conditions compared to participants in the low-diversity condition.

Manipulation Check. After completing all of these measures, participants responded to the following two items: “The city I read about earlier was very racially diverse” and “The residents of the city I read about earlier lived in racially segregated areas” (from 1 = strongly disagree to 7 = strongly agree).

10.2. Results

Our manipulations produced the intended effects. Participants in the two high-diversity conditions ($M = 5.37$, $SD = 1.27$) reported the city they read about was more racially diverse than participants in the low-diversity condition ($M = 3.25$, $SD = 1.85$), $t(282) = 11.25$, $p < 0.001$, $d = 1.34$. Additionally, participants in the two high segregation conditions ($M = 5.68$, $SD = 1.46$) reported the city they read about was more racially segregated than participants in the low-segregation condition ($M = 4.26$, $SD = 1.68$), $t(282) = 7.40$, $p < 0.001$, $d = 0.90$.

Next, we examined the effect of condition on anxiety. As predicted, participants in the two high-diversity conditions ($M = 3.14$, $SD = 1.66$) reported higher levels of anxiety than participants in the low-diversity condition ($M = 2.49$, $SD = 1.65$), $t(282) = 3.04$, $p = 0.003$, $d = 0.39$. Then, we tested the effect of condition on each of our four dependent variables which sought to capture preferences for intergroup avoidance and negative attitudes toward intergroup contact. Participants in the two high-diversity conditions ($M = 4.49$, $SD = 1.89$) reported a stronger preference for the country club to be private than participants in the low-diversity condition ($M = 3.88$, $SD = 2.08$), $t(282) = 2.47$, $p = 0.014$, $d = 0.31$. Participants in the two high-diversity conditions ($M = 4.90$, $SD = 1.85$) also reported a stronger preference to send their children to the private school than participants in the low-diversity condition ($M = 4.06$, $SD = 2.05$), $t(282) = 3.44$, $p = 0.001$, $d = 0.43$. Furthermore, participants in the two high-diversity conditions ($M = 3.88$, $SD = 1.57$) reported that their commute to work on the public bus would be more stressful than participants in the low-diversity condition ($M = 3.27$, SD

$= 1.77$), $t(281) = 2.90$, $p = 0.004$, $d = 0.36$. Finally, participants in the two high-diversity conditions ($M = 3.61$, $SD = 1.72$) did not report a significantly stronger preference to avoid shopping at the shopping mall than participants in the low-diversity condition ($M = 3.46$, $SD = 1.64$), $t(282) = 0.67$, $p = 0.51$, $d = 0.09$. Overall, analyses involving three of the four dependent variables provided support for our hypothesis (see Fig. 7).

Next, we tested whether anxiety statistically mediated the effect of condition on each of the three statistically significant relationships we reported previously.¹⁷ As predicted, anxiety significantly mediated the effect of diversity condition (coded 1 for the two high-diversity conditions and 0 for the low-diversity condition) on private country club preference ($CI_{95\%}$, [0.08, 0.44]), private school preference ($CI_{95\%}$, [0.05, 0.28]), and work commute stress ($CI_{95\%}$, [0.10, 0.49]).

To determine if anxiety served as a stronger mediator than negative affect more broadly, we conducted parallel mediation analyses using the *lavaan* package in R using both the scale comprised of the five negative affect items that are specific to anxiety (i.e., nervous, afraid, jittery, and distressed) and the scale comprised of the five negative affect items that are not specific to anxiety (i.e., upset, guilty, hostile, irritable, and ashamed). We then compared the fit of this parallel mediation model with one that constrained both indirect effects to be equal, such that a statistically significant difference in model fit would provide evidence that the indirect effects are different. SEM analyses revealed that for all three dependent variables, the unconstrained model was a significantly better fit (private country club preference: $\chi^2(1) = 5.54$, $p = 0.019$; private school preference: $\chi^2(1) = 5.55$, $p = 0.018$; work commute stress: $\chi^2(1) = 7.26$, $p = 0.007$). That is, for all three dependent variables, the scale comprised of the five anxiety-related items

¹⁷ Even though, we did not find a significant main effect of condition on the shopping mall DV, we report mediation analysis using the shopping mall DV in the SOM. Additionally, we report secondary mediation analyses using each of the four DVs and following the procedures recommended by Hayes and Preacher (2014) for conducting mediation when the IV is a multicategorical variable.

Table 5

Local racial diversity is associated with more exclusionary policies in golf (Study 2b).

	DV = Course Type (1 = Private, 0 = Public)		DV = Green Fee (avg.)		DV = Dress Code Strictness	
	Model 1		Model 2		Model 3	
Diversity Index	3.225***	(0.394)	13.901***	(1.814)	2.186***	(0.366)
Median Household Income (logged)	1.360***	(0.265)	10.523***	(1.616)	1.881***	(0.291)
Gini	13.697***	(1.409)	47.280***	(9.050)	5.047***	(1.363)
Population (logged)	0.327***	(0.067)	−1.971***	(0.360)	0.072	(0.061)
Population Density	−405.137***	(121.401)	135.133	(314.105)	−45.073	(63.995)
% Residents W/ BA Degree	6.578***	(1.111)	17.291**	(6.001)	−1.325	(1.125)
Election Voting Results	0.009***	(0.002)	−0.012	(0.009)	−0.002	(0.002)
Par	0.030***	(0.004)	0.453***	(0.013)	0.037***	(0.003)
Course Age	0.039***	(0.003)	−0.151***	(0.016)	−0.028***	(0.003)
Driving Range (1 = Yes, 0 = No)	2.881***	(0.273)	2.032**	(0.782)	0.567**	(0.212)
Putting Green (1 = Yes, 0 = No)	−1.024*	(0.448)	0.022	(1.586)	0.159	(0.432)
Chipping Green (1 = Yes, 0 = No)	1.109***	(0.179)	2.323*	(0.974)	−0.004	(0.199)
Practice Bunker (1 = Yes, 0 = No)	−3.140***	(0.221)	−1.876	(1.143)	0.589**	(0.221)
Motor Cart (1 = Yes, 0 = No)	−1.963***	(0.254)	−1.633	(1.079)	−0.303	(0.239)
Pull Cart (1 = Yes, 0 = No)	0.434	(0.540)	0.564	(2.507)	1.138	(0.774)
Golf Club Rental (1 = Yes, 0 = No)	−2.042***	(0.292)	−1.103	(1.422)	−0.612	(0.408)
Golf Club Fitting Service (1 = Yes, 0 = No)	−2.549***	(0.327)	1.534	(1.574)	0.244	(0.283)
Pro Shop (1 = Yes, 0 = No)	1.024**	(0.363)	−0.632	(1.714)	0.159	(0.280)
Golf Lessons (1 = Yes, 0 = No)	−0.010	(0.298)	0.683	(1.542)	−0.029	(0.275)
Caddie for Hire (1 = Yes, 0 = No)	−1.567***	(0.198)	−0.225	(1.354)	0.103	(0.245)
Restaurant (1 = Yes, 0 = No)	1.679***	(0.465)	1.558	(1.412)	0.276	(0.372)
Reception Hall (1 = Yes, 0 = No)	−1.913***	(0.216)	2.912***	(0.801)	0.674***	(0.152)
Changing Rooms (1 = Yes, 0 = No)	−1.189***	(0.288)	−0.385	(1.212)	0.885***	(0.247)
Lockers (1 = Yes, 0 = No)	8.062***	(0.375)	−0.884	(1.167)	−0.442*	(0.219)
Grass Type (ref. Desert)						
Links	−0.400	(3.076)	2.123	(10.886)	−4.848	(2.905)
Mountain	0.471	(2.281)	−6.858	(9.905)	0.187	(3.507)
Parkland	−1.228	(1.963)	−5.733	(9.827)	−3.287	(2.889)
Constant	−29.790***	(3.881)	−114.507***	(21.586)		
Observations	10,949		5184		5386	

Model 1 is a mixed effects logistic regression (melogit command in Stata), Model 2 is a mixed effects linear regression (mixed command in Stata), and Model 3 is mixed effects ordinal regressions (meologit command in Stata) with golf courses nested within zip codes.

* $p \leq 0.05$.

** $p \leq 0.01$.

*** $p \leq 0.001$.

(compared to the scale comprised of the five negative affect items that are not specific to anxiety) functioned as a stronger mediator. These additional analyses suggest that our effect travels specifically through anxiety, but not through negative affect more broadly.

10.3. Discussion

White participants who imagined living in a more (vs. less) racially diverse city expressed more anxiety, which drove their preference to structure their environment to reduce incidental intergroup contact. Specifically, Whites' anxiety associated with living in a more (vs. less) racially diverse city drove their preferences for their country club and children's school to be private as well as the amount of stress they anticipated experiencing during their work commute. These findings provide support for [Hypothesis 3](#).

11. General discussion

Across five studies using a mix of experimental, archival, and survey methods, we provide evidence of a cycle of intergroup avoidance that is reflected in Whites' efforts to structure their local environments in ways that reduce incidental intergroup contact: Whites experience more intergroup anxiety in the face of local racial diversity, and as such, work to segregate themselves geographically and institutionally from racial outgroup members. This, in turn, reduces the likelihood of incidental intergroup contact, which has the potential for debiasing effects.

Specifically, in Studies 1a and 1b, we found that when given the opportunity to do so, Whites exhibited a preference to racially self-segregate when making decisions about the racial distribution of

residents in a diverse city even in a controlled experimental setting. In Studies 2a and 2b, we constructed a rich archival dataset using information about every tennis and golf facility in the United States. We found that the gatekeepers of these historically White institutions restrict access in more versus less racially diverse communities by maintaining private (vs. public) access, higher monetary barriers, and stricter dress codes. Finally, Study 3 experimentally manipulated the racial composition of a fictitious city and found that Whites who imagined living in a more versus less racially diverse city more strongly endorsed exclusionary policies in their institutions and anticipated feeling more stressed when confronted with the prospect of navigating through a diverse part of town, effects which were statistically mediated by feelings of intergroup anxiety.

Taken together, the current research offers important insights into how local racial diversity shapes Whites' intergroup avoidance strategies, and ultimately results in Whites structuring communities in ways that reduce incidental intergroup contact and the frequency of potentially debiasing encounters. Moreover, such decisions block critical opportunities (economic, social, etc.) for racial minorities themselves, thus contributing to the persistence of structural racism, even in the face of increasing racial diversity (see also [Kraus & Torrez, 2020](#)).

12. Theoretical contributions

The current work aims to make three main contributions. First, our findings connect Whites' *psychological* reactions to local racial diversity to *structural* outcomes ([Coleman, 1994](#)), revealing a self-perpetuating cycle of intergroup avoidance. Specifically, Whites who are exposed to greater local racial diversity, and the associated opportunities for

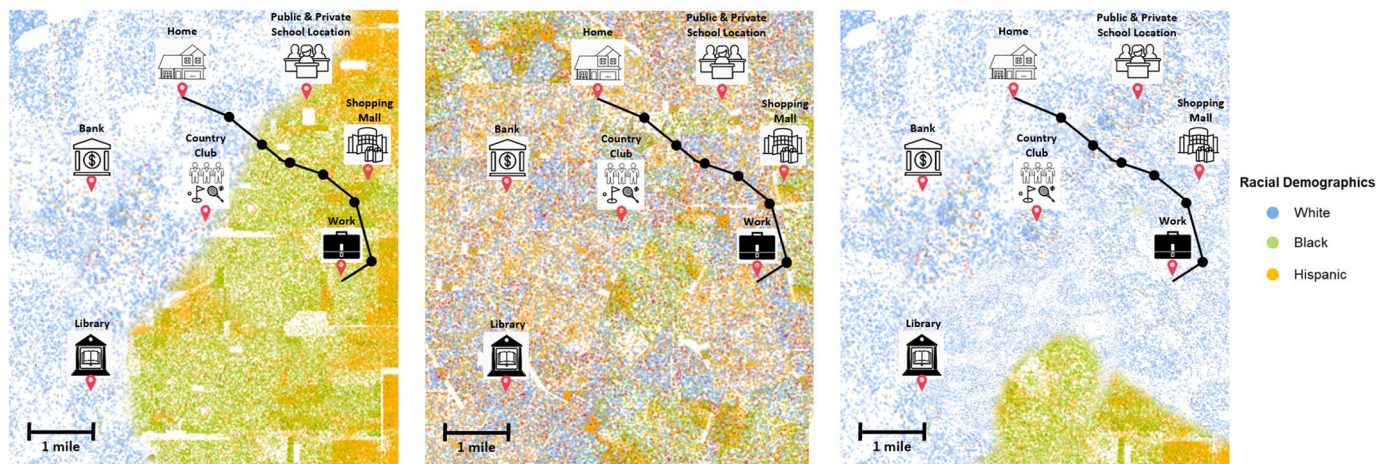


Fig. 6. Experimental Stimuli Used in Study 3.

Note. Experimental stimuli used in the *high-diversity/high-segregation condition* (left panel), the *high-diversity/low-segregation condition* (middle panel), and the *low-diversity/high-segregation condition* (right panel).

incidental intergroup contact, are actually more likely to construct environments that *avoid* such contact. As a result, Whites contribute to “durable inequality” (Tilly, 1998): Whereas growing local racial diversity offers the chance for integration, Whites’ heightened anxiety leads them to maintain structural barriers that foster exclusion. While we focus on anxiety as one mechanism driving our effects, future work might consider additional psychological drivers of such structural decisions (see our discussion in the Future Directions section below). Overall, psychological research has recently embraced the call to consider racism at a more structural, and less individual level (e.g., see Daumeyer, Rucker, & Richeson, 2017; Dupree & Kraus, 2020; Kraus & Torrez, 2020; Onyeador, Hudson, & Lewis Jr., 2021; Roberts, Bareket-Shavit, Dollins, Goldie, & Mortenson, 2020). We hope to contribute to this important endeavor, while recognizing that more work is needed to better understand the various psychological mechanisms that contribute to structural racism.

Second, we integrate experimental approaches with archival analysis of several large-scale datasets to address the question of how local racial diversity influences Whites’ feelings toward and decisions affecting intergroup contact. Specifically, we demonstrate that the gatekeepers of historically White tennis and golf institutions leverage institutional policies to manage their intergroup contact locally. Beyond anecdotal evidence of such exclusionary practices (Newman, 2018; Sandomir, 2008), little if any research has documented these behaviors in tennis and golf clubs on the scale that we do in the current work. Notably, these findings dovetail with other social scientific work documenting similar exclusionary patterns in other institutions, including residential markets, higher education, and the workplace (e.g., Baradaran, 2019; Hannah-Jones, 2012; Rothstein, 2017; Trawalter, Hoffman, & Palmer, 2021). We encourage scholars to bring more such datasets to bear on this important issue, with the goal of illuminating additional connections between individual psychology and structural racism.

Third, rather than asking participants to directly *report* discriminatory attitudes, we capture discriminatory *behaviors* reflected in participants’ choices and real-world institutional policies. This is an important contribution because social psychological work related to “discrimination” and “intergroup conflict” often narrowly focuses on psychological states (i.e., emotion and cognition) instead of the behavioral consequences of discrimination (e.g., Cortina, Kabat-Farr, Leskinen, Huerta, & Magley, 2013; Fiske, 2000). The paradigm we developed in Studies 1a and 1b as well as the exclusionary policies we examined in Studies 2a and 2b allowed us to explore how discrimination manifests in the structural choices individuals support in their local environments, complementing historical and sociological perspectives on the

consequences of discrimination.

13. Practical implications

From a societal standpoint, our findings highlight the need for more efforts to increase *incidental* intergroup contact in parallel with efforts to increase racial diversity. In particular, physical environments have the power to shape everyday decisions and interactions (Bonam et al., 2017; Klotz, Pickering, Schmidt, & Weber, 2019). Thus, policies related to physical space planning, in addition to housing and public transportation, may be important levers that can be used to counter barriers to intergroup contact. For instance, civil engineers and other city architects may design and promote physical spaces that lead to “serendipitous interactions,” a concept that has gained popularity among organizations seeking to increase heterogeneous contact among employees.¹⁸ Equitable access and power to implement such policies is also critical. To the extent Whites have disproportionate control over policies, they are liable to continue to maintain environments that reproduce segregation and inequality. Cross-disciplinary scholarship in particular is likely to be fruitful, combining insights from psychological science with those of community design, policy, and sociology. Just as recent scholarship has called for cooperation across these disciplines to address sustainable design (e.g., Klotz et al., 2019), so too are such teams needed to address equitable design.

Relatedly, our results reinforce the sociological insight that the aggregation of individual decisions can create patterns of segregation at scale. Thus, interventions to shape individual decisions—even those decisions that individuals do not “see” as explicitly racist—may be required. For instance, real estate agents explicitly steer Black and Hispanic home seekers away from White neighborhoods (Charles, 2003). Likewise, in organizational contexts, Whites often make decisions they believe to be non-racialized, such as dress code enforcement or recruiting via internal referral, which can be highly racialized (Ray, 2019). Thus, both training individuals to understand the racialized nature of public space and institutional decisions (Bonam et al., 2017), and crafting policies that consider the aggregate consequences of such approaches rather than intention may be particularly important.

¹⁸ See Henn (2013): <https://www.npr.org/sections/alltechconsidered/2013/03/13/174195695/serendipitous-interaction-key-to-tech-firms-workplace-design>

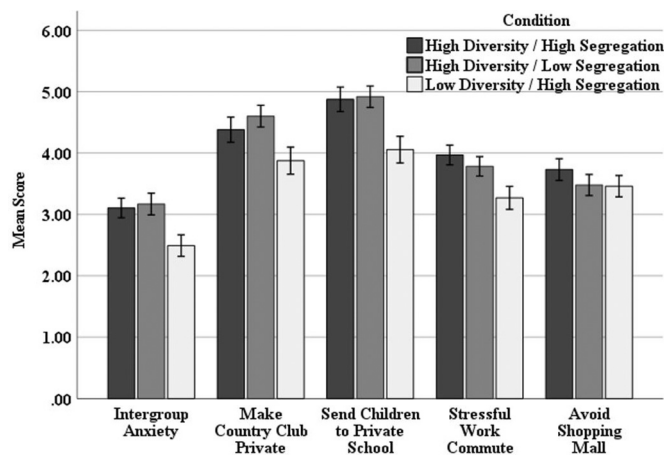


Fig. 7. Mean Differences on the Mediator and Dependent Variables in Study 3. Note. Error bars reflect ± 1 SE.

14. Limitations and future directions

We acknowledge several limitations of the current research. In particular, several of our studies are correlational, describing reality without establishing causality. For instance, since Studies 2a and 2b represent cross-sectional snapshots of data from every golf and tennis facility in the U.S., we are unable to gauge *when* the restrictive policies we documented were actually implemented. It is possible that some of the policies were implemented when local racial diversity was either higher or lower than the 2017 diversity values on which we performed our analyses. We attempt to mitigate these concerns by presenting a series of robustness checks, including a Nearest Neighbor matching analysis (in Studies 2a and 2b; reported in the SOM), and by assessing causal links in more tightly controlled experimental settings (in Studies 1b and 3), which heighten confidence in the reported results.

Second, we focus on (anticipated) intergroup anxiety as one marker of threat that serves as a proximal mechanism driving our effects. However, and as previous work has documented, many different *forms* of threat may drive Whites' intergroup behavior, including realistic threat, symbolic threat, status threat, prototype threat, social dominance, negative stereotyping, explicit and implicit bias, and others (e.g., Craig & Richeson, 2014a, 2014b; Danbold & Huo, 2015; Sidanius & Pratto, 1999; Stephan et al., 2002). Some scholars have even pointed to in-group favoritism as a driver that is just as powerful as outgroup avoidance (e.g., DiTomaso, 2013; Granovetter & Soong, 1988; see also Brewer, 1999). It is also important to acknowledge the ways in which explicit racial animus and White supremacy beliefs continue to motivate exclusionary behavior. Indeed, many of the same motives described by Du Bois in 1939 remain persistent and powerful today. In short, many mechanisms—some perhaps subtle, but others very much explicit—likely influence Whites' choices to structure their environments in ways that minimize contact with racial minorities. More work is needed to understand the nuances of these different mechanisms and the interventions that may commonly or uniquely affect each one.

Third, the majority of intergroup relations work has sampled from largely WEIRD populations, i.e., Western, educated, industrialized, rich, and democratic (Henrich, Heine, & Norenzayan, 2010; see also Richeson, 2018; Roberts et al., 2020). Thus, future work should strive to identify generalizable as well as context-specific effects in under-represented—i.e., less WEIRD—contexts. We focus exclusively on how U.S.-based Whites structure their local environments, in part because in the U.S. context, Whites' dominant historical position affords them disproportionate power. However, our findings do not speak to how these dynamics may unfold in different racial hierarchies where marginalization in society may take a very different form than it does in the U.S. context.

Finally, more work needs to be done to explain how individual psychology supports (or mitigates) structural racism. For instance, individual choices and preferences may not directly affect policy, and at times may not even be motivated by broader intergroup concerns (e.g., see Jaffé, Rudert, & Greifeneder, 2019). Nevertheless, collectively such individual decisions may lead to the emergence of social environments that *do* impact policy and the broader intergroup landscape (e.g., Phillips & Lowery, 2018). For instance, the structural decisions made by Whites that we document not only affect Whites' chances for incidental intergroup contact, but also minorities' chances, and, in turn, minorities' chances at economic opportunity and equality. Thus, researchers should not only consider majority group members' structural preferences and outcomes, but also minority group members' perceptions. For example, researchers could examine how racial minorities experience Whites' decisions to self-segregate and what implications these experiences may have for minorities' social mobility perceptions or collective actions to improve their standing in society.

15. Conclusion

As the U.S. continues to become more racially diverse, one might expect a subsequent increase in incidental intergroup contact, potentially improving intergroup relations. Instead, we find that local racial diversity prompts Whites to structure their communities in ways that diminish incidental intergroup contact, despite the potential of such contact to instead alleviate Whites' intergroup anxiety. This perspective highlights the troubling, self-perpetuating cycle of Whites' intergroup avoidance that will continue to contribute to durable racial inequality unless individuals and institutions take steps to redress this trend.

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