Doctors’ Perceptions of Multiracial Adolescents

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Abstract: Perceptions of race influence the way health care is delivered to minority populations, particularly multiracial people. Currently only 11% of American physicians are Black or Latinx, making the chances slim that Black and Latinx patients will be treated by a co-ethnic. White supremacy is well documented in the medical literature—along with efforts to combat it—yet medical education and health care are still largely based on studies by and about white people. This privileging of whiteness is increasingly evident as the COVID-19 pandemic has shone a renewed spotlight on disparities in health and care in the U.S. The current study considers how doctors perceive race and use it to make healthcare decisions. Among the (N = 509) doctors in this sample, few said they considered the patient's race. Of those who did, many determined race by some method other than asking the patient directly. The most common methods were observing skin tone and observing cultural cues. Doctors perceived nearly half the multiracial targets as monoracial. Targets who followed the norm of hypodescent were significantly more likely to be identified congruently by doctors. Targets who identified at the extremes of the color spectrum (black and white) were easier to identify, while the beige tones in the middle of the spectrum were more challenging. Patient ancestry was the most relevant criterion in explaining the congruence of racial identification between patients and doctors, while characteristics of the doctors were nearly irrelevant.

Keywords: identity; perception; congruence; health care; racism

The doctor enters the examining room to find a new patient: a white-appearing young man who has come to discuss some chest pain and his family’s history of hypertension. What goes through the doctor’s mind? “Who is this patient and which risk factors does he have for hypertension?” The doctor blithely says, “Don’t worry, young white guys like you don’t just drop dead. You’re not at risk of hypertension”. The part-Black patient in this true story became anxious about what happens to young non-white guys with a family history of hypertension: do they just “drop dead”? Embarrassed to correct the doctor, he left without describing his racial background or getting any information about hypertension.

The patient’s risk of a given condition is influenced by genetic code, physical environment, and social context—none of which is visible to the doctor. However, like all Americans, doctors use their experiences, stereotypes, and knowledge to make informed assumptions about the consequences of what they perceive to be the patient’s race, ethnicity, gender, socioeconomic status, etc. These experiences, stereotypes, and knowledge are rooted in American society, a society with a history of slavery, white supremacy, and discrimination—even among “good” doctors who mean well and try hard to combat their implicit biases.

Perceptions of a person’s race are typically consistent with the way the person self-identifies racially because most people identify in keeping with norms about appearance and racial categorization (Saperstein 2006). However, many multiracial people appear ambiguous, and some identify in ways that are not consistent with social norms. Regardless, racial identity is not a proxy for racial ancestry when it comes to health risks. Racial misclassification has implications for mental health, physical health, and the validity of medical research (Campbell and Troyer 2011; López et al. 2018; Rhoades 2005). Furthermore, misclassification can damage trust between the patient and the doctor who has mistaken
the patient’s identity (Franco and O’Brien 2018). This lack of trust undermines diagnoses, treatment decisions, and patient compliance with treatments (Grilo et al. 2022).

In addition to lack of trust arising through misperception, some distrust between patient and provider is rooted in the structural racism and white supremacy that led to many examples of white physicians experimenting on minority patients. For example, Dr. J. Marion Sims, the white “father of modern gynecology”, performed surgeries on enslaved Black women without any anesthesia. His goal in these surgeries was to increase the fertility of his patients—on behalf of their owners—and the lack of anesthesia stemmed from a common belief that Black people could not feel pain. This attitude toward people of color is a clear example of white supremacy: the belief that white people are superior to others and should dominate them. Although experiments such as those of Marion Sims took place many years ago, they were followed by other infamous examples such as the Tuskegee syphilis experiments and the uncompensated/uninformed cloning of Henrietta Lacks’ cervical cells. Many examples of racial disparities in health still abound and are often based on such small inaccuracies as Hedges Greising’s (2005) finding that patient race is listed inaccurately or not at all in many patients’ charts either because clerks either do not collect the information or they enter their own perceptions of the patient’s race!!

Given the consequences of misperception and mistrust, this study asks three questions: first, do doctors typically ascertain the races of their patients? Second, when doctors do ascertain race, how do they accomplish the task? Note that although the average observer is more than 90% accurate at identifying monoracial faces (Richeson and Trawalter 2005; Vargas and Stainback 2016), Americans have much lower congruence when identifying multiracial faces (Herman 2010). Third, how well do doctors, whose training and work focuses on the observation of physiological characteristics, assess race? The answers to these questions lead to speculation on a fourth question: how have racism and white supremacy in American society contributed to both racial misperception of and indifference toward multiracial patients?

1. Racial Disparities in Health Care

One of the fiercest debates in the healthcare literature is how race matters to health and whether race-based health disparities are due to genetic or environmental differences (Cooper et al. 2003). Genetic risk factors are embedded in a person’s family health history and are difficult to escape, though they may be managed. Environmental factors such as poverty and racism may be inescapable on an individual level even if they are manageable on a public policy level. Both types of risk factors are worsened by providers who do not understand the racial background of their patients. Indeed, Snyder et al. (2018) report that common microaggressions against multiracial patients in healthcare settings include mistaken identity (provider makes mistakes about a patient’s race), mistaken relationships (provider makes assumptions about a patient’s family makeup), fixed forms, and entitled examiner (provider asks racially stereotyped questions that go beyond what is necessary for proper patient care, ignores race, or does not communicate the potential impact of race on health).

An important extension of this genetic vs. environmental debate is whether to treat multiracial patients as “the sum of their parts” or to categorize them according to their various ancestries. There are differences of opinion about how to apply existing research on (mono)racial differences in health status to multiracial patients (Berthold 2008; Tashiro 2005). It makes little sense to lump all multiracial people together into one category for consideration of their health outcomes, yet lumping them in with just one of their racial ancestries squanders valuable data. Healthcare providers must not rely on knowledge about population-based risk factors associated with the race they perceive a multiracial patient to be phenotypically (Tashiro 2008). Instead, they should take a complete patient history—not only because of the inherent risks associated with particular backgrounds, but also because providers need to know the environmental and social contexts of their
multiracial patients’ complex lives. This is, of course, true for all patients, but multiracial patients have added complexities in this regard.

Which health conditions vary by race? Leaving aside the question of whether researchers are measuring race appropriately (Cobb et al. 2016), cardiovascular disease and breast cancer are the conditions most commonly studied with respect to racial difference (Jackson 2008; Littrell 2008). There is well-documented racial variation in propensity to experience obesity, asthma, sickle cell anemia, lactose intolerance, alcohol intolerance, depression, and diabetes. Health outcomes also vary by race, influenced by cultural factors such as patient willingness to seek treatment, willingness to participate in medical trials, attitudes toward invasive procedures, likelihood of following healthcare directions, and willingness to take vaccines (Braunstein et al. 2008; Choi et al. 2022; Latkin et al. 2021; Rao et al. 2007; Westergaard et al. 2014).

A study by van Ryn and Burke (2000) showed that race and other sociodemographic characteristics of the patient influence how a practitioner perceives, and thus, interacts with the patient. Combining this with Monk’s (2015) finding that doctors perceive Black and low socioeconomic status patients overwhelmingly more negatively than white and high SES patients, these “negative views” reflect a lack of affiliation with minority patients, beliefs about these patients’ likelihood of risky behavior, and presumptions about these patients’ willingness and ability to adhere to a doctor’s advice. Other studies show that unconscious race bias among doctors contributes to racial disparities in prescribing medical procedures. While doctors do not explicitly state their preferences for white patients, they do have implicit preferences for wealthier and non-minority patients (Chapman et al. 2013; Green et al. 2007). Such preferences are disconcerting because implicit biases against patients are associated with poorer treatment decisions about their care (FitzGerald and Hurst 2017).

The Centers for Disease Control reported, in October of 2021, that multiracial people were more likely than those of other minority groups to be vaccinated against COVID-19 (Ndugga et al. 2021). However, even the CDC data are complicated by varying race data collection protocols across the 50 states. For example, Utah residents may choose more than one race while Wyoming does not collect any race data about vaccine recipients (Smith 2021).

How does this research relate to multiracial patients? Like other minorities, multiracial people are more likely than white people to experience speech, behavior, hearing, and vision problems, to have unmet prescription needs, and to lack insurance/health care (Flores and Tomany-Korman 2008; Liu et al. 2021). There are also differences between multiracial and “monoracial” minorities: multiracial people are significantly less likely than other groups to receive adequate oral health care and are more likely to experience asthma and allergies. However, they are less likely to suffer from hearing, vision, joint, bone, and muscle problems or obesity (Lau et al. 2012).

Notwithstanding all of these inequities in healthcare practice, this paper does not argue that multiracial patients should be treated “better” than other minority groups or “as well as” white patients. Rather, all patients should receive appropriate care with particular attention to their social, environmental, and genetic risk factors. Multiracial patients simply have a lower likelihood of receiving such individualized attention since their race is unclear and, as I show below, most doctors presume a patient’s race rather than verifying it directly.

Multiracial people are part of a growing population. In 2010, the U.S. Census showed that multiracial Americans comprised 2.9% of the total population and nearly half of them were under age 18. By 2020, the “more than one race” group had grown to 10.2% of the population (Jones et al. 2021). While some argue that this increase may be inflated by increased genetic testing, it is unsurprising that the population of Americans whose parents are of different races has grown since the “multiracial baby boom” in the 1970s after Loving v. Virginia struck down anti-miscegenation laws (Root 1997).

Although multiracial youth experience many of the same issues as minority youth in terms of achievement (Kao 1999), mental health (Shih and Sanchez 2005), friendship
networks (Quillian and Redd 2008), and deviant behavior (Udry et al. 2003), they also experience challenges that are specific to having multiple ancestries: identity development (Root 1997) higher levels of parental divorce (Fu 2000) and the mental health consequences of others’ confusion about who they are (Kateri Hernandez 2018). Thus, studying the interaction of doctors and multiracial youth provides a window into the future of racial and cultural issues in health care.

It is not easy to recognize multiraciality, let alone to determine the specific ancestries of a multiracial person. Studies of racial perception have focused mostly on the amount of time it takes an observer to determine a target’s race (Livingston and Brewer 2002; Richeson and Trawalter 2005), not how accurate the observer is at identifying race (Herman 2010). General studies of multiracial identity have focused on difficulties of identifying (Brunsma 2005), enumerating (Campbell 2007), and categorizing (Herman 2004) multiracial individuals—but not whether perceptions of multiracial individuals are consistent with those individuals’ self-identifications. Studies of doctors and race have focused on disparities in health care and health outcomes (Nelson 2002), on whether outcomes are better for patients who see a doctor of the same race (LaVeist and Nuru-Jeter 2002; Meghani et al. 2009), and on whether registration clerks at a doctor’s office list the same race for the patient as the patient lists for him/herself (Kressin et al. 2003)—but not on whether the doctor’s assessment of the patient’s race is consistent with the patient’s self-identification. Thus, we lack studies that consider the ability of doctors to recognize and treat multiracial patients.

2. Perceptions of Race

Theories abound to determine which factors are important to understanding whether and how an observer (doctor) assesses the race of a target (patient). Some scholars find that physical characteristics of the target are the most relevant to how observers assess race (Brown et al. 1998). Others argue that the observer’s own race and contact with members of a given race group affect their perceptions, particularly when measuring the accuracy of an observer choosing a target from an eyewitness lineup (Hannon and DeFina 2014; Sporer 2001). Still others suggest that experiencing racial discrimination changes a perceiver’s accuracy (Blascovich et al. 1997), that skin-tone bias affects perception (Hill 2002; Maddox and Gray 2002), or that whites do not perceive skin tone differences in African-Americans (Hannon et al. 2020). Here, I examine the theories associated with these claims, starting with aspects of the observer, moving to aspects of the target, and then looking at both simultaneously.

The contact hypothesis argues that recognition accuracy for members of another race is directly related to the amount of contact and/or quality of experience with people in the other racial group (Sporer 2001). Because recognition of faces belonging to other races is not genetically programmed (Pauker et al. 2010), differential performance in recognition can be attributed to different social learning experiences. However, social learning experiences (e.g., frequency and quality of contacts with other ethnic/racial groups) are challenging to measure because they vary widely in scope and importance. Furthermore, the impact of such contacts on affect toward people of other races is endogenous: a positive racial attitude may lead to repeated contact (and better recognition), but repeated or frequent contact with other races may also lead to a more positive attitude toward another racial group, and thus, to better recognition. Similarly, conflictual interactions may induce negative affect but still lead to better recognition, as in the case of white supremacists. My study extends the contact hypothesis to consider whether greater contact with patients of different races would lead doctors to be more aware of their patients’ races and have more congruent assessments of race.

Turning now to theories focusing on features of the target, studies of skin-tone bias show that healthcare professionals classify and treat patients differently based on the darkness of the patient’s skin tone with clear preferences for patients with lighter skin (Maddox 2004; White-Means et al. 2009). Similarly, Brown et al.’s (1998) determinant features hypothesis holds that observers rely on certain physical features to distinguish between
races: notably skin tone, hair texture/color, and lip shape. Because doctors are trained in physiological examination, we expect their observations of race to fit these two theories.

Finally, combining aspects of both observer and target, the own-group bias hypothesis holds that people separate others into in-group and out-group based on certain physical or personality characteristics. Individuals are more likely to identify in-group members correctly and to treat them more conscientiously because they rely on stereotypes to identify out-group members versus experience to identify in-group members (Oliver and Fonash 2002; Van Bavel and Cunningham 2012). If doctors identify traits using in and out-group stereotypes, they may also identify physical characteristics using such stereotypes.

3. Multiracial Targets

Congruence between an observer and a monoracial target is a binary measure: the observer either accurately identifies the target’s race or does not, but congruence with multiracial targets is more complex. Many factors are related to racial self-identification among multiracial youth, including socioeconomic status, neighborhood and school racial demographics, gender, contact with parents, phenotype, and the particular race groups in a multiracial person’s ancestry (Brunsma 2005; Campbell and Rogalin 2006; Herman 2004; Pickett et al. 2019). Even the details of a person’s ancestry (which is different from, and arguably more objective than, self-identification) are subject to the vagaries of memory and the willingness of parents and grandparents to share such details (Senna 2009).

These complications may explain why existing studies of perceptions of multiracial faces show contradictory results (Feliciano 2016). One study concluded that the observer’s race, sex, and context affected the observer’s accuracy in judging race (Harris 2002). Another concluded that Black–white mixed-race targets were more likely to be categorized as Black (not white) or as multiracial (Peery and Bodenhausen 2008), and a third found that the background of the observer was unrelated to racial perceptions (Herman 2010).

To address these complications, the current study simply investigates congruence between target and observer in the context of the doctor’s office—keeping in mind that the doctor observers are working only with external/physical cues while the targets may be choosing an identity using internal/cultural cues as well as external ones. Gauging doctor perceptiveness with respect to a patient’s racial/ethnic identity lays the foundation for exploring doctors’ cultural sensitivity and treatment approaches with multiracial youth.

Thus, this paper considers how “monoracial” theories of racial perception predict whether doctors assess race among multiracial patients, and if so, how well they do it. The determinant features hypothesis suggests that regardless of their own race, all doctors use skin tone to judge race; i.e., that the target’s skin tone and other physical features are associated with whether the doctor perceives the patient’s race the same way the patient reports their race. The contact hypothesis suggests that doctors who spend more time with people of different races are better at identifying another person’s race, i.e., that characteristics of the doctor are relevant to congruence. Finally, the own-group bias theory predicts that doctors are better at categorizing people belonging to races they share; i.e., that both characteristics of the doctors and of the patients are related to congruence.

Hypotheses:

Skin tone/determinant features:

Hypotheses 1a (H1a). Many doctors use skin tone to assess race.

Hypotheses 1b (H1b). Aspects of the patient are related to congruence.

Contact:

Hypotheses 2a (H2a). Doctors who have more contact with racial outgroups are more likely to assess race.
Hypotheses 2b (H2b). Doctors who have more contact with racial outgroups demonstrate higher congruence in assessing race.

Own-group bias:

Hypotheses 3 (H3). Congruence is higher when doctor and patient share racial categories.

4. Method

Participants and Measures

For “patients”, I used color photos that were taken from high school yearbooks featuring students who participated in a survey on adolescent development. The survey included two questions relating to racial identification and racial ancestry. The first was about identity: “Select the one major ethnic group that best describes you” and offered seven categories to choose from (Black, American Indian, White, Asian, Hispanic, Pacific Islander, and Middle Eastern). Multiracial was not an option, nor was “other”. Thus, respondents were forced to choose one racial/ethnic category.

The second question concerned ancestry: “What is the ethnic background of your mother and your father? If a person has a mixed ethnic background, darken more than one answer for that person”. All the photos used in this study were of students who indicated that their parents (not step-parents) were of different backgrounds, i.e., multiracial students. Of the 536 multiracial students in the selected high schools who provided racial data for themselves and their parents, 91% (N = 486) had yearbook photos available.

In selecting yearbook photos from this sample of 486, the first goal was to include as many racial group combinations as existed in the sample. It would have been fascinating to examine all possible racial group combinations, but not all combinations are equally distributed (e.g., Asian–Latinos are scarce). Given the seven forced-choice response categories presented in the survey, there were 21 possible biracial combinations and many more possible multiracial combinations. The aim was to have a photo of one boy and one girl from each of the 21 possible biracial combinations. This was not always possible because some categories had no cases (for example, there were zero Middle Eastern–American Indians). However, it was possible to select a photo from all but one of the combinations of Black, White, Asian, and Latino (Asian–Latino was the exception). There were also examples of some of these common categories combined with the less common American Indian, Middle Eastern, and Pacific Islander categories.

The second goal was, within each biracial and gender category, to have one target who identified as each of the racial categories (e.g., one Black–White boy who identified as Black and one who identified as White). As with the first goal, there were empty cells for some identification combinations. For example, there were no Black–Asians of either gender who identified as Asian. Indeed, the majority of Black–Asians in American society identify as Black, as do most multiracial people who are part-Black (Daniel 2002; Rockquemore and Brunsma 2002; Root 2001).

When there was only one photo for a given gender–ancestry–identity category, I included it. When there were multiple photos representing a given category, three research assistants selected the one that most clearly displayed features such as skin tone, eye shape, and hair type. This procedure resulted in a pool of 35 representative target photos (see Table 1). Regression analyses weighted each category of target photo based on the number of other respondents of that same category in the original high school dataset.

I recruited doctors who had graduated from a prestigious medical school where racial minorities comprised 16% of the alumni body, which corresponds well to national statistics for doctors (see Figure 1 for details). The average age of the alumni was 48 years, and 95% of the alumni lived in the United States.
Table 1. Target ancestry, identification, and gender.

| Photo # | Ancestries           | Identification | Gender |
|---------|----------------------|----------------|--------|
| 1       | Black–American Indian| Black          | female |
| 2       | Black–American Indian| Black          | male   |
| 3       | Black–American Indian| American Indian| female |
| 4       | Black–American Indian| American Indian| male   |
| 5       | Black–White          | Black          | female |
| 6       | Black–White          | Black          | male   |
| 7       | Black–White          | White          | female |
| 8       | Black–White          | White          | male   |
| 9       | Black–Asian          | Black          | female |
| 10      | Black–Asian          | Black          | male   |
| 11      | Black–Hispanic       | Black          | female |
| 12      | Black–Hispanic       | Hispanic       | female |
| 13      | Black–Hispanic       | Hispanic       | male   |
| 14      | Black–Pacific Islander| Pacific Islander| female |
| 15      | American Indian–White| American Indian| female |
| 16      | American Indian–White| American Indian| male   |
| 17      | American Indian–White| American Indian| female |
| 18      | American Indian–White| White          | female |
| 19      | American Indian–White| White          | male   |
| 20      | American Indian–Hispanic| American Indian| female |
| 21      | American Indian–Hispanic| American Indian| male   |
| 22      | White–Asian          | White          | female |
| 23      | White–Asian          | White          | male   |
| 24      | White–Asian          | Hispanic (Filipino) | female |
| 25      | White–Asian          | Asian          | male   |
| 26      | White–Hispanic       | White          | female |
| 27      | White–Hispanic       | White          | male   |
| 28      | White–Hispanic       | Hispanic       | female |
| 29      | White–Hispanic       | Hispanic       | male   |
| 30      | White–Middle Eastern | White          | male   |
| 31      | White–Middle Eastern | Middle Eastern | female |
| 32      | White–Middle Eastern | Middle Eastern | male   |
| 33      | White–Pacific Islander| Pacific Islander| female |
| 34      | White–Pacific Islander| White          | male   |
| 35      | Hispanic–Middle Eastern| Hispanic      | male   |

N = 35 photos.

Email invitations were sent to the 66% of alumni who had provided the alumni office with email addresses. Although I had no information about the alumni without emails, I have no reason to think they would have different perceptions of race than their more electronically connected peers. Furthermore, the ages of the email respondents were varied enough (ages 25–84) to conclude that the sample was not missing the older end of the alumni body due to lack of email. The email invitation introduced the project as “a study of how doctors perceive the races of their patients,” and provided a link to the study website along with a password. Participants were promised that $1000 would be donated to the medical school’s scholarship fund for every 100 participants who completed the study. Participation took 5–10 min and was completed online via the doctors’ own computers. Twenty-eight percent of the invitees participated, N = 509.
Doctor participants logged into the study’s website and were presented with fifteen of the randomly selected target photos. Respondents were asked about each target’s racial ancestry, “How would you describe this person? (check all that apply)” and identification “What single category would you say best describes this person?” The response options were the same as those in the original survey completed by targets. For an example of the webpage, see Figure 2.

![Survey screenshot](image-url)

**Figure 2.** Survey screenshot.
After completing fifteen ratings, doctor respondents answered a series of demographic questions about themselves including their year of birth, gender, country of birth, age at immigration, a check-all-that-apply ancestry question, and a forced-choice racial identification question. Respondents also answered questions about the racial makeup of contexts they lived in including their parents and children, their interracial dating history, the race of their college roommates or housemates, and the percentage of their patients and colleagues from each race group. Finally, the doctors provided information on how often they considered a patient’s race in making treatment decisions and, if they did, what methods they used to ascertain that race.

Of the 509 doctors who completed the survey, 64% were male, 69% reported having had a roommate of a different race, 47% reported dating someone of a different race, 13% had a parent, spouse, or child of another race, and 96% were born in the U.S. (Although 47% reporting interracial dating may seem high, Levin et al. (2007) found that 46% of white and 35–61% of minority college students had dated interracially in just a single year and Herman and Campbell (2012) show that people of all ages engage in interracial dating much more than they do interracial cohabitation, marriage, or childbearing). The average doctor participant was 45 years old with a 30% non-white patient caseload and a colleague racial makeup of 15% non-white (see Table 2, below).

Table 2. Doctor characteristics.

|                          | %  | Min | Max | Mean | Std. Dev. |
|--------------------------|----|-----|-----|------|-----------|
| Middle Eastern           | 0.6% | 3   |     |      |           |
| Pacific Islander         | 0.6% | 3   | 4   | 3.75 |           |
| American Indian          | 0.8% | 3   | 3   | 3.00 |           |
| Southeast Asian          | 3.1% | 4   | 4   | 3.75 |           |
| Black                    | 2.2% | 16  |     |      |           |
| Hispanic                 | 1.6% | 11  |     |      |           |
| Asian                    | 7.7% | 8   | 8   | 7.75 |           |
| White                    | 83.1% | 39  | 83  | 83.15|           |
| No response              | 0.4% | 423 |     |      |           |
| Female                   | 37.0% |     |     |      |           |
| Foreign born             | 4.1% |     |     |      |           |
| Age                      |     | 25  | 84  | 45.02| 15.52    |
| Roommate of a different race | 69.0% |     |     |      |           |
| Dated or married someone of a different race | 47.4% |     |     |      |           |
| Parent, sibling, spouse, or child of another race | 13.6% |     |     |      |           |
| Non-White patients in caseload | 30.0% |     |     |      |           |
| Non-White co-workers     | 14.8% |     |     |      |           |
| How often do you consider the race of the patient? | | | | | |
| 0 = never                | 28.50% | 1.18| 0.97|   |
| 1 = rarely               | 34.80% |     |     |      |
| 2 = sometimes            | 29.10% |     |     |      |
| 3 = frequently           | 5.90%  |     |     |      |
| 4 = always               | 1.80%  |     |     |      |
| If you do consider the race of the patient in making treatment decisions, how do you ascertain it? (check all that apply) | | | | | |
| Ask directly             | 53.4% |     |     |      |
| Look in chart            | 32.4% |     |     |      |
| Observe cultural clues   | 32.0% |     |     |      |
| Observe skin tone        | 36.2% |     |     |      |
| Other                    | 5.5%  |     |     |      |
| N = 509 doctors          |     |     |     |      |
I was not able to compare the races of participants and non-participants because the medical school did not keep records of race associated with the names of the alumni in its database—only aggregate numbers of alumni in each category were available for the classes of 1976 through the present. Figure 1 (above) shows racial demographics for the study sample, all alumni 1976 to the present, and all U.S. doctors. Comparing my sample of participants to all U.S. doctors (AMA 2019) the racial demographics were virtually identical with one interesting exception: nearly all of my study participants answered the race question whereas 41% of the U.S. sample did not. Curiously, the U.S. sample contained 44% white while mine contained 83% white. Simple addition (41% + 44% = ~83%) suggests that most of the U.S. doctors who did not indicate race were probably white. Indeed, other studies support this conjecture (Panter et al. 2008). There were no statistically significant differences between alumni who participated in the study and those who did not in terms of age, gender, or college major.

Table 2 (above) shows that only 29% of doctors never considered the race of the patient when making treatment decisions. Among those who did consider race, their average frequency was 1.65, which corresponds to between “rarely” and “sometimes” on a 5-point scale of “never” to “always”. Among these, three-quarters ascertained race using more than one method—including by asking the patient directly. Only one-quarter ascertained race exclusively by asking the patient. Of those who did not ask directly, most observed the patient’s skin tone (59%), used cultural cues about the patient (52%), looked in the patient’s chart (42%) or used another method (13%). Thus, there is some support for the determinant features Hypothesis 1a: doctors use skin tone to assess race.

5. Procedure

Since 36% of all the doctors in the sample reported using skin tone to assess race, it is worth considering how accurate—or congruent—they were at doing so. In testing congruence, I had three units of analysis: 35 target photos, 509 doctor observers, and 7089 views of photos by observers. The first methodological question was to assess the level of congruence between the doctor’s and the target’s reports of the target’s race, and the second was to assess the characteristics affecting congruence.

With the forced-choice question, determining the level of congruence was simple: either the target and doctor gave the same answer or they did not. I call this forced-choice or Type 1 congruence. With the check-all-that-apply question, there were many ways to define congruence. One was binary: whether the observer recognized the target’s multiraciality by marking more than one race category, called binary or Type 2 congruence. An alternative involved counting the percentage of ancestries checked off by the observer, either missing some or adding in ones that the target did not identify, called percentage or Type 3 congruence.

I tested for differences in congruence across doctor and target characteristics, then regressed each type of congruence on the independent variables representing the theories described above. I evaluated the contact hypotheses using the variables measuring the quantity of contact doctors have had with people of other races (interracial relationships, roommates, family members, patient caseload, and colleagues) to see if such contact was associated with congruence. I evaluated the determinant features hypothesis by considering the impact of the target’s features on congruence. Finally, I assessed the own-group bias hypothesis by examining the extent to which doctors’ and targets’ racial identities and ancestries were associated with congruence.

6. Results

6.1. Targets

I tested the determinant features Hypothesis 1b (whether features of the photo were related to congruence) by examining whether certain types of targets were difficult or easy to identify, which features (if any) of the targets were related to different types of congruence, and whether targets were perceived as multiracial at all (binary Type 2 congruence).
Starting with the ease or difficulty of identifying targets: the five most consistently congruent targets were coded congruently more than 95% of the times they were viewed. All of these ‘most congruent’ photos were either part-Blacks who identified as Black or part-whites who identified as white. The five least consistent targets were congruently coded only 3% of the times. They included part-Blacks who identified as non-Black and two part-American Indians who identified as American Indian. Thus, the most congruent targets identified themselves according to the norm of hypodescent whereas the least congruent targets did not.

Hypothesis 1b tested whether a feature of the target (identification) was related to forced-choice Type 1 congruence. The bottom cell in the first column of Table 3 reveals that 49% of the photos were perceived in the same way (by doctors) as the targets had categorized themselves on the forced-choice question. Targets who identified as Black had significantly (F(7088, 6) = 391.868, p < 0.001) higher congruence with doctors than those who identified as white, while targets who identified as American Indian, Asian, Middle Eastern, Hispanic, or Pacific Islander had significantly lower congruence with doctors than either whites or Blacks. In other words, targets who followed the norm of hypodescent were significantly more likely to be identified congruently by observers. Additionally, targets who identified with the extremes of the color spectrum (black and white) were easier to identify, while the beige tones in the middle of the spectrum were much more challenging. Thus, Hypothesis 1b was supported in the sense that a feature of the target (the way the target identified) was related to congruence.

Table 3. Mean percent congruent, by racial identification of target.

| Target Self-Identification | Type 1: Forced-Choice Congruence | Type 2: Binary Congruence | Type 3: Percentage Congruence |
|---------------------------|---------------------------------|--------------------------|------------------------------|
| Black                     | 77%                             | 39%                      | 69%                          |
| American Indian           | 6%                              | 44%                      | 64%                          |
| White                     | 60%                             | 35%                      | 76%                          |
| Asian                     | 46%                             | 40%                      | 72%                          |
| Hispanic                  | 41%                             | 51%                      | 63%                          |
| Middle Eastern            | 37%                             | 63%                      | 73%                          |
| Pacific Islander          | 12%                             | 59%                      | 45%                          |
| Total                     | 49%                             | 43%                      | 68%                          |

N = 7643 photo views for all types of congruence

Binary Type 2 congruence tested whether the doctor recognized the target as multiracial. The second column of Table 3 shows that of 7089 photo views of multiracial targets, only 43% were perceived as multiracial. This finding is troubling from a healthcare perspective, and it indicates more support for Hypothesis 1b that features of the target are important to perceiving race. This finding is confirmed by regressing a target’s average binary Type 2 congruence on demographic characteristics, showing that both racial identification (Black or white) and gender (female) are significant predictors of being perceived as multiracial.

Percent Type 3 congruence: the third column of Table 3 shows that observers named an average of 68% of a target’s reported ancestries. Regressing a target’s average Type 3 congruence on the remaining features of the target photo (each ancestry, the total number of ancestries, and gender) revealed that all ancestries had a significant and negative impact on Type 3 congruence compared to white, the reference category. In other words, having any of the minority ancestries made a target harder to identify relative to having white ancestry. Furthermore, the number of races in a target’s ancestry was negatively related to congruence. Thus, the more races an observer must perceive, the more challenging the task.

Although these findings all support determinant features Hypothesis 1b (that ancestry and number of ancestries—features of the target—are related to congruence), the congruence rate was still quite low (43–68%), particularly compared to congruence between mono-
racial targets and observers in other studies (more than 90%) (Livingston and Brewer 2002). Perhaps doctors were guessing because they felt constrained by the forced choice or were unable to identify the target’s race. Or, possibly doctors were giving thoughtful answers but the task was not straightforward—even when considering targets for which the doctor identified only one race. The discussion takes up these issues.

6.2. Doctors

The doctor analyses tested the contact Hypotheses 2a–2b: that doctors who have had more contact with people of other races are more likely to assess race, and that they will have higher congruence than doctors with less interracial contact. Thus, these tests explored which types of doctors used race in their treatment decisions, which were congruent in their assessments of race, and which doctor characteristics were related to different types of congruence. ANOVAs reveal that Asian doctors were less likely than whites to consider race \( (p < 0.001) \), while older and foreign-born doctors were somewhat more likely than younger and American-born ones \( (p < 0.001) \). Logistic regression (see Table 4) confirms these findings. However, neither having family members, roommates, nor romantic partners of a different race was related to considering race in treatment. Since these latter variables are aspects of interracial contact, as opposed to features of the doctor, I argue that the contact Hypothesis 2a was not supported: doctors with more interracial contact were no more likely to consider race in making treatment decisions than those who have had little interracial contact.

Table 4. Logistic regression of doctor characteristics on likelihood of considering race.

|                      | B       | S.E.   | p-Value |
|----------------------|---------|--------|---------|
| Female               | 0.095   | 0.227  | 0.676   |
| Black                | −0.276  | 0.624  | 0.659   |
| Hispanic             | 0.150   | 0.814  | 0.854   |
| Asian                | −0.855  | 0.405  | 0.035 * |
| Age                  | 0.014   | 0.007  | 0.046   |
| Foreign born         | 0.548   | 0.600  | 0.361   |
| Family members of another race | 0.283   | 0.337  | 0.401   |
| Roommate of another race | 0.234   | 0.237  | 0.324   |
| Dated or married another race | 0.054   | 0.225  | 0.810   |
| Non-White patients   | 0.008   | 0.004  | 0.046 * |
| Non-White colleagues | −0.002  | 0.005  | 0.689   |
| Constant             | −26.513 | 14.353 | 0.065   |

\( \text{N = 509 doctors} \)

Log Likelihood = 591.241

Cox & Snell \( R^2 = 0.033 \)

\( R^2 = 17.020 \text{ df = 11, } p < 0.108 \)

* \( p < 0.05 \), ** \( p < 0.01 \), *** \( p < 0.001 \); reference category = White.

6.3. Targets and Doctors

The analyses above show how characteristics of targets explain variance in congruence while most characteristics of doctors do not. Combining both sets of variables into one model allows direct comparison of target and doctor characteristics. Tables 5 and 6 show that several characteristics of the target were strongly associated with congruence while none of the doctor characteristics was associated with Type 1 congruence and only two were significant for Type 3. Thus, these analyses undermine Hypothesis 2b.

Analyses of the own-group hypothesis (Hypothesis 3) tested whether doctors had more congruent perceptions when examining a target whose ancestry was similar to their own. For example, are Black doctors more congruent in their observations of part-Black targets and are they any more likely to identify the Black part of part-Black targets? ANOVAs within (race) groups of targets showed no significant differences between doctors who shared part of the target’s race and those who did not. Even estimating the full model with an additional variable: “Match between the target’s racial identification and the doctor’s
own racial identification,” showed no advantage for doctors and targets who shared racial ancestry. Thus, these analyses undermine Hypothesis 3: doctors were generally no more congruent at identifying targets whose identities they shared.

Table 5. Logistic regression of Type 1 congruence on doctor and target characteristics.

| Doctor                         | B    | S.E. | Sig. |
|-------------------------------|------|------|------|
| Female                        | −0.081| 0.063| 0.198|
| Black                         | 0.114| 0.171| 0.505|
| Hispanic                      | 0.043| 0.194| 0.824|
| Asian                         | 0.019| 0.119| 0.873|
| American Indian               | 0.191| 0.189| 0.312|
| Pacific Islander              | 0.390| 0.635| 0.539|
| Middle Eastern                | 0.244| 0.248| 0.325|
| Southeast Asian               | 0.492| 0.297| 0.098|
| Other                         | −0.090| 0.162| 0.578|
| Age                           | 0.006| 0.002| 0.003**|
| Family members of another race| 0.105| 0.091| 0.249|
| Dated or married another race | −0.116| 0.064| 0.070|
| Roommate of another race      | −0.013| 0.068| 0.849|
| % non-White patients          | −0.001| 0.001| 0.317|
| % non-White colleagues        | −0.001| 0.001| 0.317|
| Foreign born                   | −0.278| 0.157| 0.077|
| Frequency of using race in    | −0.064| 0.038| 0.092|
| diagnosis                     |      |      |      |
| Determine race using skin tone| −0.134| 0.079| 0.090|
| Determine race by asking       | 0.074| 0.047| 0.116|
| Determine race by cultural     | 0.147| 0.081| 0.070|
| overtones                      |      |      |      |
| Target                         |      |      |      |
| Female                        | −0.586| 0.063| 0.000***|
| Black                         | 0.926| 0.075| 0.000***|
| American Indian               | −3.027| 0.137| 0.000***|
| Asian                         | −0.886| 0.102| 0.000***|
| Hispanic                      | −0.782| 0.086| 0.000***|
| Middle Eastern                | −0.661| 0.126| 0.000***|
| Pacific Islander              | −2.160| 0.174| 0.000***|
| Number of ancestries          | −0.290| 0.030| 0.000***|
| Constant                      | −10.999| 4.227| 0.009**|

N = 7089 photo views
Cox & Snell $R^2 = 0.272$
Log likelihood = 7511.665
$R^2 = 2236.976$ df = 28, $p < 0.000$

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; reference category = White.

Because the determinant features theory was the only theory that received support in my analyses, the final analysis examined patterns of incongruence. Table 7 juxtaposes targets’ self-identifications with doctors’ perceptions of targets. The main diagonal shows Type 1 congruence between targets and doctors, while the cells off the main diagonal reveal incongruence. Black (77%) and white (60%) had the highest congruence. Furthermore, doctors only perceived 5% of the white-identified targets as Black. Thus, although doctors were only 49% congruent with targets overall, they rarely mis-perceived targets as Black. Most of the “error” lay in doctors perceiving targets as Asian, Middle Eastern, Hispanic, and Pacific Islander.
Table 6. Multiple regression of Type 3 congruence on doctor and target characteristics.

|                      | B    | S.E.  | Beta  | Sig. |
|----------------------|------|-------|-------|------|
| **Doctor**           |      |       |       |      |
| Female               | 0.000| 0.004 | −0.003|      |
| Black                | 0.000| 0.011 | 0.000 |      |
| Hispanic             | −0.019| 0.012 | −0.017|      |
| Asian                | −0.006| 0.008 | −0.009|      |
| American Indian      | 0.006| 0.012 | 0.005 |      |
| Pacific Islander     | 0.026| 0.040 | 0.007 |      |
| Middle Eastern       | 0.012| 0.015 | 0.008 |      |
| Southeast Asian      | 0.041| 0.019 | 0.023 | *    |
| Other                | 0.013| 0.010 | 0.014 |      |
| Age                  | 0.001| 0.000 | 0.048 | ***  |
| Family members of another race | 0.003 | 0.006 | 0.007 |      |
| Dated or married another race | −0.007 | 0.004 | −0.021 |      |
| Roommate of another race | 0.001 | 0.004 | 0.003 |      |
| % non-White patients | 0.000 | 0.000 | 0.007 |      |
| % non-White colleagues | 0.000 | 0.000 | −0.008 |      |
| Foreign born         | −0.016| 0.010 | −0.018|      |
| Frequency of using race in diagnosis | −0.004 | 0.002 | −0.021 |      |
| Determine race using skin tone | −0.006 | 0.005 | −0.016 |      |
| Determine race by asking | 0.001 | 0.003 | 0.006 |      |
| Determine race by cultural overtones | 0.006 | 0.005 | 0.017 |      |
| **Target**           |      |       |       |      |
| Female               | 0.005| 0.004 | 0.015 |      |
| Black                | −0.071| 0.005 | −0.182| ***  |
| American Indian      | −0.116| 0.006 | −0.245| ***  |
| Asian                | −0.040| 0.007 | −0.064| ***  |
| Hispanic             | −0.116| 0.006 | −0.225| ***  |
| Middle Eastern       | −0.005| 0.009 | −0.007| ***  |
| Pacific Islander     | −0.292| 0.009 | −0.374| ***  |
| Number of ancestries | −0.048| 0.002 | −0.277| ***  |
| Constant             | −0.204| 0.265 |       |      |

N = 7089 photo views
R² = 0.00262

* p < 0.05, ** p < 0.01, *** p < 0.001; reference category = White.

Table 7. Doctor identification of target by target self-identification.

| Doctor Perception of Target | Black | White | Asian | American Indian | Middle | Hispanic | Pacific |
|-----------------------------|-------|-------|-------|-----------------|--------|----------|---------|
| Black                       | 77%   | 5%    | 2%    | 1%              | 3%     | 7%       | 5%      | 100%    |
| White                       | 13%   | 60%   | 3%    | 2%              | 3%     | 14%      | 5%      | 100%    |
| Asian                       | 0%    | 45%   | 46%   | 2%              | 0%     | 2%       | 5%      | 100%    |
| American Indian             | 39%   | 28%   | 1%    | 6%              | 1%     | 21%      | 4%      | 100%    |
| Middle                      | 2%    | 25%   | 0%    | 4%              | 37%    | 29%      | 3%      | 100%    |
| Hispanic                    | 16%   | 6%    | 25%   | 1%              | 4%     | 41%      | 7%      | 100%    |
| Pacific                     | 7%    | 6%    | 10%   | 7%              | 28%    | 31%      | 12%     | 100%    |
| Total                       | 33%   | 28%   | 9%    | 3%              | 5%     | 17%      | 5%      | 100%    |

Note: all figures represent percentage of photo views by doctors (N = 7089 photo views).

7. Discussion/Conclusions

The central findings of this study are (1) that the majority of doctors say they rarely consider the race of their patients (2) those who do consider race often guess about it rather than verifying it with the patient, (3) these guesses are only moderately congruent with the self-identifications of multiracial patients, and (4) patient ancestry is the most relevant criterion in explaining the congruence of racial identification between patients and doctors,
while characteristics of the doctors are nearly irrelevant. The patients and doctors in this study have levels of congruence ranging from 6% for part-American Indians who identified as American Indian to 77% for part-Black respondents who identified as Black. Furthermore, multiracial patients who self-identified as Black were most congruently identified when observers used the one-drop rule than when they used the check-all-that-apply system.

These congruence levels are low compared to the near perfect levels of accuracy when observers are assessing monoracial targets (Willadsen-Jensen and Ito 2006). These levels are also low compared to what people might expect of doctors, some of whom failed to correctly identify even one of a multiracial patient’s ancestries.

Such a lack of congruence is significant for several reasons. First, although many of my doctors said they did not usually consider the race of their patients in making medical decisions, most doctor write up their cases beginning with something like, “16 year-old white female presented with symptoms of . . .”. When doctors are unaware of their patients’ racial/ethnic background and fail to ask for this information, they are guessing. Since guesses are congruent only part of the time, doctors may be interacting in uninformed and insensitive ways with patients, making suboptimal medical decisions, proposing culturally inappropriate treatments, and giving inaccurate data to public health registries. These decisions may not cause life-threatening situations among younger patients but they could be problematic for the health outcomes of older multiracial people (Ferdinand 2006; Green et al. 2007). Furthermore, it is stressful for targets to be racially misidentified (Campbell and Troyer 2011; Gaskins 1999), and multiracial youth already have higher levels of mental health symptoms than monoracial youth (both white and minority) (Herman 2007; Udry et al. 2003).

My finding that the interracial experiences and race of the doctor are irrelevant to congruence is surprising, in light of the contact hypothesis. Why are doctors’ backgrounds irrelevant? Why do they underperform at recognizing multiraciality? One possibility is the task. Doctors have more information when assessing real patients than they did in my task, but my task is one at which doctors may assume they are capable. When there is racial ambiguity in a real office visit, doctors either ask patients directly or turn to secondary information (i.e., chart, language, clothes, name) to provide insight whereas the doctors in my study only had photos to consider so they were left in an uncomfortable position of having to classify someone without all the usual tools to do so.

However, this uncomfortable position is not so uncommon and may not be so uncomfortable when it is subconscious. Employers are often presented with a resume and asked to use only that information to select interviewees. Race is typically not specified, although it may be inferred. Thus, even when the verbal, interpersonal, and even visual cues that might provide more insight are absent, candidates with darker skin tones are systematically discriminated against at the stage of being called in for an interview (Bertrand and Mullainathan 2003; Pager 2003, 2007). With an actual skin tone in front of an observer, the chance to mis-perceive race and to misuse the resulting misperception is increased. Situations like these and many others, in which people make and act on assumptions about race, reinforce the importance of understanding perceptions of race.

Secondly, this task is challenging because some multiracial people maintain identities that are different from the way social norms would lead doctors to perceive them. That is, although the one-drop rule is widely known by doctors and other observers, multiracial people may reject it in identifying themselves. Similarly, multiracial people may rely more heavily on internal/cultural identity cues while the doctors are only able to assess external/physical cues. Nonetheless, doctors should know internal identities in order to develop culturally sensitive and appropriate treatment regimens.

My study’s generalizability is limited by the fact that it is not an experiment with randomly selected respondents. However, my sample’s demographics are similar to those of a nationally representative sample of American doctors. Moreover, my results are likely to be a conservative test of the contact hypothesis since those who participated are likely to be more interested in race and could be expected to have more congruent racial perceptions
than those who chose not participate in a study about race. Thus, these results raise legitimate concerns about the treatment of multiracial people in the health care system. Doctors’ relatively low congruence coupled with their low likelihood of ascertaining race is worrisome. Medical schools must train doctors to ask about race even when they feel confident of the answer. Good clinicians will take a careful patient history to assess environment, social context, health history, and racial/ethnic characteristics—rather than relying on knowledge about population-based risk factors associated with the race they perceive a patient to be (Tashiro 2005). Regardless of whether the differences between racial groups are caused by genetic or environmental factors, it is important to know the patient’s racial and ethnic background and to act on that information as one of many pieces in a patient’s healthcare profile.

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**Institutional Review Board Statement:** The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Committee for the Protection of Human Subjects at Dartmouth College on 03/23/05. The project “Effects of Observer Characteristics on Perceptions of Race Among Multiracial Adolescents” was designated EXEMPT (CPHS #17382) from further review based on the federal regulation: (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects’ responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects’ financial standing, employability, or reputation. 45 CFR 46.101(b)(2). Passive consent was provided by the parents of students in the target photos, and the student who appears in the photo in Figure 2 actively consented to use her photo. Consent to participate was obtained from physicians through their active participation.

**Informed Consent Statement:** Passive consent was provided by the parents of students in the target photos, and the student who appears in the photo in Figure 2 actively consented to use her photo. Consent to participate was obtained from physicians through their active participation.

**Data Availability Statement:** The data are not available due to privacy agreements.

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**Notes**

1. Note: Although race and ethnicity are not synonymous, I use the terms interchangeably in this paper for several reasons. First, the question used in the original survey asked respondents to “select the one major ethnic group that best describes you” and the list of response categories included both racial and ethnic groups. Second, two-thirds of Hispanic-identifying American adults say that being Hispanic is part of their racial background—not something separate (Pew Research Center 2015). Thus, Hispanics view race in a way that does not match the way scholars gather racial/ethnic demographic data. Third, Americans more generally see Hispanic as “one of the racial/ethnic categories” despite the scholarly definition of it only as an ethnic group (Compton et al. 2010; Porter and Snipp 2018; Sandefur et al. 2004).

2. While the original survey called all of the response options ethnic groups, some scholars would argue that Middle Eastern and Hispanic are the two ethnic groups among a list of race groups. I call them all race groups for simplicity and because there is some debate about whether Hispanic and Middle Eastern should be treated as races or ethnic groups (Compton et al. 2010; Porter and Snipp 2018; Sandefur et al. 2004).

3. I could have calculated Type 3 congruence using percentage correct, percentage incorrect, or percentage missing but the results were so similar that I chose the percentage correct method.
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