

Polluting Black Space

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Social psychologists have long demonstrated that people are stereotyped on the basis of race. Researchers have conducted extensive experimental studies on the negative stereotypes associated with Black Americans in particular. Across 4 studies, we demonstrate that the physical spaces associated with Black Americans are also subject to negative racial stereotypes. Such spaces, for example, are perceived as impoverished, crime-ridden, and dirty (Study 1). Moreover, these space-focused stereotypes can powerfully influence how connected people feel to a space (Studies 2a, 2b, and 3), how they evaluate that space (Studies 2a and 2b), and how they protect that space from harm (Study 3). Indeed, processes related to space-focused stereotypes may contribute to social problems across a range of domains—from racial disparities in wealth to the overexposure of Blacks to environmental pollution. Together, the present studies broaden the scope of traditional stereotyping research and highlight promising new directions.

Keywords: stereotyping, discrimination, housing and residential segregation, environmental justice, racial disparities

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We are told about the world before we see it. We imagine most things before we experience them. And those preconceptions [. . .] govern deeply the whole process of perception. They mark out certain objects as familiar or strange, emphasizing the difference, so that the slightly familiar is seen as very familiar, and the somewhat strange as sharply alien. They are aroused by small signs, which may vary from a true index to a vague analogy. Aroused, they flood fresh vision with older images, and project into the world what has been resurrected in memory (Lippmann, 1922, p. 90).

Nearly 100 years ago, Walter Lippmann introduced the term “stereotypes” to the social sciences and forever changed the way scholars

across the globe understand person perception. Lippmann (1922) described person perception as the joint production of the perceiver and the target, the knower and the known. According to this perspective, our view of others cannot provide us with a true index of who they are, only a partial view that is molded to fit what we already imagine them to be. Guided by Lippmann’s insights, social psychologists have investigated how racial stereotypes, in particular, are formed, shared, stored, triggered, and applied. In the United States, for example, the “pictures in our heads” of Black people paint them as hostile, dangerous, criminal, unintelligent, and poor (Devine & Elliot, 1995).

We propose that a complementary (though understudied) set of pictures may also be associated with Black people. These pictures include dilapidated and boarded-up houses, dirty and unkempt yards, and crime-ridden neighborhoods. Just as generalized stereotypes about Black people can influence how people think about particular Black individuals, we propose generalized stereotypes about Black areas can influence how people think about particular locales occupied by Blacks. Once triggered, these *space-focused stereotypes* may in turn lead people to feel less connected to these locales, to evaluate that space less positively, and to protect it less vigorously.

To our knowledge, psychologists have not directly investigated the application of racial stereotypes to spaces. However, examining space-focused stereotypes provides us with a fuller view of how stereotypes operate and highlights the extent to which racial meaning suffuses our social environment. Stereotypes not only operate more often than people may think, but also act on a wider range of targets, encompassing those extending well beyond hu-

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man bodies. Without attending to such stereotypes, our understanding of social perception is, at best, partial.

The Historical Grounding of Race in Space

Race and space are inextricably intertwined. Since its inception almost 250 years ago, the concept of race has resided squarely at the intersection of person and place. Carl Linnaeus, considered the father of taxonomy, drew hard lines through gradual human variations in physical appearance, cultures, and customs across the globe. He used four geographical locales to decide where one race of people ended and another began. Africa, Europe, Asia, and the Americas translated to four groups of people: Afer, Europeus, Asiaticus, and Americanus (Gould, 2006; Markus & Moya, 2010). Thus, from the time race was introduced as a fundamental method for classifying people, certain races have been associated with certain spaces.

This intertwining of race and space continues to occur in modern times. As distinct racial populations have increasingly become dispersed throughout the world, people have constructed locales to maintain and strengthen race as a hierarchical human classification system (Delaney, 2002). Consider, for example, the history of race relations in the U.S.—physical space has been used consistently as a tool to subjugate Black Americans (Delaney, 1998; Lipsitz, 2006; Powell, 2009; Woodward, 2002). Members of this group were confined to separate spaces in all domains of life during the Jim Crow era and *de jure* segregation (O'Brien, 2012; Woodward, 2002). These circumstances helped solidify Black Americans' status as a clearly delineated racial group, inferior and marginalized (Massey & Denton, 1993; Powell, 2009).

Black spaces were not only literally labeled as such during these historical periods, but also underresourced and physically degraded (Massey & Denton, 1993; Powell, 2009; Woodward, 2002). For example, Black schools were poorly constructed and lacked adequate resources for effective teaching and learning (Erickson, 2012; Kluger, 2004; Wade, 1990). Not only were resources diverted away from many Black spaces, but in some cases the land itself was appropriated from Black people through eminent domain policy (Fischel, 2004; Kelly, 2006). During the Great Migration, buses shipped Black people to new jobs and a new way of life—from rural southern areas to increasingly industrial northern cities (Massey & Denton, 1993). In their new homes, however, redlining and steering practices explicitly and intentionally confined Black families to urban neighborhoods that were at best undesirable and at worst toxically hazardous (Commission for Racial Justice, United Church of Christ, 1987; Dedman, 1988; LaCour-Little, 1999). Lingering effects of these practices are still visible today (Bullard, Mohai, Saha, & Wright, 2008; Darling-Hammond, 2004; Logan, 2013; Logan & Stults, 2011; Massey & Denton, 1993; Oliver & Shapiro, 2006).

This legacy of grounding race in space makes it plausible that people have developed a generalized mental image of severely degraded space tied to Black people. This mental image, we predict, consists of distinct (yet related) space-focused racial stereotypes. Our research identifies the specific content of these stereotypes and examines how such stereotypes can operate together to shape space-focused perceptions and judgments downstream.

Space-Focused Stereotypes and Their Downstream Consequences

Social psychology is particularly well positioned to examine this generalized image. A foundational theme in this field is how context shapes human experiences and how humans shape the world around them (Fiske, Kitayama, Markus, & Nisbett, 1998; Plaut, 2010). Though historically the primary focus often has been limited to social context, increasingly researchers are emphasizing the importance of physical context (for reviews see Oishi, 2014; Opatow & Gieseeking, 2011). Some researchers have examined physical context as a cue for normative behavior (Aarts & Dijksterhuis, 2003; Cialdini, Reno, & Kallgren, 1990; Goldstein, Cialdini, & Griskevicius, 2008). Others have demonstrated how belonging cues are embedded in organizational and school settings (Cheryan, Plaut, Davies, & Steele, 2009; Cheryan, Ziegler, Plaut, & Meltzoff, 2014; Murphy & Dweck, 2010; Murphy, Steele, & Gross, 2007). Researchers are also investigating how group, cultural, and individual factors shape the way people perceive, value, and engage with space (Ledgerwood, Liviatan, & Carnevale, 2007; Maddox, Rapp, Brion, & Taylor, 2008; Motyl, Iyer, Oishi, Trawalter, & Nosek, 2014; O'Brien & Wilson, 2011; Trawalter & Hoffman, 2012). Still others emphasize physical context as shaper of person perception (Correll, Wittenbrink, Park, Judd, & Goyle, 2011; Gosling, Ko, Mannarelli, & Morris, 2002; Guinote & Fiske, 2003; Wittenbrink, Judd, & Park, 2001). Wittenbrink, Judd, & Park (2001), for example, found the valence of physical context primes (e.g., a church vs. a street corner) shifts automatic stereotypes and evaluative judgments about Black people. That is, physical space shapes person perception in the moment. We are, however, aware of no research in psychology examining the reverse; how person primes shift perception of physical space. We address this gap here by investigating how the mere presence of Black people can trigger evaluative judgments about Black physical spaces.

Sociologists studying residential segregation have examined enduring associations between Black Americans and the physical spaces they occupy. However, sociologists typically examine how racial stereotypes and attitudes about people can influence neighborhood desirability (see Charles, 2003; Krysan, Farley, & Couper, 2008). The more people endorse negative stereotypes about Blacks, for example, the less willing they are to live in neighborhoods with Black Americans. Rarely have sociologists examined stereotypes about physical spaces (for exceptions see Ellen, 2000; Krysan, Couper, Farley, & Forman, 2009; Swaroop & Krysan, 2011), and still unclear is the direct role, if any, that generalized space-focused stereotypes play in physical space perception.

Social distance theory provides insight into one consequence of space-focused stereotyping. This theory presumes stereotyping pervades social interactions and that negative stereotyping should lead group members to feel distant from one another (Bogardus, 1959; Staats, 1978). In fact, individuals who stereotype a social group more negatively also report greater social distance from that group (Staats, 1978), and heightened stereotyping leads people to sit physically farther from members of the stereotyped group (Macrae, Bodenhausen, Milne, & Jetten, 1994; Madera & Hebl, 2013). Just as negatively stereotyping a social group can lead people to distance themselves from that group, we argue that

negatively stereotyping physical space can lead people to distance themselves from that space. This distancing should manifest as a dampened willingness to connect both psychologically (i.e., valuing the land) and physically (i.e., living in or visiting a given area).

Feeling connected to a physical space and its built environment comes with its own consequences. Well-established literatures on *place identity* and *place attachment* theorize that people who feel connected to a locale (i.e., incorporate it into their personal identity and form an emotional bond with it) are motivated to regard it highly and demonstrate investment in its welfare (for reviews see Lewicka, 2011; Trentelman, 2009). Further, numerous studies have shown a relationship between place attachment and proenvironmental behaviors (e.g., Halpenny, 2010; Zhang, Zhang, Zhang, & Cheng, 2014). We contend that the extent to which people feel distant from or less connected to a space will shape the judgments they make about the space, including evaluations of its quality, investment worthiness, and decisions about the kinds of structures that do or do not belong.

These *space-focused evaluative judgments* are all significant because they work together to shape the quality of our physical environments, which can determine a host of important life outcomes (e.g., health, education; Bell & Rubin, 2007). Moreover, we argue that, when racially driven, such judgments may have implications for place-relevant racial inequalities, such as patterns of residential segregation and environmental pollution exposure. We therefore introduce a model to demonstrate that negative, space-focused stereotypes and the social distancing those stereotypes inspire may contribute to racial disparities, via individuals' judgments about, for example, a home's value or where polluting industrial facilities should be located. Notably, we theorize that thoughts and feelings about the space, not necessarily anti-Black animus directed toward people, will drive these decisions.

The Present Studies

In Study 1, we demonstrate the existence of a tainted and pervasive image of generalized Black space. In Studies 2a, 2b, and 3, we test the space-focused stereotyping model, which posits a causal chain in which this image influences the way people first imagine, then connect with, and ultimately judge or treat target spaces—both in housing and environmental domains (see Figure 1). Participants viewing a house for sale by a Black (vs. White) family (Study 2a) or in a Black (vs. White) neighborhood (Study 2b) imagine the surrounding neighborhood to be of lower quality,

leading them to disconnect from this neighborhood and evaluate the house less positively. In Study 3, participants envision a majority Black neighborhood as more industrial than a majority White neighborhood, leading them to disconnect from the Black neighborhood and be more open to locating a potentially harmful chemical plant in it. Studies 2a, 2b, and 3 show how space-focused stereotypes figuratively pollute the way observers imagine a target area and their judgment about an existing structure in it. Study 3 demonstrates how this presumed figurative pollution leads observers to consider literally polluting Black space.

Study 1: Black Space-Focused Stereotypes

In 1933 Katz and Braly published a landmark study, the first to systematically measure generalized stereotypes about racial groups. Using a checklist procedure, these researchers asked people to list characteristics they associated with a range of racial and national groups. Today, researchers continue to use variations of this paradigm to monitor stability and change in racial stereotype content over time (Bergsieker, Leslie, Constantine, & Fiske, 2012; Devine & Elliot, 1995; Fiske, 1998). Clearly, specifying stereotype content has advanced the study of prejudice, discrimination, and intergroup relations. Here, we use a related paradigm to identify generalized stereotypes about physical spaces and, in so doing, examine a new domain of stereotypes.

Our investigation also expands sociological research on neighborhood stereotyping. Prior work has measured only the extent to which people have a negative image of specific Black neighborhoods (e.g., Chicago's Englewood neighborhood), and has done so only in the context of evaluating residential space (Ellen, 2000; Krysan, 2002; Krysan et al., 2008; Sampson & Raudenbush, 2004). Researchers have inferred the general content of what we term Black "space-focused stereotypes" by showing that residents become concerned about the quality of their neighborhoods, and perceive more disorder, as the Black population increases. Such correlational research records impressions of specific neighborhoods, yet does not identify perceptions of Black areas overall.

Our initial study asked people to list the characteristics associated with Black areas in general and estimate the endorsement of these associations among Americans. This approach allowed us to directly test whether generalized, space-focused stereotypes exist and, if so, how normative they are perceived to be. This method also highlights the potential for space-focused stereotyping pro-

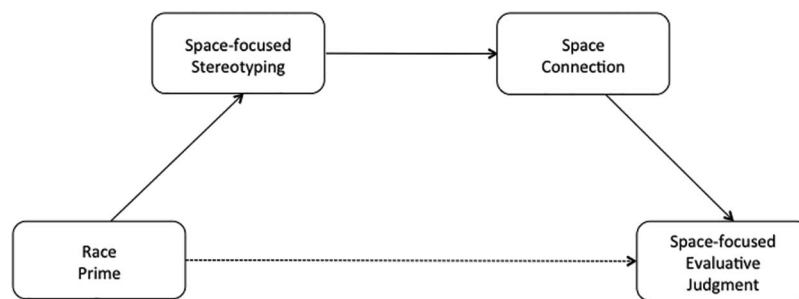


Figure 1. The space-focused stereotyping model depicting downstream consequences of space-focused stereotypes for connection and evaluative judgment following a race prime.

cesses to shape judgments about physical space beyond the residential domain.

Pilot Study

A racially diverse sample of 49 adults completed an online pilot survey through Amazon.com's Mechanical Turk service. Participants generated space characteristics that most Americans would associate with Black people living in the United States; then indicated the valence of each characteristic from -3 (*very negative*) to $+3$ (*very positive*). Participants' mean valence ratings were negative—significantly below 0 ($M = -1.35$, $SD = 1.35$), $t(48) = 6.99$, $p < .001$, $d = 1.00$). The 10 most prevalent categories were: *impoverished*, *crime-ridden*, *ghetto*, *rundown*, *urban*, *dangerous*, *dirty*, *low-income housing*, *failing schools*, and *overpopulated*. This pilot confirmed that people can readily report stereotypes of Black spaces and produced over 30 themes for the coding scheme used in Study 1.

Method

Participants. Initially, 206 adults took part in an online survey through Mechanical Turk. Individuals in the U.S. who had completed at least 95% of previous tasks satisfactorily were eligible to participate. Excluding five participants who lacked U.S. citizenship or a U.S. IP address and three who did not pass any attention checks left a sample of 198: 79 men, 119 women; 151 White, 11 Asian, 18 Black, eight Latino, 10 other/unspecified race ($M_{\text{age}} = 36.3$, $SD = 12.9$, $Mdn_{\text{age}} = 33.0$). A target sample size of 200 participants was set to achieve at least 80% power, assuming large effects (i.e., $d = 1$) and to enable exploratory comparisons between racial groups. Data analysis began after fielding ended.

Procedure and measures. After consenting to complete a brief online survey about physical spaces, participants completed

the following measures in order (each on a separate page) identifying and assessing Black space characteristics.

Participant-generated characteristics: Content, valence, consensus. Participants were asked to describe the areas that most Americans would associate with Black people living in the United States. They were instructed to list characteristics of Black Areas as a whole (as opposed to specific locales) in the 10 textboxes provided. Next, participants rated the valence of each listed characteristic from -3 (*very negative*) to 3 (*very positive*). Finally, participants estimated consensus (i.e., the proportion of Americans who think the characteristic describes Black areas) for each characteristic on an 11-point scale from 0% to 100%.

Researcher-provided characteristics: Consensus. Participants also used the same 11-point scale from 0% to 100% to estimate consensus for seven clearly valenced neighborhood characteristics (four undesirable, three desirable characteristics) provided to participants by the researchers. For the four undesirable, negative characteristics ($\alpha = .75$), we adapted three items from the Multi-City Study of Urban Inequality (MCSUI; Farley, Fielding, & Krysan, 1997), which assesses satisfaction with neighborhood quality along dimensions related to themes identified in the pilot study: *poor neighborhood safety*, *low quality public schools*, and *poor city services* (e.g., street cleaning or garbage collection). One final item, *industrial facilities nearby* (e.g., power plants and incinerators), was added to reflect rising environmental pollution concerns and further probe the “dirty” code from the Study 1 pilot. All three desirable, positive characteristics came from the MCSUI ($\alpha = .89$): *great access to banks or savings and loan institutions*, *housing and property being kept up nicely*, and *great neighborhood shopping* (e.g., grocery and drug stores).

Coding and interrater reliability. We developed a coding scheme based on the pilot study responses (see Table 1 for coding categories and sample responses). Three trained research assistants, blind to hypotheses, independently categorized each characteristic

Table 1
Black Space-Focused Stereotypes: Prevalence, Frequency, Valence, and Consensus of Participant-Generated Characteristics by Category in Study 1

Category	Example responses	%Ps		Valence		Consensus	
		Listing ^a	Freq. ^b	<i>M</i> (<i>SD</i>)	<i>d</i>	<i>M</i> (<i>SD</i>)	<i>d</i>
Impoverished	poverty, poor, welfare, low-income	53%	137	-2.12 (1.05)	-2.01***	71% (17%)	1.22***
Crime-ridden	crime, gangs, drugs, violence	45%	161	-2.78 (.58)	-4.77***	69% (19%)	.97***
Rundown	disrepair, dilapidated, ugly, graffiti	37%	122	-2.20 (.81)	-2.71***	68% (18%)	1.03***
Dangerous	dangerous, unsafe, scary	32%	81	-2.67 (.81)	-3.31***	66% (21%)	.77***
Dirty	dirty, trashy, littered	30%	69	-2.41 (.81)	-2.97***	65% (20%)	.74***
Ghetto	ghetto, slums, hoods	28%	62	-2.39 (1.01)	-2.35***	66% (21%)	.78***
Urban	urban, city, inner city	19%	42	-.10 (1.03)	-.09	64% (23%)	.61***
Bad area	bad, barren, unappealing, inferior facilities	18%	44	-2.23 (1.01)	-2.21***	66% (18%)	.87***
Overpopulated	overcrowded, dense, cramped	15%	34	-.97 (1.22)	-.80***	62% (19%)	.60***
Low-income housing	projects, public housing, section 8	13%	30	-1.40 (1.43)	-.98***	62% (20%)	.61**
Failing schools	uneducated, bad schools, poor education	10%	19	-2.42 (.90)	-2.69***	68% (17%)	1.08***

Note. Prevalence, frequency, valence rating, and perceived consensus for each content category listed by at least 10% of participants. Multilevel models with responses nested within participants tested whether mean valence ratings differed from 0 and mean consensus estimates differed from 50% for each category.

^a Percentage of participants who listed at least one response in a given category (% Ps, i.e., participants). ^b Total number of responses coded in each category.

** $p < .01$. *** $p < .001$.

listed (without knowing which responses came from which participant). Coders assigned only one category to each response and used the category “miscellaneous” if a characteristic did not fit any of the categories provided. Agreement between coders was high, with Cohen’s kappas from .80 to .86, all $ps < .001$.

Results

Our analytic approach involved first testing our predictions with data from all 198 participants, then conducting exploratory follow-up analyses for the four participant racial subgroups White, Asian, Black, and Latino ($n = 188$, excluding the 10 of “other” or unspecified race). Without oversampling minorities, the racial subgroup sample sizes are small, providing only a preliminary indication of whether results differed by participant race.¹ Analyses of participants’ open-ended space characteristics used multilevel regression models with a random intercept accounting for potential nonindependence in ratings from any given participant. Notably, adjustments for interdependence in such models can yield fractional degrees of freedom.

Participant-generated characteristics. Participants produced 1,047 valid responses, excluding 13 responses (1.2%) that referenced proper places (e.g., Los Angeles) or regions (e.g., the South), despite the instruction to list characteristics of Black areas as a whole, rather than specific places. Participants on average listed 5.29 valid characteristics ($SD = 2.50$, range: 1–10), confirming that people can spontaneously identify features stereotypically associated with generalized Black areas.

Content. The coding scheme successfully classified 900 responses (86%) into 28 categories, leaving the remaining 14% unclassified (i.e., miscellaneous). Paralleling Katz and Braly (1933), over 50% of responses were concentrated in the top five most common categories: *impoverished*, *crime-ridden*, *rundown*, *dangerous*, *dirty*. The two most prevalent categories—*impoverished*, *crime-ridden*—were each listed by about 50% of participants, and 11 categories were listed by 10% or more of participants (see Table 1 for category frequencies, percentages, valence, and perceived consensus). The relative likelihood of generating a response in each of these 11 categories did not differ by participant race, $\chi^2(30, N = 560) = 26.21, p = .664$.

Valence. We first computed a mean valence rating for each participant by averaging that person’s valence ratings across all the characteristics he or she had listed. Mean valence ratings were negative for 168 participants (85%), neutral for eight participants (4%), and positive for 22 participants (11%), indicating that people were significantly more likely to describe Black areas as negative versus non-negative (positive/neutral), $\chi^2(1, N = 198) = 96.18, p < .001$. This valence imbalance did not differ by participant race, $\chi^2(3, N = 188) = 2.79, p = .426$.

Valence ratings of each listed characteristic were also analyzed using a multilevel model with responses nested within participants. On average, ratings were negative—significantly below 0 (*neutral*)—when including either all content categories, $b = -1.71, SE = 0.09, t(191.8) = -18.21, p < .001$, or only the most commonly used 11 categories (*impoverished*, *crime-ridden*, *rundown*, *dangerous*, *dirty*, *ghetto*, *urban*, *bad area*, *overpopulated*, *low-income housing*, *failing schools*), $b = -2.08, SE = 0.07, t(148.4) = -28.75, p < .001$. Participants in each racial group gave negative ratings overall, all $ps < .01$, and for the top 11 categories, all $ps < .001$.

Notably, 10 of the top 11 categories (all except *urban*) were rated negatively on average, all $ps < .01$ (see Table 1). Correlational analysis of the 20 content categories mentioned by at least five participants revealed that categories rated more negatively were also mentioned more frequently, $r(18) = -.59, p = .007$, and by a higher proportion of participants, $r(18) = -.62, p = .002$ (see Figure 2).²

Consensus. Participants estimated the percentage of Americans who would endorse the characteristics they listed. These consensus ratings were analyzed with responses nested within participants. Confirming that participants had indeed listed characteristics they believed “most Americans” would use to describe Black areas, participants on average estimated that over 50% of Americans endorsed the characteristics they had listed when including either all content categories, $b = 15.77, SE = 1.14, t(194.0) = 13.89, p < .001$, or only the most commonly used 11 categories, $b = 17.07, SE = 1.20, t(184.1) = 14.22, p < .001$. Additionally, participants in each racial group estimated that a majority (over 50%) of Americans endorsed the characteristics they had listed both overall, all $ps < .01$, and only the top 11 categories, all $ps < .001$. In sum, participants reported that most Americans would think that each of the top 11 coding categories describes Black areas (see Table 1).

Valence-consensus association. As previously noted, aggregating across participants, content categories that were rated more negatively were mentioned more often and by more participants. A related question is whether the specific characteristics of Black areas that individual participants rate more negatively are also perceived by them to be endorsed by more Americans. Multilevel regression analyses tested the relationship between the valence and perceived consensus—as rated by individual participants—of their open-ended space descriptors. As hypothesized, a significant negative relationship emerged between valence and consensus: space characteristics perceived by participants as more negative (vs. positive) were judged to have higher levels of consensus, $b = -0.95, SE = 0.40, t(1040.1) = -2.39, p = .017$. Models estimating slopes for each participant racial group (and testing moderation by race) revealed that this relationship was negative for each group: $b = -1.11, SE = 0.46, t(983.7) = -2.42, p = .016$, for Whites; $b = -0.51, SE = 1.32, t(866.0) = -0.38, p = .702$, for Blacks; $b = -1.79, SE = 1.57, t(972.3) = -1.14, p = .255$, for Asians; and $b = -2.85, SE = 2.23, t(942.0) = -1.28, p = .202$, for Latinos. Notably, although this relationship attained significance only for the largest racial group (Whites), the slopes for the other groups did not significantly differ, all $ts < 1, ps > .40$.

Researcher-provided characteristics: Consensus. Single-sample t tests compared participants’ consensus estimates with 50%. On average, participants estimated that only a minority (less than 50%) of Americans think desirable, positive characteristics—related to banks (25%), housing and property upkeep (26%), and neighborhood shopping (24%)—describe Black areas, $M = 24.95\%$, $SD = 19.59\%$, $t(197) = -17.99, p < .001, d = 1.28$; ratings did not differ by participant race, $F(3, 184) = 1.43, p = .236$. Further,

¹ Excluding Latinos (the smallest racial group, $n < 10$) as well does not alter the reported results.

² Including all 28 categories mentioned at least once, more negatively rated spaces were again listed more frequently, $r(26) = -.54, p = .003$, and by more participants, $r(26) = -.57, p = .002$.

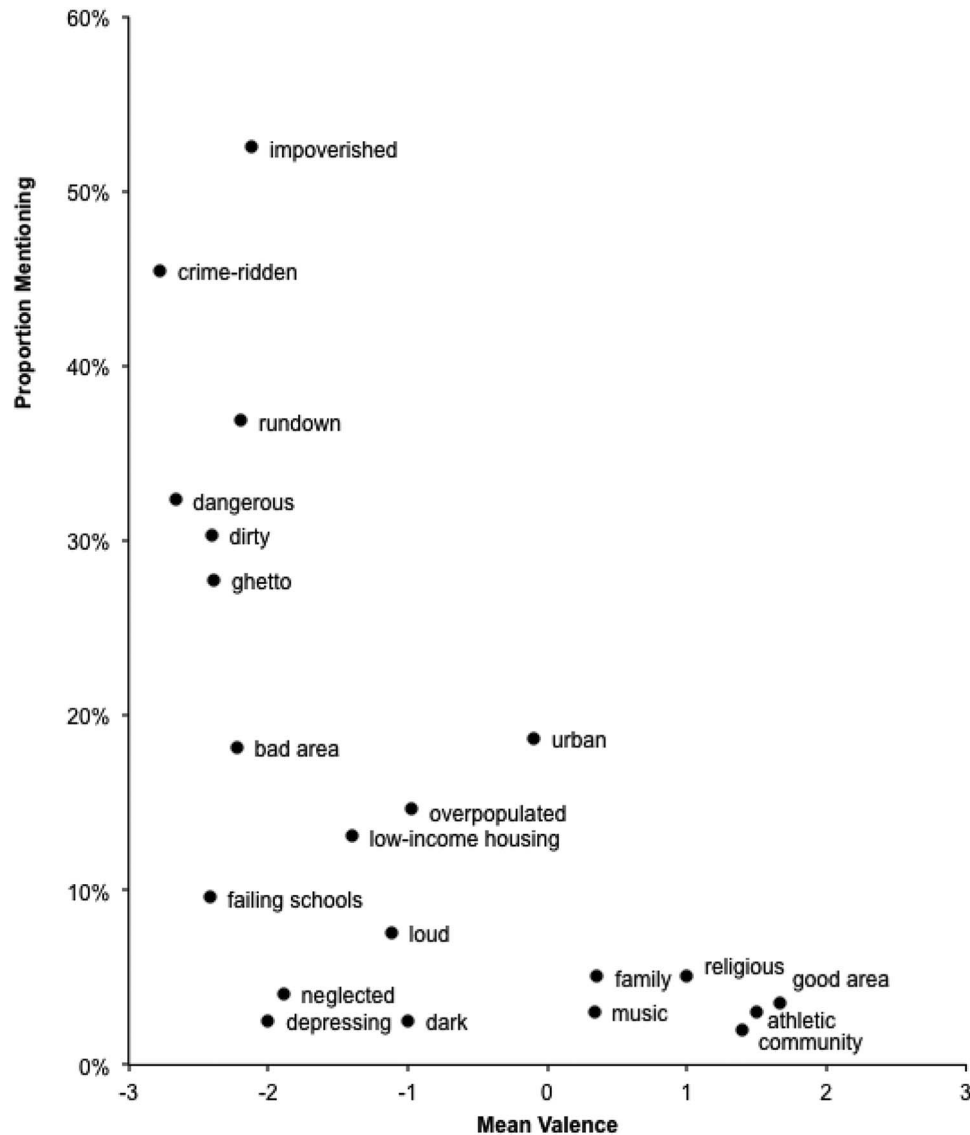


Figure 2. Black space-focused stereotypes: Proportion of participants listing responses in each content category by mean valence. Categories listed by at least five participants are plotted.

on average, participants estimated that a majority (over 50%) of Americans think undesirable, negative characteristics—related to neighborhood safety (73%), public schools (72%), city services (66%), and industrial facilities (54%)—describe Black areas, $M = 66.21\%$, $SD = 16.18\%$, $t(197) = 14.10$, $p < .001$, $d = 1.00$; ratings did not differ by participant race, $F(3, 184) = 1.93$, $p = .126$.

Discussion

As a whole, Study 1 findings paint a negative and prevalent picture of Black space as failing: physically degraded, unpleasant, unsafe, and lacking resources. This evidence suggests lay people (likely irrespective of race) are aware of a generalized image of Black areas that echoes the U.S. historical legacy of confining Black Americans to impoverished, blighted spaces. Stereotype content about members of social groups has long been established.

Here, we demonstrate that stereotypes can also focus on the physical spaces those group members occupy. Further, we have identified not just one stereotypical characteristic of Black areas but a host of characteristics that cohere, forming a full, nuanced image of stereotypical Black space.³

Additionally, the consensus measures highlight the problematic nature of Black space-focused stereotypes. These stereotypes are estimated to be held by a majority of Americans and the most

³ Just as the web of people-focused stereotypes differs in content across social groups, so too might the web of space-focused stereotypes vary. Asian American spaces, for example, may also be perceived as overpopulated and impoverished, but not as crime ridden, dangerous, or as lacking adequate schools. Both Black and Asian American spaces may be perceived as urban, yet Native American spaces may be perceived as rural. Future work is needed to test these ideas for additional racial/ethnic groups.

negative stereotypes are judged to be most widely held. This finding is concerning in light of research showing that the more normative people think it is to hold a stereotype, the more likely they are to freely express it (Crandall & Eshleman, 2003). Thus, it appears likely that the stereotypes identified here will be freely applied and expressed, with the worst stereotypes applied and expressed most frequently.

In the following two studies, we investigate how this generalized image of Black space may shape downstream perceptions and evaluations of physical locales that become imbued with racial meaning. Specifically, we measure the assumptions participants make about physical space characteristics related to judgments in housing (Study 2) and environmental protection (Study 3) domains. In both cases, we expect participants' assumptions about Black spaces to align with the generalized blighted image of Black space identified in Study 1.

Study 2a: Space-Focused Stereotyping Depresses Evaluation of Black-Owned Homes

Study 2a examines whether this negative image of Black space ultimately shifts evaluations of a given space, effectively rendering the space a target of racial stereotypes. To test this prediction, we showed participants a picture of a phenotypically Black or White family ostensibly selling their suburban, middle-class home. Although we did not provide participants with any information about the surrounding neighborhood, we predicted that the presence of one Black family would suffice to taint perceivers' assumptions about the amenities in the neighborhood surrounding the home, reflecting the stereotypes identified in Study 1. We expected this tainted vision of the neighborhood to, in turn, have important psychological consequences, causing individuals to feel socially disconnected from the neighborhood and evaluate the house itself less positively. In fact, we predicted that dampened willingness to connect with the neighborhood would mediate the relationship between this tainted vision and participants' lower house evaluations. That is, house ratings will decline insofar as people feel unwilling to connect personally with the surrounding area. We expected this causal sequence to emerge despite instructions asking participants to focus their ratings on the house itself.

We chose the housing domain as the study context not only because it often involves making explicit judgments about physical space, but also because it enables tests of space-focused stereotyping in the context of a pressing social problem. On average, homes in Black neighborhoods are worth less and appreciate more slowly than homes in comparable White neighborhoods (Oliver & Shapiro, 2006; Shapiro & Kenty-Drane, 2005). Common explanations for this structural racial disparity include racial steering, other forms of housing market discrimination, White flight, zoning policy decisions, and structural racialization that both results from and strengthens segregation (Lipsitz, 2007; Powell, 2009; Shapiro & Kenty-Drane, 2005). To our knowledge, the current study is the first to investigate how generalized, space-focused stereotypes can influence the way specific houses are evaluated (even in the absence of neighborhood information) and thus, may perpetuate racial inequality in the housing domain.

Method

Participants. Thirty-one U.S. citizens were recruited via advertisements in the real estate section of the San Francisco Bay Area craigslist.org web site. We recruited from this section of the site to increase the likelihood that participants would be interested in real estate and have knowledge of or firsthand experience with the home search process. Inherent difficulties in recruiting people who are actively searching for housing opportunities in a competitive market, yet also willing to volunteer time for a research study, limited sample size. Nevertheless, 34 participants would produce 80% power assuming large race manipulation effects like those of Study 1. Participants received a \$5 Amazon.com gift certificate for completing the 20-min survey. Data analysis began after fielding ended. One participant who failed the race manipulation check (which involved simply selecting the family's race from a list) was dropped from analysis. The final sample of 30 participants ($n = 15$ per condition) included eight men and 22 women, with 12 White, 11 Asian, four Black, one Latino, and two race-unspecified participants ($M_{\text{age}} = 35.6$, $SD = 12.1$, $Mdn_{\text{age}} = 31$).

Procedure. People who clicked on our advertisement for a "Real Estate Study" were routed to an external online survey. After consenting to participate, participants read that this study examined the process of looking for a home on the Internet because this method of searching for real estate had gained popularity in recent years. Next, participants were asked to imagine themselves as a potential homeowner looking for a new home. They were given a "buyer profile" to use in evaluating a hypothetical house for sale. Participants were reminded that although most houses viewed by potential homeowners do not meet all their specifications, houses to seriously consider should satisfy many of their preferences. Participants then read that they would be randomly assigned to one house to view and evaluate (actually the same house and house profile for everyone). Participants were randomly assigned to see a picture of either a phenotypically Black or White family ostensibly selling the home. Participants viewed the family picture, the house profile, and a picture of the front of the home. Next, participants viewed nine additional pictures (showing different rooms of the home), each on a separate survey page, with identical order and appearance across conditions. Participants then answered questions about their evaluation of the home and their ideas about its surrounding neighborhood. Participants ended with a brief follow-up survey, including a manipulation check, a control check (neighborhood type: *urban*, *suburban*, *rural*; followed by confidence in this judgment, from 1 = *not at all* to 5 = *very*), and six additional memory probes about the house and family photos. Finally, participants were thanked and debriefed.

Materials. Novel study stimuli (see Appendix A) were based on rigorous pilot testing.

Buyer and house profiles. Participants imagined seeking a home with the following specifications: property acreage: 1/8–1/2 acre; house square footage: 1,250–1,700; construction year: 1970–present; bedrooms: 2–3; bathrooms: 1–2; garage: 1–2 cars. This buyer profile was intended to convey interest in an average, middle-class home.

The house profile for the home contained the following information: property owners: Thomas family; years in residence: 11.5; investments in property: replaced roof, remodeled bathrooms; property acreage: 1/4 acre; house square footage: 1,500; construc-

tion year: 1983; bedrooms: 3; bathrooms: 1.5; garage: 2 cars. This profile met all the buyer profile criteria. This clear buyer-house profile match was intended to control house desirability across individual participants (Emerson, Chai, & Yancey, 2001) and lead them to see the house as desirable.

House pictures. Pictures of homes collected from online real estate sites were piloted on three dimensions: social class, neighborhood type, and likely occupant race. Pilot participants deemed the home selected for Study 2 likely to be in a suburban area with middle-class occupants, who could plausibly be Black or White.⁴ The house pictures also provided a subtle way to hold class information constant across conditions (Krysan et al., 2009).

Family pictures. The research team collected images from web sites with family pictures available to the public. These pictures were piloted and matched along the following dimensions: perceived family social class, friendliness, and attractiveness.⁵ The two photos selected each contained a mother, father, and two children, similarly dressed and posed. Each family photo was inserted into the home's living room using Adobe Photoshop.

Measures. Dependent variables included distinct measures of space-focused stereotyping, space connection, and house evaluations.

Space-focused stereotyping. To assess activation and application of the stereotype concepts identified in Study 1, participants indicated their ideas about the neighborhood they imagined around the house. We adapted six items ($\alpha = .89$) from the MCSUI (see Study 1) to fit the hypothetical context of Study 2 (Farley, Fielding, & Krysan, 1997). Participants used a scale from 1 (*not at all*) to 7 (*extremely*) to indicate how satisfied they thought residents of the neighborhood surrounding the house were with the following: city services (e.g., street cleaning or garbage collection); housing and property being kept up; the public schools; neighborhood safety; neighborhood shopping (e.g., grocery and drug stores); access to banks or savings and loan institutions. Lower numbers indicate less positive neighborhood characteristics.

Space connection. We measured subjective connection to the neighborhood with two items, $r = .50$, $p = .005$. Participants reported how eager they would be to move into the neighborhood, from 1 (*not at all*) to 5 (*extremely*), and how desirable the neighborhood would be as a place to live, from 1 (*very undesirable*) to 4 (*very desirable*). Responses on the latter item (from the MCSUI) were standardized and recoded into a 5-point scale for continuity with the former item.

House evaluations. Participants evaluated the home itself on 4 items ($\alpha = .81$). Participants rated how much they liked the house, from 1 (*not at all*) to 7 (*extremely*). On a scale from 1 (*very little*) to 7 (*a great deal*) participants rated how much interest they thought other people would likely have in the house, and how much about the house would have to be changed to make it appealing to others (reverse coded). Finally, participants indicated how much they thought the house would be worth if it were in their own neighborhood, using the following scale: 1 (*less than \$50,000*), 2 (*\$50,000–\$100,000*), 3 (*\$100,000–250,000*), 4 (*\$250,000–\$500,000*), 5 (*\$500,000–\$750,000*), 6 (*\$750,000–\$1,000,000*), 7 (*\$1,000,000–\$1,500,000*), 8 (*\$1,500,000–\$2,000,000*), 9 (*more than \$2,000,000*).⁶ The last item was standardized then recoded into a 7-point scale to match the other items.⁷

Results

Preliminary analyses. Participants perceived the house as suburban in both the Black (86%) and White (93%) conditions, $\chi^2(1, N = 30) < 1$. Participants who selected *suburban* did not differ in their confidence in this judgment between conditions ($M_{White} = 2.79$, $SD = 0.80$; $M_{Black} = 2.85$, $SD = 0.69$), $t(28) < 1$. Average memory test scores (out of 6) were high and did not differ by condition ($M_{White} = 5.13$, $SD = 0.92$; $M_{Black} = 5.27$, $SD = 0.88$), $t(28) < 1$ (see Table 3 for correlations between all dependent measures).

Primary analyses. As predicted, participants showed direct evidence of space-focused stereotyping. Although they saw no images of or explicit information about the neighborhood in which the house was located, they imagined the neighborhood to have less positive characteristics when the home's sellers were Black ($M = 4.68$, $SD = 0.61$), rather than White ($M = 5.45$, $SD = 0.62$), $t(28) = 3.43$, $p = .002$, $d = 1.25$ (see Table 2 for each item in the composite). Participants felt less connection with the neighborhood when the family was Black ($M = 3.86$, $SD = 0.68$) as opposed to White ($M = 4.44$, $SD = 0.85$), $t(28) = 2.08$, $p = .047$, $d = 0.76$. Finally, participants provided a less positive house evaluation when the family was Black ($M = 4.50$, $SD = 0.93$) rather than White ($M = 5.35$, $SD = 1.07$), $t(28) = 2.32$, $p = .028$, $d = 0.85$.

Mediation analysis: Space-focused stereotyping and space connection explain the effect of family race on house evaluations. We tested whether the effect of family race on house evaluation was explained by its indirect effect on space-focused stereotypes and space connection. Specifically, we wanted to know whether this indirect effect operated from space-focused stereotypes through space connection. We used serial multiple mediation procedures recommended by Taylor, MacKinnon, and

⁴ Pilot ratings from 18 participants evaluating 13 sets of house pictures led to a final set of house photos compiled from the two houses rated as most closely matching our desired characteristics. Both Houses A and B were seen as likely having middle class occupants (1 = *lower class* to 5 = *upper class*; $M_A = 3.03$, $SD = 1.04$; $M_B = 3.33$, $SD = 1.08$), of indeterminate race (i.e., not clearly Black or White: 1 = *Black* to 4 = *Black/White equal* to 7 = *White*; $M_A = 4.56$, $SD = 0.92$; $M_B = 4.89$, $SD = 1.18$). For likely neighborhood type (free response), over 50% reported suburban and less than 6% reported urban. The final 10 photos were selected to match the house profile information (e.g., 1.5 bathrooms, 3 bedrooms).

⁵ A separate set of 18 pilot participants rated the Black ($n = 9$) or White ($n = 9$) family on social class (1 = *lower class* to 7 = *upper class*; $M_{Black} = 5.00$, $SD = 1.32$; $M_{White} = 5.33$, $SD = 0.50$), attractiveness (1 = *very unattractive* to 7 = *very attractive*; $M_{Black} = 5.00$, $SD = 1.80$; $M_{White} = 5.22$, $SD = 0.67$), and friendliness (1 = *very unfriendly* to 7 = *very friendly*; $M_{Black} = 5.78$, $SD = 1.92$; $M_{White} = 5.67$, $SD = 1.41$). All $t_s < 1$.

⁶ Participants estimated the value of the average house in their own neighborhood on the same scale. As expected, their estimates did not differ by condition, $t(28) < 1$.

⁷ The house evaluation measure indexes factors potential homebuyers usually consider when initially evaluating a home. However, because these items are worded in distinct ways, we conducted a principal components factor analysis without rotation confirming that all items loaded onto a single factor (loadings in parentheses): house liking (.85), others' interest (.91), change needed (.92), and estimated property value (.50). We retained the property value item, given its centrality for house evaluation and the high reliability among all four items.

Table 2
Space-Focused Stereotyping by Condition for Specific Items in Studies 2a and 2b

Space stereotype item	<i>M (SD)</i> by condition		<i>t (df)</i>	<i>p</i>	<i>d</i>
	White	Black			
Study 2a					
City services	5.80 (.56)	4.87 (.83)	3.60 (28)	<.01	1.31
Housing and property kept up	6.07 (.70)	5.13 (.74)	3.53 (28)	<.01	1.29
Public schools	5.13 (.83)	4.60 (.74)	1.86 (28)	=.07	.68
Safety	5.36 (.93)	4.60 (.63)	2.58 (27)	<.05	.96
Shopping access	5.27 (.96)	4.47 (.92)	2.33 (28)	<.05	.85
Financial institution access	5.07 (.96)	4.40 (.99)	1.88 (28)	=.07	.68
Study 2b					
City services	5.32 (1.08)	5.01 (1.09)	2.03 (203)	<.05	.28
Housing and property kept up	5.48 (1.20)	5.13 (1.27)	2.02 (204)	<.05	.28
Public schools	4.99 (1.05)	4.45 (1.23)	3.42 (204)	<.01	.75
Safety	5.47 (1.00)	4.57 (1.27)	5.62 (204)	<.01	.78
Shopping access	5.08 (1.04)	4.69 (1.20)	2.45 (204)	<.05	.34
Financial institution access	4.94 (1.08)	4.68 (1.11)	1.70 (204)	=.09	.24

Tein (2008) with Model 6 of the SPSS macro PROCESS (Hayes, 2012, 2013) and 5,000 bias-corrected bootstrap resamples. Our predicted model was family race → space-focused stereotyping (Mediator 1) → space connection (Mediator 2) → house evaluations. A 95% confidence interval (CI) excluding zero indicates a significant effect at the *p* < .05 level. Each individual path in the model proved significant (see Figure 3 for path estimates), as did the family race → stereotypes → connection → house evaluation indirect path, *b* = 0.35, *SE* = 0.16, CI [0.102, 0.740]. The two single-mediator specific indirect paths were not significant: family race → stereotypes → house evaluation, *b* = 0.03, *SE* = 0.16, CI [-0.333, 0.334], family race → connection → house evaluation, *b* = -0.08, *SE* = 0.11, CI [-0.359, 0.104].

Discussion

Study 2a provides evidence supportive of our space-focused stereotyping model: The mere presence of Black people in a physical space activates an image of blighted physical space. Once activated, this image influences the assumptions people make about the space, which in turn makes them disconnect from and devalue it. Specifically, people who viewed a house for sale by a Black (vs. White) family imagined the neighborhood around this house as possessing lower-quality characteristics: less well-maintained property, lower-quality schools and municipal services, less access to shopping and financial institutions, and lower perceived safety. The dimensions of this Black-White disparity

reflected the themes defining the generalized blighted image of Black space in Study 1. Participants also felt less connected to the neighborhood they imagined around the Black-owned house. This negative space-focused stereotyping and disconnection explained why participants gave the house a less favorable evaluation.

Notably, in Study 2a merely one “drop” of Blackness—a single Black family—was enough to trigger space-focused stereotypes that tainted assumptions about the entire neighborhood, despite careful matching of the family pictures. The families’ comparable perceived attractiveness, class, and style of dress reduced the potential influence of these cues on Black house evaluations. Matching the families on perceived friendliness minimized the likelihood that negative feelings toward the family lowered house evaluations.

That the home was seen less favorably in the Black (vs. White) condition is also notable, given the number of other factors held constant. All participants saw the same pictures of an apparently middle-class suburban home, read about the same house characteristics and improvements, and received the same “home buyer profile.” Despite these constants, participants still gave the house occupied by a Black family a lower evaluation than the same house occupied by a White family.

Perhaps participants used the race of the family to draw inferences not only about the quality of the neighborhood, but also the racial composition of the neighborhood. That is, viewing a single Black family may lead people to imagine blighted space containing a sea of Black people. In Study 2b, we provide people with direct information on the racial composition of the neighborhood. We again expect to find evidence supporting our model.

Study 2b also addresses the small sample size of Study 2a. Empirical estimates of sample sizes needed to achieve 80% power—given large effects (operationalized as standardized path coefficients of .59) like those observed in Study 2a (.54, .87, .70)—reveal that a sample of 34 is needed for bias-corrected bootstrap tests of mediation (Fritz & MacKinnon, 2007). Feasibility restrictions related to recruiting Bay Area residents seeking homes through a real estate website limited Study 2a sample size. Accordingly, Study 2b removes these restrictions and uses a participant panel in which recruiting a larger, national sample is feasible. Addi-

Table 3
Correlations (*R*) Between Dependent Measures in Studies 2a and 2b

Measure	1	2	3
1. Space-focused stereotyping		.81***	.68***
2. Space connection	.57***		.78***
3. House evaluation	.47***	.66***	

Note. Correlations for Studies 2a and 2b are reported above and below the diagonal, respectively.
* *p* < .05. ** *p* < .01.

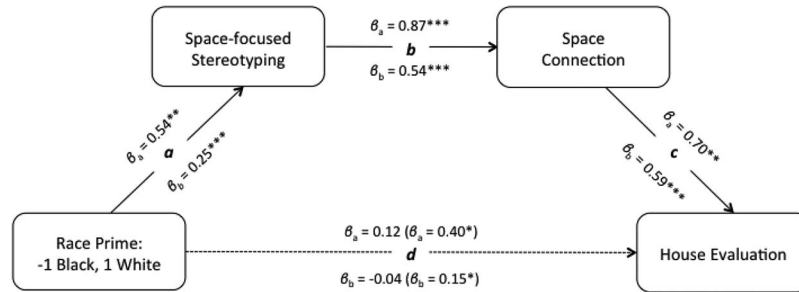


Figure 3. The space-focused stereotyping model depicting relationships between space-focused stereotypes, connection, and house evaluation following a race prime in Studies 2a and 2b. Subscripts “a” and “b” indicate respective standardized path estimates for Studies 2a and 2b, with total (unmediated) effects in parentheses. (Higher space-focused stereotyping scores indicate more favorable impressions.) * $p < .05$. ** $p < .01$. *** $p < .001$.

tionally, whereas Study 2a demonstrates model support with a racially diverse sample, Study 2b utilizes a sample of only Whites to ensure an adequately powered model test with at least one racial group. We chose White Americans due to their population size and control over societal resources, including physical spaces.⁸

Study 2b: Space-Focused Stereotyping Depresses Evaluation of Homes in Black Neighborhoods

A key aim of Study 2b involves replicating our model with the race manipulation removed from the house itself and instead applied to the immediate target of space-focused stereotyping, namely, its neighborhood. Thus, Study 2b omits the family picture, substituting a table indicating that the largest neighborhood racial/ethnic group is either Black or White.

Method

Participants. Initially, 209 adult White U.S. citizens who had completed at least 95% of previous tasks satisfactorily completed this online survey through Mechanical Turk. Data analysis began after fielding ended. Three participants failed the race manipulation check (which involved selecting the neighborhood’s race from a list), leaving 206 participants for analysis ($n_{\text{Black}} = 101$, $n_{\text{White}} = 105$): 93 men, 112 women, one gender unspecified ($M_{\text{age}} = 37.4$, $SD = 14.1$, $Mdn_{\text{age}} = 34$).

Procedure. Materials (buyer and house profiles, house pictures) and primary procedures for Study 2b were the same as those of Study 2a, with the following exceptions: Replacing a picture of the White or Black family selling the home was a table with information about the neighborhood surrounding the home. One line of this table stated the neighborhood’s largest racial/ethnic population, and participants were randomly assigned to African American/Black ($n = 104$) or Caucasian/White ($n = 105$). Remaining information in the table was filler and was held constant across race conditions (see Appendix A for full table.) Participants ended with a brief follow-up survey, including a manipulation check and four additional memory probes.

Measures. Dependent variables included distinct measures of space-focused stereotyping, space connection, and house evaluations adapted from Study 2a. One new item measured house worth.

Space-focused stereotyping. To again assess activation and application of the stereotype concepts identified in Study 1, participants indicated their ideas about the neighborhood they imagined around the house by responding to the same six MCSUI items from Study 2a ($\alpha = .89$). The one difference between Study 2a and 2b being that participants reported how satisfied they themselves (as opposed to residents of the neighborhood) would be with the neighborhood characteristics. Lower numbers again indicate lower quality characteristics.

Space connection. We measured subjective connection to the neighborhood with three new items ($\alpha = .90$) to improve scale reliability from the Study 2a space connection measure and to more directly assess connection to the physical environment (see Raymond, Brown, & Weber, 2010). Participants indicated their agreement, from 1 (*strongly disagree*) to 7 (*strongly agree*), with the following statements: “This neighborhood seems like a place I would like to live;” “I value the land in this neighborhood;” “I feel connected to this neighborhood.”

House evaluations. Participants provided their evaluation of the home by indicating their agreement, from 1 (*strongly disagree*) to 7 (*strongly agree*), with the following five statements ($\alpha = .81$), including three from Study 2a: “I like this house;” “I think other people would be interested in this house;” and “I think this house would need to be changed to make it appealing to others” (reverse coded). A new item “I think this house would be a poor financial investment” (reverse coded) replaced the Study 2a house worth item, enabling a financial assessment of the house on the same scale as all other items. The item “I would consider making an offer on this house” adds a key behavioral intention to the measure. Higher scores reflect more favorable house evaluation.⁹

⁸ For example, Whites are overrepresented in city planning professions (e.g., Vazquez, 2002) as well as among faculty and students in urban planning graduate programs (Sweet & Etienne, 2011).

⁹ As in Study 2a, the house evaluation measure indexes factors potential homebuyers usually consider when initially evaluating a home. A principal components factor analysis without rotation confirmed that all five items in this updated measure loaded onto a single factor (loadings in parentheses): house liking (.87), others’ interest (.77), change needed (.63), poor investment (.75), and make offer (.82).

House worth. Because the house worth item was removed from the house evaluation composite, participants used a free-response text box to estimate the house's worth in dollars.

Results

Preliminary analyses. As in Study 2a, participants perceived the house as suburban in both the Black (74%) and White (82%) conditions, $\chi^2(1, N = 206) = 1.76, p = .184$. Participants who selected *suburban* did not differ in their confidence in this judgment between conditions ($M_{White} = 3.45, SD = 0.82; M_{Black} = 3.39, SD = 0.82, t(159) < 1$. Average memory test scores (out of 4) were high and did not differ by condition ($M_{White} = 3.44, SD = 0.71; M_{Black} = 3.41, SD = 0.62, t(204) < 1$. House worth analysis excluded one Black condition extreme outlier (\$1,000,000; > 5 SDs above both the overall and condition means; see Table 3 for correlations between all dependent measures).

Primary analyses. As predicted, participants showed direct evidence of space-focused stereotyping. They imagined the neighborhood to have less positive characteristics when it was Black ($M = 4.76, SD = 0.97$), rather than White ($M = 5.21, SD = 0.82$), $t(204) = 3.64, p < .001, d = 0.51$ (see Table 2 for each item in the composite). Participants felt less connection with the neighborhood when Black ($M = 4.30, SD = 1.32$) as opposed to White ($M = 4.97, SD = 1.22$), $t(204) = 3.81, p < .001, d = 0.53$. Participants provided a less positive house evaluation when the neighborhood was Black ($M = 4.81, SD = 1.04$) rather than White ($M = 5.13, SD = 1.12$), $t(204) = 2.12, p = .035, d = 0.30$. Finally, participants estimated the house to be worth over \$20,000 less when the neighborhood was Black ($M = \$116,860, SD = \$66,845$) as opposed to White ($M = \$138,768, SD = \$81,581$), $t(203) = 2.10, p = .037, d = 0.29$.

Mediation analysis: Space-focused stereotyping and space connection explain the effect of neighborhood race on house evaluations. Serial multiple mediation analyses tested whether the effect of neighborhood race on house evaluation was explained by its indirect effect on space-focused stereotypes operating through space connection. Our predicted model paralleled Study 2a: neighborhood race \rightarrow space-focused stereotyping (Mediator 1) \rightarrow space connection (Mediator 2) \rightarrow house evaluations. Each individual path in the model proved significant (see Figure 3 for path estimates). Bootstrapped estimates with 95% CIs for the three potential indirect effects show the predicted mediation (indirect path from neighborhood race \rightarrow stereotypes \rightarrow connection \rightarrow house evaluation) was significant, $b = 0.08, SE = 0.03, CI [0.038, 0.153]$. The two single-mediator specific indirect paths were also significant: neighborhood race \rightarrow stereotypes \rightarrow house evaluation, $b = 0.04, SE = 0.02, CI [0.008, 0.096]$, neighborhood race \rightarrow connection \rightarrow house evaluation, $b = 0.08, SE = 0.04, CI [0.007, 0.168]$.

Discussion

Study 2b provides additional evidence confirming our space-focused stereotyping model. Specifically, people who read that the largest racial/ethnic group in a neighborhood was Black (vs. White) imagined the neighborhood as possessing the same lower-quality characteristics reported by people who viewed the Black-owned (vs. White-owned) house in Study 2a. Participants

also felt less connected to the neighborhood when they knew it was Black. Hence, disconnection occurs when Black racial meaning either imbues one element of the physical environment, namely the house itself via its owners (Study 2a), or describes the broader context, in this case the surrounding neighborhood (Study 2b). This negative space-focused stereotyping and disconnection again explained why participants gave the house a less favorable evaluation.

In Study 2b participants devalued the home in the Black (vs. White) condition despite additional factors held constant. Not only were the house qualities identical across conditions; so were the neighborhood demographics aside from race, which reflected a typical suburban balance of married and single homeowners. Indeed, most participants saw the neighborhood as suburban, indicating that strong race effects can emerge even when participants are not induced to imagine a prototypical Black inner city neighborhood.

Additional support for the serial mediation in our proposed space-focused stereotyping model comes from three supplemental studies probing perceptions of residential space (see Supplemental Materials for full study descriptions and results). To extend findings beyond Study 2a and 2b materials, all three studies ask participants to imagine and then evaluate a house (instead of viewing house pictures). Study S1 ($N = 119$) replicates the serially mediated indirect race effect when measure order is randomized. Studies S2 and S3 test this process again, using an experimental-causal-chain approach (see Spencer, Zanna, & Fong, 2005; Todd, Forstmann, Burgmer, Brooks, & Galinsky, 2015). Study S2 ($N = 111$) manipulates Black space-focused stereotype content (i.e., space quality), showing that imagining a low (vs. high) quality neighborhood significantly decreases space connection and house evaluations. Study S3 ($N = 101$) similarly manipulates space connection, showing that feeling disconnected from (vs. connected to) a neighborhood dampens evaluations of a house in the neighborhood. Taken together, these supplemental studies support the causal chain observed in Studies 2a and 2b, in which Black racial meaning—whether linked to a home's owners or a neighborhood—activates negative stereotypes of Black space, prompting perceivers, in turn, to disconnect from and ultimately devalue a residential space.

Findings from Studies 2a, 2b, and the supplement together build on recent sociological research investigating space perception at the neighborhood level, in the context of racial segregation. The present studies, however, ask participants to evaluate a specific house. Our focus, on perceptions and judgments of a house, highlights the role of space-focused social perception in perpetuating residential segregation. These studies demonstrate not only that people become disconnected from an area tainted by Black space-focused stereotypes, but also that this disconnect may decrease the likelihood that they buy homes in such areas, perpetuating racial segregation.

These findings highlight another implication of such space-focused social psychological processes—that of helping to perpetuate racial disparities in wealth. Study 2a uniquely demonstrates how potential buyers may be willing to pay less for a home being sold by a Black family than the identical home being sold by a White family. Study 2b more clearly demonstrates what this monetary cost might be: about \$20,000. This gap is consistent with macrolevel findings that homes in class-matched Black versus

White neighborhoods have lower monetary values (Farley et al., 1997; Massey & Denton, 1993; Oliver & Shapiro, 2006). Social scientists have already acknowledged how these decrements to equity can present a challenge for Black families trying to move to more affluent residential areas (Friedman, Tsao, & Chen, 2013; Woldoff & Ovadia, 2009), limiting wealth accumulation through home ownership. Because real estate is a common conduit for intergenerational wealth transfer, decreased access to higher quality residential areas exacerbates and maintains wealth disparities over time (Oliver & Shapiro, 2006). Our findings highlight how social psychological processes could contribute to these structural-level dynamics. Thoughts and feelings about the space alone, absent animosity directed toward Black people, seem sufficient to drive race-based judgments about a space.

Study 3 investigates the question of animus directly by measuring and controlling for racial attitudes about people. Study 3 also further removes the possible role of animus by using a scenario that does not confront people with potentially living in a Black community or near a Black family. Their ultimate decision will be one that, whatever the outcome, does not imply a desire to avoid contact with Black people. In this case, we still expect a generally tainted image of Black space to color space perception and evaluative judgments. Such results can crucially extend sociological work that assumes racial animus as a given. Finally, Study 3 tests our full model again with a larger, more representative sample.

Study 3: Space-Focused Stereotyping Depresses Environmental Protection

In Study 3, we test a conceptual replication of our model in a new domain with a large, nationally representative sample of White Americans. Pragmatic considerations limited the sample to a single racial group, so, as in Study 2b, we again sampled White Americans, the dominant racial group. Like Studies 2a and 2b, Study 3 examines how space-focused stereotyping can ultimately lead to devaluing physical space, this time in the form of decreased environmental protection. Our primary aim was to examine whether people still negatively stereotype, disconnect from, and devalue Black space even when they are not judging whether they wish to live in the target locale. Our secondary aims were to examine the impact of Black space-focused stereotypes beyond the effects of anti-Black attitudes and the perceived socioeconomic status of an area. In Study 3, we again manipulated the racial composition (primarily White or Black) of a target neighborhood. Participants took the perspective of a chemical company employee as they read a proposal to build a chemical plant adjacent to this neighborhood. We presented participants with a difficult decision that lacked a clear right answer. Our primary outcome measures—stereotyping, connection, and evaluative judgment—were tailored to this scenario. Participants again indicated the extent to which they stereotyped the area as low quality; this time as containing polluting industrial facilities such as power plants, incinerators, and chemical plants. This type of industrial space is consistent with elements of the Black space stereotypes participants acknowledged in Study 1 (e.g., dirty, low-income, rundown, industrial facilities nearby) and is directly relevant to environmental decision-making. As in Study 2b, we measured space connection with questions directly examining connection to the physical space of the neighborhood. Finally, we measured opposition to building a chemical

plant in the targeted neighborhood. We hypothesized, once again, that the mere presence of Blacks would trigger Black space-focused stereotypes. When we represented a neighborhood as primarily Black versus White, we expected participants to stereotype the neighborhood as industrial, disconnect from it, and protect it less vigorously.

This study extends the space-focused stereotyping model from the domain of housing to environmental protection. This domain highlights another important set of potential downstream consequences of space-focused stereotyping, beyond perpetuating racial residential segregation and wealth disparities. Environmental decisions are relevant to broader racial disparities characterized by the overrepresentation of majority Black communities in areas of concentrated industrial pollution. Extensive work in the field of environmental justice suggests race is a factor driving this disparity (Bullard et al., 2008), but this relationship has not yet been tested experimentally as a causal factor. To our knowledge, the present study is the first to do so. In addition to providing experimental evidence for *whether* race matters, our space-focused stereotyping model examines *how* race might contribute to this disparity via individual-level psychological processes.

We expected the main effects of space-focused stereotyping to hold even when controlling for person-focused racial attitudes. Researchers studying residential segregation and the overexposure of Black communities to concentrated industrial pollution have theorized about the potential role of racially biased individual-level decisions in producing structural problems. When describing the role of race in guiding such decisions, one primary argument is that race shapes decisions via negative attitudes toward Black people (Bullard, 1993; Charles, 2003, 2005; Pulido, 2000). Although we do not deny this dynamic occurs, we argue it need not occur: Race can guide individual judgments another way. We contend physical space itself can become imbued with racial meaning and thus be a direct target of racial stereotyping and discriminatory judgments; indeed, this is the central premise of our model. If this understanding of race is correct, representing the neighborhood as a Black area should still shift perceptions and judgments of the target space regardless of whether individuals exhibit negative bias toward Black Americans as people.

Finally, Study 3 more directly examines how perceptions of race and class intersect. This intersection is particularly relevant to environmental decision-making because areas lower in socioeconomic status (SES) also experience a higher rate of exposure to environmental toxins (Bullard et al., 2008). Some scholars contend that class accounts for race disparities because Black Americans are overrepresented among lower-SES communities (for a discussion see Bullard et al., 2008; Wilson, 1978), particularly those with lower property values (Charles, 2005; Ellen, 2000). However, correlational structural analyses show both race and class indicators predict community exposure to environmental toxins, with race often the stronger predictor (Bullard et al., 2008).

We extend such findings by experimentally probing how both race and class shape individuals' space-focused judgments in the environmental domain. If information about an area's class (not race) primarily drives perceptions of a space, elevating class perceptions to middle class should eliminate effects of race on space-focused stereotyping. Conversely, if race drives space perceptions beyond class, its impact should remain even when accounting for class.

The present study addresses class in two ways. First, we attempt to boost perceptions of neighborhood class by presenting information about median neighborhood house values (as compared with a control condition with housing information that does not include median house value). Because our paradigm proposes building a chemical plant near the target neighborhood, in the absence of property value information, participants may think it a lower-class area (Bullard et al., 2008; value absent condition). Otherwise, providing participants with information about neighborhood housing values near the national average should shift class perceptions upward, closer to middle class (value present condition). We expect the same pattern of race effects on space-focused stereotyping, connection, and environmental protection at both levels of perceived class. Second, we test the main effect of race on our primary measures, when controlling for class perceptions. Despite attempts to hold class perceptions constant across race conditions by introducing property value information, neighborhood race may still shift participants' class perceptions, due to stereotypes that Black people are poor (Devine & Elliot, 1995). Consistent with our *race-beyond-class* hypothesis, however, we expect the effects of race on space perceptions to remain robust when controlling for race-driven shifts in class perceptions.

Method

Participants. A nationally representative sample of 414 White U.S. citizens with at least a high school diploma or GED participated. Our sample size (>400) reflects the minimum recommended for a nationally representative sample of this population (hence our recruitment of only one racial group). Participants were recruited through GfK Knowledge Panel (GfK), an online research company that maintains a high-quality national panel. GfK recruits panel members using random digit dialing and random address-based sampling, giving even cellphone-only households the opportunity to join the panel. In exchange for participating, panel members receive Internet access and, if needed, a device for using the Internet. GfK sent an e-mail invitation to randomly sampled panelists, allowing only these individuals to participate in the online survey (see www.gfk.com/us/knowledgepanel for detailed recruitment methods). Participants were compensated with a small cash award, gift prize, or raffle entry. Excluding 10 participants (seven in the Black and three in the White condition) who failed a race manipulation check that involved selecting the neighborhood's majority racial group from a list left a final sample of 404: 204 men and 200 women ($M_{\text{age}} = 49.0$, $SD = 16.2$, $Mdn_{\text{age}} = 49$). Data analysis began after fielding ended.

Procedure. This study was a 2 (Neighborhood Race: Black or White) \times 2 (Property Values: Value Present or Value Absent) between-subjects online survey. Participants read that the study investigated land development decision-making processes. They were told they would view information about a neighborhood; then provide their opinions about how adjacent land should be developed. Next, participants viewed the neighborhood information and were asked to create a vivid mental image of this neighborhood's physical space while doing so. This information contained the property values and neighborhood race manipulations, plus filler details (see Appendix B). Participants then read a proposal for building a chemical plant near this neighborhood (see Appendix C). They were asked to take the perspective of a chemical pro-

duction company employee who needed to make a recommendation to her/his boss about whether the proposed location was suitable. Participants were reminded that this new plant was needed and must go somewhere. After reading the proposal, participants answered questions about their perceptions of the neighborhood and their opinions about whether the chemical plant should be built nearby, as well as some follow-up questions. Finally, participants were thanked and debriefed.

Materials. A novel neighborhood profile (see Appendix B) and chemical plant proposal (see Appendix C) were developed for this study.

Filler neighborhood information. Participants viewed a table with information about the hypothetical neighborhood's environment and that of the United States overall. This information included average annual rainfall, snowfall, number of sunny days, July and January temperatures, UV index, and elevation. These neighborhood statistics closely mirrored U.S. averages.

Neighborhood demographics and race manipulation. Participants also viewed the neighborhood demographics table from Study 2b. This table included the overall population, median age, number of households, gender ratio, proportion married and single, the largest ethnic population (Caucasian/White or African American/Black), and the neighborhood's area in square miles.

Neighborhood housing and property-value manipulation. Participants viewed a table with neighborhood and U.S. housing information: median home age, annual home appreciation, and percentage of homes owned, vacant, and rented. Inclusion of residential property values was experimentally manipulated: Half the participants viewed the median home cost and half did not.

Chemical plant proposal. The proposal was written to make the "right" decision unclear regarding whether to locate the chemical plant in the proposed site or not. The proposal included information about the primary chemical to be produced: chlorine—a common chemical. Next, it described the chemical's production impact on the surrounding area. For example, plant waste would be dumped in an adjacent river, but the water would be filtered before entering back into the drinking supply. Additionally, the plant met minimum environmental codes, but the long-term health risks for nearby residents were unknown. This proposal also included the plant's cost (within the budget) and a map of its location adjacent to the neighborhood. This information resembled a condensed version of the kind of proposal needed to get approval for such plants.

Measures. Dependent variables included measures of space-focused stereotyping, space connection, chemical plant opposition, and racial attitudes, as well as perceived race and class.

Space-focused stereotyping. To assess activation and application of space-focused stereotypes, participants answered two questions, $r = .66$, $p < .001$ regarding their perception of the neighborhood as tainted by industry. On a scale from 1 (*strongly disagree*) to 7 (*strongly agree*), participants estimated the likelihood that (a) chemical plants and (b) other industrial facilities, such as power plants or incinerators, already existed near this neighborhood. Higher numbers indicate a greater perception of this area as industrial.

Space connection. Three items ($\alpha = .80$) from Study 2b assessed participants' sense of connection to the neighborhood in its current state—without the proposed plant. On a scale from 1 (*strongly disagree*) to 7 (*strongly agree*), they indicated whether

they would like to live in this neighborhood, valued the land in it, and felt connected to it. Higher numbers indicate greater connection to the neighborhood.

Chemical plant opposition. Four questions ($\alpha = .74$) assessed participants' opposition to building the chemical plant in the proposed location. On a scale from 1 (*strongly disagree*) to 7 (*strongly agree*), participants indicated the extent of their discomfort recommending the chemical plant be built near this neighborhood, as well as their surprise that their company identified land near this neighborhood as a potential site. Participants also indicated how reasonable they thought it was to place the chemical plant in the proposed location (reversed), on a scale from 1 (*not at all reasonable*) to 7 (*very reasonable*). After a prompt to consider the time and effort involved in identifying an alternate location, participants indicated whether to do so on a scale from 1 (*do not identify an alternate location*) to 7 (*identify an alternate location*). Higher numbers indicate greater opposition.

Racial attitudes. Participants rated their feelings toward both White Americans and Black Americans (in randomized order), using a thermometer measure of racial attitudes from 0 (*very cold or unfavorable feeling*) to 100 (*very warm or favorable feeling*) degrees. We subtracted warmth toward White Americans from that toward Black Americans to create a difference score indexing racial attitudes. Positive numbers indicate pro-Black/anti-White bias ($n = 12$), zero indicates no bias ($n = 211$), and negative numbers indicate anti-Black/pro-White bias ($n = 167$).

Class indicators. Participants reported their perception (or recollection, in the value-present condition) of median neighborhood house values (free response). Participants reported perceived resident SES in terms of education and income as follows: 1 (*working class*), 2 (*lower middle class*), 3 (*middle class*), 4 (*upper-middle class*), 5 (*upper class*).

Perceived neighborhood race. Participants reported the extent to which they associated the neighborhood with being White or Black, on a scale from 1 (*extremely White*) to 7 (*extremely Black*).

Results

Preliminary analyses. Racial attitudes analyses excluded 14 additional participants who skipped the racial attitudes index items. Property value analyses excluded 22 participants who did not report a value and 1 extreme White/value-absent condition outlier (\$5,000,000; > 5 SDs above both the overall and condition means). SES analyses excluded six participants who did not report perceived SES.

Collapsing across conditions, participants rated resident SES as just below middle class ($M = 2.36$, $SD = 0.92$), as intended. Analysis of perceived neighborhood race and the two class indicators confirmed that the race and property-value manipulations each shifted perceptions in the expected directions.¹⁰ Participants' scores on the 6 chemical plant proposal memory test questions were good on average ($M = 5.09$, $SD = 1.39$), and did not differ significantly by race condition or property-value condition, both $t(402) < 1$ (see Table 4 for means and standard deviations for all dependent measures by condition; see Table 5 for correlations between all dependent measures).

Primary analyses. First, t tests assessed whether the basic race effects observed in Studies 2a and 2b replicated in this new domain. As predicted, neighborhood race (Black or White) influ-

enced space-focused stereotyping, space connection, and chemical plant opposition. Participants envisioned the Black neighborhood as more industrial ($M = 4.22$, $SD = 1.19$) than the White neighborhood ($M = 3.67$, $SD = 1.28$), $t(399) = 4.50$, $p < .001$, $d = 0.45$. Participants also reported feeling less connected to the Black neighborhood ($M = 4.05$, $SD = 1.18$) than the White neighborhood ($M = 4.78$, $SD = 1.18$), $t(399) = 6.21$, $p < .001$, $d = 0.62$. Lastly, participants reported less opposition to building the chemical plant near a Black neighborhood ($M = 4.53$, $SD = 1.31$) than a White neighborhood ($M = 4.85$, $SD = 1.29$), $t(401) = 2.44$, $p = .015$, $d = 0.25$.

Mediation analysis: Space-focused stereotyping and space connection explain the effect of neighborhood race on chemical plant opposition. Serial multiple mediation analyses tested whether the effect of neighborhood race on chemical plant opposition could be explained by its indirect effect on space-focused stereotypes operating through space connection (see correlations in Table 3). Our model paralleled Study 2: neighborhood race \rightarrow space-focused stereotyping (Mediator 1) \rightarrow space connection (Mediator 2) \rightarrow chemical plant opposition. Each individual path in the model proved significant (see Figure 4 for path estimates). Bootstrapped estimates with 95% CIs tested the three potential indirect effects. The predicted mediation (indirect path from neighborhood race \rightarrow stereotypes \rightarrow connection \rightarrow opposition) was significant, $b = 0.01$, $SE = 0.004$, CI [0.001, 0.017]. The indirect path from neighborhood race \rightarrow stereotypes \rightarrow opposition was also significant, $b = 0.06$, $SE = 0.02$, CI [0.027, 0.105], as was the final indirect path from neighborhood race \rightarrow connection \rightarrow opposition, $b = 0.04$, $SE = 0.02$, CI [0.0004, 0.086].

Secondary analysis: Race effects hold when controlling for racial attitudes. We hypothesized that the effect of neighborhood race would remain when accounting for variation in anti-Black racial attitudes. On average participants reported significantly less warmth toward Blacks ($M = 70.38$, $SD = 20.14$) than Whites ($M = 79.59$, $SD = 16.39$), $t(389) = 10.27$, $p < .001$. ANCOVAs controlling for anti-Black racial attitudes revealed that significant effects of race persisted for space stereotyping, $F(1, 386) = 19.57$, $p < .001$, $\eta_p^2 = .05$, space connection $F(1, 386) = 35.57$, $p < .001$, $\eta_p^2 = .08$, and plant opposition, $F(1, 386) = 6.65$, $p = .01$, $\eta_p^2 = .02$.

Secondary analysis: Support for the race-beyond-class hypothesis. Finally, we examine whether race effects remain on our primary measures of interest when shifting neighborhood class upward. First, 2 (Neighborhood Race: Black or White) \times 2 (Property Value: Present or Absent) ANOVAs confirmed our class manipulation's effectiveness: Providing property value information (vs. not) boosted neighborhood class perceptions and this pattern was consistent across both the White and Black neighborhood conditions, with

¹⁰ Participants perceived the neighborhood as significantly more Black in the Black condition ($M = 5.07$, $SD = 1.06$) than the White condition ($M = 2.42$, $SD = .92$), $t(398) = 26.73$, $p < .001$, $d = 2.67$. Introducing property values raised estimates of median neighborhood house value, $t(367.0)$; equal variances not assumed) = 4.31, $p < .001$, $d = 0.44$ ($M_{\text{value-present}} = \$183,160.62$, $SD = \$90,589.10$; $M_{\text{value-absent}} = \$139,383.60$, $SD = \$107,305.67$) and resident SES, $t(396) = 2.56$, $p = .011$, $d = .026$ ($M_{\text{value-present}} = 2.48$, $SD = 0.94$; $M_{\text{value-absent}} = 2.24$, $SD = 0.89$).

Table 4
Means (SDs) by Condition for Dependent Measures in Study 3

Measure	Black neighborhood		White neighborhood	
	Value absent (N = 97)	Value present (N = 97)	Value absent (N = 101)	Value present (N = 109)
Space-focused stereotyping	4.20 (1.19)	4.24 (1.19)	3.73 (1.32)	3.60 (1.25)
Space connection	4.11 (1.20)	3.98 (1.16)	4.82 (1.15)	4.74 (1.22)
Chemical plant opposition	4.56 (1.33)	4.50 (1.31)	4.76 (1.36)	4.93 (1.22)
Racial attitudes	-8.05 (13.86)	-8.36 (17.48)	-10.46 (22.53)	-9.87 (15.91)
Perceived resident SES	2.11 (.88)	2.37 (.88)	2.36 (.89)	2.56 (.99)
Perceived property values (thousands)	\$122.9 (\$94.7)	\$181.5 (\$100.0)	\$156.1 (\$116.8)	\$184.6 (\$81.9)
Perceived neighborhood race	5.01 (1.11)	5.14 (1.01)	2.54 (.99)	2.31 (.84)

Note. Positive scores on racial attitudes indicate pro-Black/anti-White bias. Perceived neighborhood race was rated on a scale from 1 (*extremely White*) to 7 (*extremely Black*).

no race-by-property value interactions emerging.¹¹ Next, we performed 2 (Neighborhood Race) × 2 (Property Value) ANOVAs on the industrial space stereotype, space connection, and chemical plant opposition. The previously reported main effects of race persisted for stereotyping $F(1, 397) = 19.95, p < .001, \eta_p^2 = .05$, connection $F(1, 397) = 38.62, p < .001, \eta_p^2 = .09$, and opposition $F(1, 397) = 5.83, p = .016, \eta_p^2 = .01$, and no significant main effects or interactions involving the class manipulation emerged, all $F_s(1, 397) < 1$. Thus, as predicted, the pattern of race effects on our primary measures did not significantly differ between lower and more moderate levels of perceived class.

Because manipulating neighborhood race also shifted class perceptions (see Footnote 11), a series of ANCOVAs tested whether the race effects on our primary measures remained when controlling for variation in perceived property values and resident class. Controlling for these factors, race significantly shaped stereotyping $F(1, 378) = 15.76, p < .001, \eta_p^2 = .04$, connection $F(1, 378) = 30.53, p < .001, \eta_p^2 = .08$, and opposition $F(1, 378) = 4.03, p = .046, \eta_p^2 = .01$.¹²

Finally, although the hypothesized neighborhood race effects were not significantly moderated by the property-value manipulation, supplemental tests of simple effects confirmed that even in the value-present condition neighborhood race significantly influenced stereotyping, $F(1, 397) = 13.62, p < .001, \eta_p^2 = .07$, connection, $F(1, 397) = 21.03, p < .001, \eta_p^2 = .09$, and opposition, $F(1, 399) = 5.64, p = .018, \eta_p^2 = .03$. Thus, neighborhood race effects did not rely upon the absence of objective social class indicators; on the contrary, our hypothesized effects emerged even for an ostensibly middle-class neighborhood.

Discussion

Study 3 replicates the primary outcome and basic processes identified in Studies 2a and 2b, using a large, nationally representative sample of White Americans. As in Study 2b, switching neighborhood racial demographics from White to Black made participants more likely to stereotype this target neighborhood in a manner consistent with the tainted image of Black space observed in Study 1 (i.e., assume it was industrial). Results supported our proposed model, in which space-focused racial stereotyping carries negative downstream consequences for the target space. In our model, stereotyping a Black area as blighted leads people to disconnect from it, which in turn influences how they judge it. In

Study 3, this judgment meant participants were less opposed to building a chemical plant near the target neighborhood, thereby providing less environmental protection for the Black space.

The three supplemental experiments also provide further support for the space-focused stereotyping model’s causal path in the environment domain (again, see Supplemental Materials for full study descriptions). Extending Study 3, all three studies ask participants to consider a waste treatment facility (instead of a chemical plant). Study S1 replicates the serially mediated indirect effect of race on neighborhood environmental protection with measure order randomized. Study S2 manipulates Black space-focused stereotype content (i.e., space quality), showing that imagining a low (vs. high) quality neighborhood significantly decreases space connection and environmental protection. Study S3 manipulates space connection, showing that feeling disconnected from (vs. connected to) a neighborhood dampens environmental protection.

In addition to replicating Studies 2a and 2b, these studies are, to our knowledge, the first to extend space-focused racial stereotyping processes from the domain of housing to environmental decision-making. This extension is theoretically significant because it suggests space-focused stereotyping is not driven solely by individuals’ desire to justify their decision to avoid living in Black communities. Instead, individuals engage in a range of discriminatory behaviors elicited by a tainted image of Black areas—the content of these particular space-focused stereotypes.

The mere presence of Black residents rendered a physical locale the target of a discriminatory environmental judgment, of the kind

¹¹ Main effects of neighborhood race confirmed that the Black neighborhood shifted class perceptions downward: Participants estimated the median neighborhood house value to be lower, $F(1, 378) = 3.22, p = .073, \eta_p^2 = .01$ ($M_{\text{Black}} = \$152,182, SD = \$101,440; M_{\text{White}} = \$170,346, SD = \$100,845$) and rated resident SES lower, $F(1, 394) = 5.86, p = .016, \eta_p^2 = .02$ ($M_{\text{Black}} = 2.24, SD = 0.89; M_{\text{White}} = 2.46, SD = 0.94$). Main effects of our property-value manipulation confirmed that introducing property values raised estimates of median neighborhood house value, $F(1, 378) = 18.55, p < .001, \eta_p^2 = .05$ ($M_{\text{value-present}} = \$183,056.53, SD = \$90,589.10; M_{\text{value-absent}} = \$139,471.52, SD = \$107,305.67$) and resident SES, $F(1, 394) = 6.33, p = .012, \eta_p^2 = .02$ ($M_{\text{value-present}} = 2.47, SD = .94; M_{\text{value-absent}} = 2.24, SD = .89$). In sum, providing property value information boosted perceived class for Black and White neighborhoods.

¹² Controlling for racial attitudes, perceived SES, and perceived property values, we still observe serial mediation. Specifically, the predicted mediation (indirect path from neighborhood race → stereotypes → connection → opposition) remained significant, $b = 0.006, SE = 0.004, CI [0.0002, 0.0181]$.

Table 5
Correlations (*R*) Between Dependent Measures in Study 3

Measure	1	2	3	4	5	6
1. Space-focused stereotyping						
2. Space connection	-.23**					
3. Chemical plant opposition	-.24**	.17**				
4. Racial attitudes	.12*	.03	-.01			
5. Perceived resident SES	-.10*	.21**	.04	-.11*		
6. Perceived property values	.06	.16**	.07	.00	.17**	
7. Perceived neighborhood race	.16**	-.34**	-.07	.00	-.19**	-.16**

Note. SES = socioeconomic status. Positive scores on racial attitudes indicate pro-Black/anti-White bias. Perceived neighborhood race was rated on a scale from 1 (*extremely White*) to 7 (*extremely Black*). Bonferroni-corrected Fisher *r*-to-*z* tests revealed a significantly stronger correlation in the Black condition ($r = -.36^{***}$) than the White condition ($r = .03$) between perceiving a neighborhood as more Black and feeling disconnected from it, $ps < .01$.

* $p < .05$. ** $p < .01$.

that is consequential for racial disparities in exposure to environmental toxins. Historically, Black Americans have been overexposed to concentrated industrial pollution (Bullard, 1993; Cole & Foster, 2001; Grant, Trautner, Downey, & Thiebaud, 2010). Overexposure is linked to negative health outcomes, from infant mortality to asthma and cancer (Morello-Frosch, Pastor, & Sadd, 2002; Morello-Frosch & Shenassa, 2006). Our results reveal how present-day, racially driven social psychological processes may contribute to the problem.

A strength of Study 3 involves controlling for person-focused racial attitudes. Participants reported relatively less warmth toward Black than White people, yet when controlling for this anti-Black bias, racial differences in space-focused stereotyping, space connection, and chemical plant opposition all remained significant. These findings undercut widespread assumptions in both the environmental justice and residential segregation literatures that racial animosity is a necessary ingredient for racial disparities. In contrast, building on other work in psychology on automatic, implicit racial bias (Devine, 1989; Eberhardt, Goff, Purdie, & Davies, 2004; Greenwald & Banaji, 1995) our findings suggest racial discrimination can occur in the absence of anti-Black animus (also see Greenwald & Pettigrew, 2014).

Evidence of racial discrimination absent anti-Black animus suggests our findings may replicate with a Black sample. Given

the pervasiveness of negative images of Black space (see Study 1), perhaps Black Americans distance themselves from Black space as well. Alternatively, Black Americans may remain connected to Black space, despite the negative images to which they are exposed (e.g., see Semuels, 2015). If this is the case, one would expect Black Americans to be more inclined to protect Black space rather than expose that space to future harm. Future work should examine space connection with a Black sample. Furthermore, conducting a study with a racially diverse sample would provide insight as to whether boosting space connection in the face of negative stereotype content, even for outgroup members, will halt the polluting of Black space.

Finally, Study 3 results provide support for the driving role of race, above and beyond class factors. The class manipulation provided evidence that neighborhood race maintains the same pattern of effects at two different class levels: lower middle class and middle class. Also, although race shifted class perceptions, neighborhood race still caused differences in space-focused stereotyping, space connection, and chemical plant opposition when controlling for perceived SES and property values. Shifts in perceived class were not a necessary driving component of polluting Black space. In ongoing work, we are further investigating race and class intersections by manipulating class at more extreme levels.

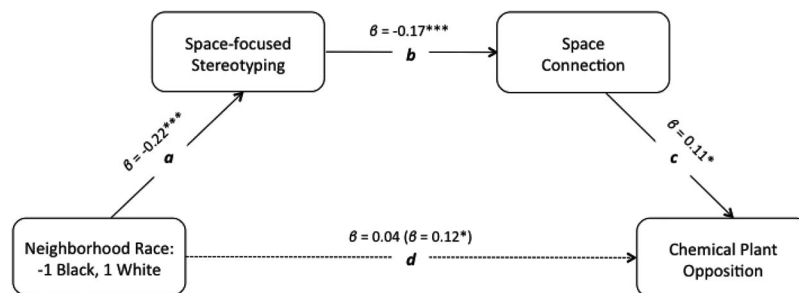


Figure 4. The space-focused stereotyping model depicting relationships between space-focused stereotypes, connection, and chemical plant opposition following a race prime in Study 3, with the total (unmediated) effect in parentheses. * $p < .05$. *** $p < .001$.

General Discussion

When Lippmann introduced the term “stereotypes” to the social sciences, he described stereotyping as a process shaping not only person perception, but also perception of the physical world. He pointed out how our beliefs about a scene, for example, could influence how we interpret that scene and what we remember from it. Our basic apprehension of space is so heavily shaped by culturally defined ways of seeing that without this scaffolding, we are in a fog: “A diffusive blur and an indiscriminately shifting suction characterize what we do not understand” (Lippmann, 1922, p. 81). We cannot see a landscape, let alone imagine one, without drawing on the stereotyped images our culture has painted for us.

Despite these insights, a century of social science rarely has empirically tested space-focused stereotyping. Here, we describe how Black space-focused stereotypes can “introduce definiteness and distinction . . . consistency [and] stability . . . into what is otherwise vague and wavering” (Lippmann, 1922, p. 81). In Study 1, we find initial evidence that Black spaces are generally characterized as impoverished, crime-ridden, disordered, and neglected. These stereotypes appear to be as strong and consensual as the stereotypes of Black people. Just as there is widespread knowledge of Black person-focused stereotypes, data from Studies 1, 2a, 2b, and 3 together suggest there is widespread knowledge of Black space-focused stereotypes as well.

Stereotype Activation

Black space-focused stereotypes are powerfully activated upon being primed with Black people associated with a space. For example, our data suggest simply viewing a single Black family can influence how people imagine an entire neighborhood around them. In Study 2a, although we gave participants no explicit information about the characteristics and racial demographics of the neighborhood, when primed with a Black versus White family, participants imagined that neighborhood to be less safe, less well maintained, and to have fewer resources. In Studies 2b and 3, knowing that Black people are the largest group in a given neighborhood led participants to again imagine that neighborhood not only as less safe, less well maintained, and having fewer resources (Study 2b) but also as more industrial (Study 3). Across all studies, priming participants with Black people led them to imagine the target neighborhood in a manner consistent with Black space-focused stereotypes. Further, our evidence suggests activating space-focused stereotypes can lead people to detach from spaces tainted with Blacks, to devalue the homes in them (Studies 2a and 2b) and to leave them less protected from pollution (Study 3). Each supplemental study suggests these housing and environment outcomes can occur simultaneously, implying that physical locales targeted in one domain may also be targeted in others. Future work will investigate cross-domain stereotyping and its cumulative impacts.

In addition to demonstrating unique space-relevant consequences of racial stereotype activation, the results reported here contribute to previous stereotyping research by expanding the notion of the target. Spaces, clearly, can be targets of stereotyping. Moreover, this contribution raises myriad questions worth exploring in future research. Do space-focused and person-focused stereotypes work in concert? When a Black family triggers space-focused stereotypes, do they trigger these stereotypes directly or via person-focused stereotypes? Results from a go-no-go associa-

tion test (GNAT, see Nosek & Banaji, 2001) support direct activation: Individuals automatically associate the Study 1 physical space characteristics more strongly with Black Americans than White Americans (Bonam, Eberhardt, & Glaser, 2013). Alternatively, might space-focused stereotypes trigger person-focused stereotypes? If this is the case, perhaps space-focused stereotypes can influence the stereotyping process even when spaces are not the measured target (e.g., see Doleac & Stein, 2013). Given that people typically observe and/or interact with others in a physical context, understanding the influence of space-focused stereotyping on person perception is especially important. Regardless of activation order (person stereotypes trigger space stereotypes or vice versa), emerging findings directly differentiate space-focused from person-focused stereotyping, confirming them to be empirically separable phenomena. Stronger awareness of the impoverished and degraded Black space-focused stereotype predicts greater negative stereotyping of and discrimination against Black physical spaces (Yantis & Bonam, 2015). Critically, this relationship holds when controlling for awareness of analogous Black person-focused stereotypes, and awareness of person-focused stereotypes does not moderate ratings of space targets.

Stereotype Content

Though empirically separable, the content of space-focused stereotypes and person-focused stereotypes appears to overlap. Black people and Black spaces are both stereotyped as dangerous and poor, for example. This similarity of content may not only provide clues to which kind of stereotype is triggered first, but to which stereotype shapes which. Overlapping content raises the question of how stereotypes, in general, develop. One possibility is that stereotypes held about people simply bleed onto the stereotypes we hold about the spaces those people occupy. In this case, space-focused stereotypes may derive from person-focused stereotypes. Alternatively, person-focused stereotypes may derive from space-focused stereotypes. Stereotypes held about spaces may bleed onto the people occupying those spaces.

Mainstream models of stereotyping frequently highlight the impact of a group’s societal position in determining both the stereotype content about that group and the affect directed toward it (see Alexander, Brewer, & Hermann, 1999; Fiske, Cuddy, Glick, & Xu, 2002). For example, groups perceived as low in competence and warmth (relative to other groups) are prime targets of negative stereotypes and prejudice (Fiske et al., 2002). However, given the work presented here, stereotype content may not only be driven by a group’s societal position, but a group’s physical position. Living in a dangerous and crime-ridden neighborhood may lead others to believe that the group itself is dangerous and criminal. Stereotypes attached to social groups may emerge not only from the social environment, but also the physical environment (e.g., see Werthman & Piliavin, 1967; Williams, Sng, & Neuberg, 2016). Future work is needed to test this idea for additional racial/ethnic groups (e.g., Latinos, Asians, American Indians).

Stereotype Accuracy

Perhaps viewing Black spaces as “bad” spaces is accurate. After all, relative to other U.S. ethnic or racial groups, Blacks have indeed occupied resource-poor, crime-ridden spaces for decades.

Perhaps exposure to this reality leads people to accept and employ stereotypes of Black spaces. Indeed, participants in Studies 2a, 2b, and 3 appeared to trust the accuracy of space-focused stereotypes enough to use them to guide their impressions of targeted neighborhoods far beyond the information given.

Though compelling, claims based on stereotype accuracy do not undermine our results. Instead, we believe that the perceived accuracy of space-focused stereotypes renders them *more* prone to overgeneralization and worthy of investigation, not less. Insofar as space-focused stereotypes are accepted as accurate, they may shape decisions more powerfully and directly than the person-focused stereotypes that are seen as illegitimate. Although people may make valiant efforts to avoid applying racial stereotypes to people (e.g., Glaser & Knowles, 2008; Plant & Devine, 1998), we suspect that no such effort is attempted for space-focused stereotypes, which appear to adequately describe what people see.

The perceived accuracy of space-focused stereotypes may even influence how people think about the consequences of their evaluative judgments and actions. When negative stereotypes about Black spaces are construed as true, perhaps people care less about harm done to these spaces. For example, if people presume Black spaces already contain industrial facilities, they may feel that adding more industrial facilities will not cause substantial harm. In fact, our Study 3 results parallel work demonstrating that people are more upset when pristine places are polluted than when polluted places are polluted further (Cialdini et al., 1990). Polluting a polluted place is barely recognized as harmful at all. There is a legacy in America of constructing poor, underresourced, and degraded spaces for Blacks. This space-based inequality still needs remediation today, yet space-based stereotypes may powerfully counter any such remediation.

Finally, the fact that space-focused stereotypes are perceived as accurate raises particularly thorny questions about how best to intervene. A stereotype-reduction intervention commonly championed in the stereotyping literature is to weaken the association between the stereotype and the group (Kawakami, Dovidio, Moll, Hermsen, & Russin, 2000). How can stereotypes that appear to be accurate and supported by historical fact be weakened? In such cases, perhaps the goal should not be to free people of their associations between race and space, but to teach them about the history of these associations. As Lippmann (1922) claims “all history is antiseptic in this fashion” (p. 91), and the more historical knowledge people have, the greater their awareness of current injustice (Nelson, Adams, & Salter, 2013). Negative characteristics of Black spaces that may appear normal and natural have been constructed by decades of policies and practices separating Black people from society and depriving them of basic resources. Without historical knowledge, people may continue to detach themselves from the spaces where Black people are overrepresented and do little to protect them.

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Appendix A

Pictures and Neighborhood Information Table in Studies 2a and 2b

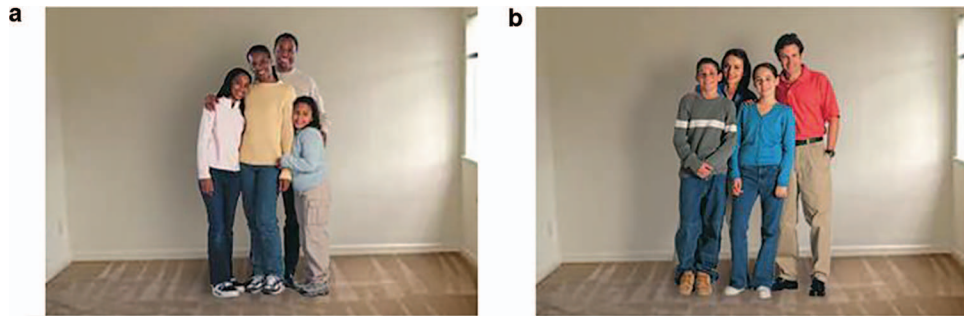


Figure A1. Families depicted in the Black (panel a) and White (panel b) conditions of Study 2a. See the online article for the color version of this figure.

Demographics	Neighborhood
Overall Population	3,281
Median Age	31.5
Households	1,093
Male Population	49.03%
Female Population	50.97%
Married Population	44.58%
Single Population	55.42%
Largest Ethnic Population	Caucasian (White)
Area	1.79 Square Miles

Figure A2. Neighborhood demographics in the White condition of Study 2b. In the Black condition, “African American (Black)” replaced “Caucasian (White).”



Figure A3. House front (full set of house pictures available upon request). See the online article for the color version of this figure.

(Appendices continue)

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Appendix B

Neighborhood Information Tables in Study 3

Environment	Neighborhood	United States
Rainfall (inches/year)	36.7	36.6
Snowfall (inches/year)	24.8	25.2
Precipitation Days (yearly)	103	101
Sunny Days (yearly)	203	205
Avg. July High	85.2	86.5
Avg. Jan Low	23.2	20.8
UV Index	4.7	4.3
Elevation (feet)	753	1062

Figure B1. Neighborhood’s environment information.

Demographics	Neighborhood
Overall Population	3,281
Median Age	31.5
Households	1,093
Male Population	49.03%
Female Population	50.97%
Married Population	44.58%
Single Population	55.42%
Largest Ethnic Population	Caucasian (White)
Area	1.79 Square Miles

Figure B2. Neighborhood demographics in the White condition of Study 3. In the Black condition, “African American (Black)” replaced “Caucasian (White).”

Housing	Neighborhood	United States
Median Home Age	32	27
Median Home Cost	\$200,000	\$217,200
Annual Home Appreciation	4.78%	5.20%
Homes Owned	60.52%	64.07%
Housing Vacant/Unoccupied	15.89%	14.48%
Homes Rented	23.59%	21.45%

Figure B3. Housing information in the value-present condition of Study 3. In the value-absent condition, the “Median Home Cost” and “Annual Home Appreciation” lines were omitted.

Appendix C

Chemical Plant Proposal in Study 3

Primary Chemical

The main chemical produced in this plant will be chlorine. Chlorine is used to manufacture things like semiconductors, paper, odor agents, pesticides, and circuit boards. It is one of the most common chemicals in the U.S., with more than 1 million pounds produced annually. Seven out of eight ranking systems classify it as being more hazardous than most chemicals. There are no recognized health hazards for this chemical. Although, it is suspected to be a blood, kidney, and liver toxicant.

Production Impact

The plant would meet, but not exceed, environmental and health codes. Some of the chemical production waste from this plant would be released into a nearby river. This plant will have its own wastewater treatment system, so that the water released will be treated and purified before going back into the drinking supply. Short-term studies show no significant health or environmental impact using this water treatment method, but long term studies have not yet been done. Some authorities say the long term health

and environmental impacts of this chemical plant are still unknown.

Monetary Cost

Your company would like to lease the land, and the space is available to lease for an amount within the budget.

Location

See the red dot in the map below for an idea of where the plant will go.



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