"They have Black in their blood": Exploring how genetic ancestry tests affect racial appraisals and classifications

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EFFECTS OF GENETIC ANCESTRY TESTS ON RACIAL APPRAISALS AND CLASSIFICATIONS

ABSTRACT

How do genetic ancestry tests (GATs) affect how Black Americans decide when others can – or cannot – identify as Black? This study explores the role of GATs in shaping racial appraisal and classification logics. Using a pre-registered nationally representative survey experiment that integrates causal inference with computational text analysis, we disentangle how ancestry (as measured by a GAT) affects how U.S.-born Black Americans draw boundaries around group membership and how these effects vary across setting and prior identification. We find that, though higher levels of Sub-Saharan African ancestry predict higher likelihoods of approval and classification as Black, even individuals with low levels of such ancestry are likely to have their self-identification validated by respondents, consistent with the practice of hypodescent. Furthermore, ancestry treatment effects are primarily mediated by perceptions of the integrity of the individual's self-identification, suggesting that respondents believe there exists an underlying legitimate and honest way to identify that is partially based on one's GAT result. However, we also find that the aspects that affect approval and evaluations differ from those that affect classification; the ways that respondents selectively integrate different sources of information, including ancestry, occurs via a dual appraisal and classification process which we term *racial contextualism*.

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INTRODUCTION

In October 2022, during the oral arguments of *Students for Fair Admissions v. The University of North Carolina* (UNC), Supreme Court Justice Samuel Alito questioned UNC's defense attorney Ryan Park about how university admissions determine who is part of a racial group (Students for Fair Admissions v. University of North Carolina 2022). What if, Alito asked, "the student has one grandparent who falls within that [racial] class. Can the student claim to be a member of an underrepresented minority?" When Park responded affirmatively, emphasizing that the university relies on self-reporting to determine racial group membership, Alito followed up: "[What about] one great-grandparent? ... One great-great grandparent?"

Social controversy over who is – and is not – part of a racial group is a longstanding feature of the U.S. racial landscape. Sociological theories regarding racial boundaries have long been concerned with how individuals classify others, and the impacts of these classifications on power dynamics and group interactions (Lamont and Molnár 2002; Lewis 2004; Okamoto 2014; Weber 1968; Wimmer 2013). For non-White populations in the U.S., racial boundaries have roots in the historical legacy of racism and the 'one-drop' rule (Gullickson 2010; Morning 2011) and have become increasingly complex due to the burgeoning genetic ancestry testing industry. Some 60 million Americans have used at-home, direct-to-consumer DNA kits to trace the approximate geographic regions where their ancestors likely originated (Orth 2022). Though the information provided by genetic ancestry tests (GATs)[1] is conceptually distinct from socially

[1] 'Ancestry' is an expansive concept that is used in a variety of ways. Broadly, *genealogical ancestry* denotes the patterns of familial relatedness encompassed in the single, sprawling family tree shared by all of humanity. Information regarding an individual's genealogical ancestry can be traced using historical records and intergenerational narratives, or, because an individual inherits their DNA from their biological parents, estimated using genotype data (Mathieson and Scally 2020). In practice, GAT companies tend to provide personal ancestry information to consumers by coarsening genealogical ancestry into simple geographic categories (e.g., 'an estimated 75% of your ancestors are from Southern Europe' and 'an estimated 25% are from Central America'), which we call *geographic ancestry*. Importantly, while genealogical ancestry is complex and continuous, geographic ancestry is discrete. Information regarding these two conceptualizations of ancestry may come from different types of sources

constructed racial categories, the two are often conflated. This conflation, in turn, reinforces longstanding, essentialist, and incorrect conceptualizations of race as biological (Brubaker 2016b; Gullickson 2016). Indeed, information from GATs have been shown to shape a person's racial self-identification in complex ways that vary across race, sociocultural context, and other characteristics (Guo et al. 2014; Johfre, Saperstein, and Hollenbach 2021; Nelson 2008). For instance, previous research has shown that some individuals change their racial identification after receiving GAT results (Roth and Lyon 2018). Likewise, GAT results are increasingly being used by individuals as 'proof' of racial membership (Bliss 2013; Brubaker 2016b; Morning 2018).

How do members of a racial in-group factor in GAT information when validating or rejecting another person's decision to self-identify as their race? Although there is growing interest in examining how GATs affect racial self-identification, there remains a limited understanding of how changes in racial self-identification that are spurred, in part, by GAT results fit into the broader social process of racial boundary-making (Brunsma 2006; Gieryn 1983; Tilly 2005). How an individual self-identifies does not necessarily correspond to how others classify them (Campbell and Troyer 2007; Feliciano 2016; Huang 2023; López and Hogan 2021; Roth 2016). Furthermore, although prior studies have identified the cues and traits that White Americans use to classify others (Schachter, Flores, and Maghbouleh 2021), few have examined how in-group processes of racial classification operate within non-White populations,

and may have varying implications for how a person constructs their social identity. Importantly, the accuracy and validity of different sources of ancestry information can vary. For example, in the case of non-paternal events resulting from an undisclosed affair, there may exist discordance between who an individual believes is a biological parent/grandparent and who they are actually biologically related to. In addition, early GATs provided information that was markedly less reliable than their modern counterparts (Nelson 2016). Unless specified otherwise, we use the term ancestry to refer to the geographic ancestry information captured by GATs.

such as for Black Americans.[2] This latter line of inquiry is particularly salient given the specificity and durability of the White-Black binary in U.S. contexts, which has been marked by the legacy of the one-drop rule and is distinct from other racial boundaries (Davis 2001; Gullickson 2010; Omi and Winant 2014). In addition, GATs have sparked a unique interest in some Black Americans because it can be difficult, if not impossible, for the descendants of enslaved populations to trace origins through other genealogical methods, such as family trees or historical documents (Nelson 2016; Roth and Ivemark 2018). While, historically, 'one drop' of (presumed) African genealogical ancestry was enough to legally classify an individual as Black (Davis 2001; Gullickson 2010; Omi and Winant 2014), social norms around racial boundaries have shifted over time, leaving open the question of how Black Americans interpret GAT information and the extent to which hypodescent[3] continues to define group membership.

This study focuses on the racial appraisal process – the evaluative process through which racial classifications of others are made – of U.S.-born Black Americans as they consider who 'counts' as Black. The introduction of GATs into society may cause the boundaries around Black racial identification to expand to incorporate new individuals who can demonstrate Sub-Saharan African (SSA) ancestry; this would be consistent with prior work showing that Black Americans often adopt a form of inclusive hypodescent, whereby multiracial Black Americans are considered part of the broader Black community (Ho, Kteily, and Chen 2017; Khanna 2010).

[2] We use the terms Black American, African-American, and African American interchangeably in this study, which reflects both the current U.S. Census categories (which groups "Black or African American" into one category) and the ways that Black Americans tend to qualitatively describe themselves (see Croll and Gerteis 2019). Importantly, the Black community in the United States is growing increasingly diverse; for example, approximately 10% of the U.S. Black community identified as an immigrant as of 2014 and Black immigration to the U.S. has increased some 2000% since the 1960s (Hamilton 2019, 2020). Given the specificity of racial hierarchies and boundaries in the U.S., which do not necessarily translate to other country contexts (Morning and Maneri 2022), we focus this study on the racial concepts of self-identified U.S.-born Black Americans.

[3] Hypodescent describes a process by which biracial or multiracial individuals are classified with the racial group perceived to be lowest in the social hierarchy. For example, historical one-drop rules followed strict hypodescent in classifying individuals with any (presumed) African ancestry as Black.

Indeed, given the history and rigidity of hypodescent in U.S. contexts, individuals with a range of phenotypic features and presumed levels of African genealogical ancestry have historically been socially (and legally) categorized as Black (Brubaker 2016b; Gullickson 2010; Roth and Ivemark 2018). However, Black Americans might also be protective of their racial boundaries, particularly if there is concern about strategic or illegitimate deployment of racial identification by individuals without a socially accepted claim to a Black identity (Abascal 2020; Brubaker 2016b; Vasquez 2010; Wimmer 2008). GAT results that demonstrate the presence of significant SSA geographic ancestry in a racially ambiguous individual might, for example, encourage those who are classifying them to emphasize other non-genetic attributes to differentiate between in-groups and out-groups (Wimmer 2013). Adjudicating between these competing possibilities provides crucial insight into the process of racial appraisals and classifications, whether contemporary Black Americans consider race to be an essentialist trait, and the extent to which geographic ancestry and hypodescent define the Black racial boundary (Brubaker 2016b; Hu, Lu, and Roth 2023; Roberts 2011; Roth 2016; Roth, van Stee, and Regla-Vargas 2023). In addition, understanding how racial boundaries are drawn has important social and policy implications, including for how the census is constructed and interpreted, how concepts such as "racial diversity" are measured and evaluated, and who might be eligible to benefit from policies such as affirmative action and reparations (Morning 2011; Nobles 2000; Roth et al. 2023).

We conduct an original survey experiment designed to understand the boundary-making processes of U.S.-born Black Americans as they apply classification logics to a fictitious racially-ambiguous individual who has identified as Black. Using randomly assigned vignette treatments, we test how varying percentages of SSA ancestry (as measured by the geographic categories used in a GAT) affect U.S.-born Black Americans' racial classifications and

appraisals across different settings and conditions. Our empirical strategy leverages both quantitative analysis of Likert and categorical outcomes and computational text-as-data analysis of open-ended free response outcomes.

We find that GATs are a powerful force shaping racial appraisals and classifications by Black Americans, suggesting that individuals integrate biological and genealogical information into their conceptions of race in ways that are consistent with hypodescent. For example, those responding to a vignette about an individual with higher SSA ancestry (relative to low SSA ancestry) were significantly more likely to express approval of the vignette individual's decision to identify as Black, to classify them as Black, and to believe that most other Black Americans would also classify them as Black. These results are mediated primarily by respondents' perceptions of the integrity of the vignette individual's decision (rather than perceptions of a shared heritage, culture, or experience of racial discrimination), suggesting that geographic ancestry might be used as a classification device and mark of legitimacy rather than as information about an individual's lived experiences. However, we find that even individuals with low SSA ancestry are classified as Black in most cases: 59% of respondents who were assigned to read about a vignette individual with 4% SSA ancestry classified that individual as Black. In addition, we find that respondents are more likely to approve of: (1) individuals who have consistently identified as Black (relative to those who did not previously identify as Black); and (2) individuals identifying as Black on the census (relative to those identifying as Black on a scholarship intended for Black students). These results demonstrate the multiple aspects that affect appraisal processes.

Furthermore, we highlight the distinctness of the appraisal and classification processes: the influence of geographic ancestry, setting, and prior identification on qualitative and

evaluative *appraisals* of an individual's identity differ from their effects on underlying racial *classifications.* For example, though setting and prior identification have smaller (or null) effect sizes compared to ancestry when predicting classification outcomes overall, they have large effects on the free response topics that respondents use to qualitatively explain their reasonings. We find that respondents in the census condition were more likely to emphasize personal choices than those in the scholarship condition, and those reading about an individual who changed his/her racial identification when identifying as Black were less likely to focus on physical features and 'one-drop' rules. Likewise, the effect of ancestry on appraisal outcomes differs from its effect on classification outcomes. We term these distinct yet intertwined processes of appraisal and classification *racial contextualism*, which denotes the selective ways that individuals reconcile GAT results, setting, and prior identification across processes.

Taken together, our results demonstrate the importance of GATs in the racial boundary-making process and point to the need to better integrate GATs into theories on how societies 'do' race. We highlight the strategies deployed by members of an in-group to validate or reject an individual's claim to membership, and the extent to which these strategies differ across conditions and modalities. In doing so, we offer a new avenue through which to understand racial classification and appraisal logics in the postgenomic era.

BACKGROUND

Racial classification and appraisal logics

Racial classification logics shape the racial structure of the U.S., which in turn affect mechanisms of stratification such as racial discrimination and segregation (Feliciano 2016; Monk 2022; Roth 2018; Saperstein, Kizer, and Penner 2015). While a large body of literature on

race in sociology has focused on the schemas that shape racial self-identification, how an individual racially identifies does not necessarily map onto how others perceive them (Campbell and Troyer 2007; Feliciano 2016; Huang 2023; López and Hogan 2021; Roth 2016). Indeed, scholars categorize race in the U.S. as a 'supra-individual' trait (Brubaker 2016b), rather than a subjective individual identity alone. In this sense, someone without any societally accepted claim to a racial identity[4] will likely be seen as illegitimate by others (for example, consider Rachel Dolezal, a White woman who identified as Black and was met with widespread criticism and rebuke; Brubaker 2016a). The decision to identify as Black is, then, an iterative process between individual and collective perception. While individual self-identification is an important measure for understanding how race shapes an individual's life, so too are others' racial classifications of that individual (Huang 2023; López and Hogan 2021; Roth 2016, 2018; Sen and Wasow 2016). In particular, racial classifications by others are essential to understand because they affect how someone is treated, whether or not they experience discrimination, and how both in- and out-groups validate their identity (Campbell and Troyer 2007; Morning 2018; Roth 2018).

Racial classifications are shaped by a number of fluid dimensions, including physical appearance, racial self-identification, presumed genealogical ancestry, GAT results, and a history of having been treated by society as a member of the in-group, among others (Brubaker 2016b; Feliciano 2016; Guo et al. 2014; Irizarry, Monk, and Cobb 2023; Morning 2018; Roth 2016, 2018; Saperstein and Penner 2012; Schachter et al. 2021; Zuberi 2001). Importantly, these characteristics may change over time as people encounter new information or enter new social positions, which may in turn alter an individual's self-identification or others' classifications of them. While skin color and phenotype are undoubtedly important (Feliciano 2016; Schachter et

[4] An individual's racial identity may incorporate a number of dimensions (see Roth (2016) for an overview). In this study, we focus on reactions to one's racial self-identification / self-reported race.

al. 2021), they are far from the only traits that matters in shaping such appraisals. For example, Schachter et al. (2021) found that GAT information is a strong predictor of classification by White observers, but also that respondents do not use strict hypodescent when making these appraisals. Along the same lines, an individual's self-identity is an important, yet insufficient, characteristic that contributes to how others perceive them (Brubaker 2016b). Aspects such as gender and sociocultural context additionally shape how observers classify others (Davenport 2016; Feliciano 2018; Xu et al. 2021), and classifications of multiracial or racially ambiguous individuals can at times be recast into a single monoracial category (Ford, Patterson, and Johnston-Guerrero 2021; Giebel 2023; Perlmann and Waters 2002).

Black Americans – both as classifiers and as the classified – are central to understanding and characterizing how racial boundaries are drawn and enforced. This is in part due to the long legacy of the Black-White binary in American racial politics and the perception that this division presents the most stark racial dichotomy (Lee and Bean 2012; Morning 2011; Omi and Winant 2014). In particular, the long history of the one-drop rule in U.S. contexts has resulted in a wide range of phenotypic features and presumed African genealogical ancestries that tend to be socially categorized as Black, including a range of skin tones and hair textures (Brubaker 2016a; Gullickson and Morning 2011; Roth and Ivemark 2018). In addition, recent research has shown that Black observers differ meaningfully from non-Black observers in their racial classification logics. For example, Feliciano (2018) found that Black classifiers were less likely than respondents of other races to categorize photos of individuals of various racial identifications as White (and instead were more likely to use categories such as 'other' and 'multiracial'). While the mechanisms underlying these patterns are complicated, Feliciano asserted that this is consistent with evidence positing that Black Americans have a more complex view of race than

non-Black individuals, which shapes how they draw boundaries around both in- and out-groups. Likewise, Dubriwny, Bates, and Bevan (2004) found that Black Americans were more likely than other groups to view race as socially constructed and jointly shaped by culture, discrimination, and segregation. However, when considering multiracial individuals with presumed African genealogical ancestry or features typically socially categorized and racialized as Black (e.g., darker skin or textured hair), Black observers tend to use a form of inclusive hypodescent whereby multiracial Black Americans' claims to Blackness are validated given their proximity to the Black community and likelihood of experiencing racial discrimination from others (Ho et al. 2017; Khanna 2010; Young et al. 2021). This, in turn, shapes racial self-identification patterns, as some multiracial Black Americans identify solely as Black based on how they believe others perceive them (Brunsma and Rockquemore 2001; Gullickson and Morning 2011; Khanna and Johnson 2010). Though White Americans have flexibility and 'ethnic options' in deciding how to identify (Waters 1990), Black individuals have historically had fewer social choices when considering how both Black and non-Black observers categorize Black individuals. Importantly, the policing of boundaries may come from both in- and out-group members, who may have different motivations for preferring a narrow or expanded boundary.

While claims to Whiteness have always been heavily policed and enforced, affirmative action policies and increased pressure to redress historical wrongs through increased racial diversity have also led to increased focus on the boundary that defines Blackness (Brubaker 2016b). For example, legal scholars and college administrators have expressed concern over the potential to misrepresent one's racial identity, experiences, and history in an effort to gain a presumed competitive advantage for educational and employment opportunities (Brubaker

2016b). This concern reverberates through the justice system, as demonstrated by Justice Alito's line of questioning in *Students for Fair Admissions v. The University of North Carolina*, which ultimately overturned the use of race-based affirmative action in higher education admissions contexts. Though racial validation procedures have not been established in the U.S. organizational context, other countries such as Brazil have instituted programs such as photo verification and interviews to discern racial group membership and therefore eligibility for affirmative action programs (Bailey, Fialho, and Loveman 2018). Legal and administrative definitions of race are distinct from the wider social validation of these identities. Nevertheless, organizational definitions of race shape appraisals and vice-versa (Bailey et al. 2018; Giebel 2023).

Ancestry and the Social Construction of Race

Race in the U.S. is now widely understood to be a socially constructed category based on several physical and social characteristics (Morning 2011; Roth 2016; Roth et al. 2023; Saperstein and Penner 2012). Evidence from both the social and biological sciences has shown that there is scant evidence of a biological basis for race (Morning 2011; Roberts 2011; Roth et al. 2023). In the past, however, biologically essentialist conceptualizations of race were pervasive. In the U.S., such conceptualizations were used to legally enshrine racial hierarchies, including to resist the abolition of slavery and codify anti-miscegenation laws (Pascoe 2009; Van Evrie 1853). Today, biologically essentialist conceptualizations of race fuel claims about the biological origins of social inequalities and justify atrocities, such as racially motivated mass shootings (Weedow, Martschenko, and Trejo 2022). As these historical and ongoing examples demonstrate, disentangling race from genealogical or geographic ancestry can be difficult.

This challenge is heightened with the advent of GATs. GATs provide consumers with approximate and individualized estimates of the global regions where their ancestors originated, but consumers generally receive very little information on how to interpret their results (Bliss 2013; Christensen et al. 2010; Lee et al. 2009). Typically, GAT results are delivered in the form of coarse geographic ancestry categories (e.g., Sub-Saharan ancestry, Eastern European ancestry) that do not neatly map onto socially constructed racial categories (for example, people of South Asian descent share more genetic similarity with people of European descent than they do with people of East Asian descent; The 1000 Genomes Project Consortium 2015). However, despite conceptual and practical differences between the geographic categories provided by GATs and conceptualizations of race, GATs are changing the nature of how race is understood and refracted by laypeople (El-Haj 2007; Morning 2018; Roth and Ivemark 2018).

To the extent that GATs shape individual self-identification, they will also shape racial classifications and appraisals by others. People actively employ and grapple with results from GATs as they consider not only their own racial identification (Panofsky and Donovan 2019; Roth and Ivemark 2018), but also the classification of others (Schachter et al. 2021). For example, individuals have used GAT results to support their racial identifications in a number of contexts, including when applying to college or for other government policies aimed at underrepresented racial minority participation (Alvero and Pattichis 2022; Brubaker 2016b; Morning 2018). In addition, prior research illustrates the complex and dynamic ways that GATs shape racial self-identification. Large-scale surveys have found that people who have taken GATs are more likely to identify as multiple races than those who have not (Johfre et al. 2021). However, GAT information is not directly determinative of racial self-identification; ethnographic fieldwork and interviews highlight a process whereby a person weighs their own

identity aspirations, cultural beliefs, and appraisals of how their identity will be viewed socially when making sense of their GAT results (Nelson 2016; Roth and Ivemark 2018). This 'identity work' (Snow and Anderson 1987), shapes the process through which individuals make meaning out of their group memberships (Condit 2019; Nelson 2016:201; Roth and Ivemark 2018; Waters 1990).

For U.S. Black and African American communities in particular, genealogy services and GATs have sparked significant interest. It can be difficult, or even impossible, for Black Americans who are descended from enslaved populations to trace their family origins and genealogy through family trees or historical documents (Nelson 2016; Roth and Ivemark 2018). Interest in genealogy among Black Americans predates the wide availability of GATs; for example, the 1976 and 1977 releases of Alex Haley's *Roots* book and miniseries set off a cascade of interest in tracing one's presumed ancestral origins back to the African continent (Nelson 2016; Roth and Ivemark 2018). This can be seen more recently in the popularity of TV shows like *Finding Your Roots* with Henry Louis Gates. However, integrating the results from a GAT into a social identity is a complex process that is itself racialized. For instance, Roth and Ivemark (2018) describe how White test-takers might look for ancestral connections that make their own racial/ethnic backgrounds more distinct or exciting, but without social costs that might accompany these new identifications (see also Waters 1990). In contrast, for Black Americans, GAT results do not tend to alter racial self-identifications (even in the context of large percentages of non-African geographic ancestry), but rather can provide a way to meaningfully connect to one's roots through symbolic ethnicity (Gans 1979; Roth and Ivemark 2018). These studies provide evidence that test-takers do not unilaterally or uniformly translate GAT information into racial self-identification. GAT information is instead filtered based on other

information, identities, and conceptions of racial hierarchies and schemas that the test taker may hold. Building upon these studies, we offer a theoretical and empirical investigation of the collective process of race-making and boundary policing among Black Americans as they grapple with a (fictitious) individual and their GAT results.

Racial boundary-making

From a theoretical perspective, the mechanisms underpinning racial classifications are shaped by the principles of boundary-making (Alba 2005; Gieryn 1983; Okamoto 2014; Wimmer 2013), which govern how boundaries are constructed, maintained, shifted, or permeated. A large body of sociological work focuses on understanding how people make distinctions between in- and out-groups and how status and power differentiations between 'us' and 'them' emerge (Lamont and Molnár 2002; Weber 1968). These distinctions are not made in a vacuum; they are the outcome of a social process that is negotiated by groups on either side of the boundary divide (Okamoto 2014; Wimmer 2008, 2013). However, each racial/ethnic boundary is specific in its attributes; boundaries vary in their characteristics across history and spatial contexts (Fox and Guglielmo 2012; Gullickson 2010; Penner and Saperstein 2013), power dynamics and hierarchies between groups (Wimmer 2013), and whether they are 'bright' or 'blurred' in their permeability to outsiders (Alba 2005). Both racial classifications and appraisals are essential to understanding how people interpret and make meaning out of differences (Morning 2011).

Importantly, the racial boundaries that individuals craft differ across settings and shape the degree to which a group is likely to validate or reject another's self-identification. For example, Abascal (2020) showed that White individuals, when faced with the threat of numeric

decline, were less likely to classify racially ambiguous individuals as White. Other studies have found that White Americans are more likely to enforce a strict Black-White boundary when faced with threats to the U.S. racial hierarchy (Chen et al. 2018; Ho et al. 2017). Analogously, in contexts where it may be potentially advantageous to identify as Black to access a scarce resource, Black Americans may feel a threat and view the use of GATs by racially ambiguous individuals as strategic (and in turn be more likely to reject the test-taker's identification). For example, there exists anecdotal evidence of college applicants using GATS to justify their racial self-identification on admission or financial aid applications (Brubaker 2016b; Harmon 2006; Morning 2018). For this reason, we test whether boundaries differ for scarce resource settings (e.g., a competitive college scholarship intended for Black students) compared to settings where resources are not scarce (e.g., a government census) and increased representation may even be viewed as a positive lever for group political representation. Indeed, prior to the 2000 census, the NAACP lobbied against changes in the census to allow respondents to select more than one race given fears that this would undercount Black populations and thereby weaken civil rights efforts (Lucas 2014). More recently, legal battles have erupted in Louisiana as lawmakers have sought to change the official definition of who is considered Black for redistricting purposes, which opponents charge is an attempt at gerrymandering and reducing Black political participation (Wang 2022).

Finally, an individual's prior self-identification could be an important moderator of the effects of GATs. In particular, perceptions of the boundaries around Blackness might differ in the face of perceived shifting racial identifications spurred by GATs. Prior work emphasizes that people are sensitive to potential crossovers (Abascal 2020; Wimmer 2013), and that boundaries vary in the extent to which they are permeable by outsiders (Alba 2005). An otherwise identical

person who changed their racial self-identification might then be differently received than someone who already identified as Black.

Given the specificity required in any racial boundary-making process, we focus on the mechanisms underlying one boundary in particular: the boundary separating those who are and are not classified by others as Black. The widespread availability of genetic ancestry testing creates the possibility of increasing numbers of individuals who may identify as Black. The extent to which Black observers consider GAT information when considering racial classification, however, remains unclear.

METHODS

This study is a pre-registered[5] original survey vignette experiment fielded in January 2023 using a nationally representative sample of U.S.-born Black Americans. We focus specifically on the boundary-making processes of U.S.-born Black Americans for three main reasons. First, the process by which Americans understand and conceptualize race is specific and local to the geographic area (Morning and Maneri 2022); as such, we limit our sample to those who were born in the U.S. to reduce the potential influence of conceptions of race that exist in other countries and contexts. Second, over 100 years after DuBois (1903) first observed the 'problem of the color line', Black Americans continue to face profound disadvantages in terms of wealth and income inequality (Chetty et al. 2020; Hamilton 2019; Massey and Denton 2003), educational opportunity (Johnson 2019; Reardon, Kalogrides, and Shores 2019), health (Aizer and Currie 2014; Reskin 2012), and access to stable housing (Desmond 2016; Rothstein 2017). Third, the U.S. has a long history of creating and formalizing distinctions between who counts as

[5] The pre-registration document can be found at the following link: https://osf.io/dj9pt/registrations.

White and who counts as Black; such distinctions have historically been based specifically on presumed African genealogical ancestry (Davis 2001; Gullickson 2010; Omi and Winant 2014). While there are numerous racial groups in the U.S., the Black-White binary is frequently considered to represent the most stark racial dichotomy (Lee and Bean 2012; Omi and Winant 2014).

Participants

Data collection was contracted through YouGov. The full sample includes 3,100 self-identified U.S.-born Black Americans and was constructed to be nationally representative of this population. Because YouGov collected demographic and background covariates directly during the panel recruitment process, there is no missingness along these measures and all demographic/background covariates were collected pre-treatment. Descriptive statistics of the survey respondent sample (weighted to reflect a nationally representative sample) are displayed in Table 1.

[Table 1]

Experimental Design

In each vignette, respondents were asked to respond to the racial identification of a fictitious individual, where we varied three key aspects of this individual's background: (1) the individual's GAT results (high vs. low SSA ancestry), (2) their prior racial self-identification (Black vs. non-Black), and (3) the setting in which they have chosen to identify as Black (census vs. scholarship). This allows us to test the effect of GAT information on in-group validation or rejection of a racial identification, as well as and how this effect is moderated by prior racial

identification and setting, which may represent reactions to potential crossover and in contexts where there is perceived advantage to identifying as Black.

Respondents began the study by viewing an image of the fictitious individual (see appendix for images) and reading the following prompt:

> *Meet Daniel.*[6] *Daniel is an American citizen whose family has been in the U.S. for generations. Daniel is usually unsure of how to identify, but mostly [has/ has not] identified as Black/African-American.*
>
> *Daniel recently received his genetic ancestry test results from a company such as 23andMe or Ancestry.com. Genetic ancestry tests use a person's DNA to make an informed guess regarding where a person's ancestors lived. Daniel's genetic ancestry test results estimate that he has approximately [4% / 36%]*[7] *Sub-Saharan African ancestry (from countries such as Ghana and Nigeria) and [96% / 64%] non-African ancestry.*
>
> *A few weeks after receiving these genetic ancestry test results, Daniel [filled out a government census and identified as Black/African-American / applied for a college scholarship intended for Black/African-American students (e.g., NAACP)].*

Respondents were then asked to make various appraisals and classifications in response to Daniel's decision to identify as Black, including two text free response questions. The full set of survey items can be found in the appendix.

Selecting Images and Names. We used a multistep process to select the images for this study. All of the images come from the Chicago Faces Database (Ma, Correll, and Wittenbrink 2015; Ma, Kantner, and Wittenbrink 2021). We first used the dataset's norming data, which includes survey responses of perceived race and ethnicity for each image, to select a range of

[6] Note that names varied randomly across twelve conditions (six male and six female treatments). We include name and image fixed effects in the models. For clarity and simplicity, we have chosen one of the names to use in the description of the example vignettes. Additional details on name selection can be seen below in the section on selecting names and images.

[7] To determine these values, we developed a pretest in which we surveyed 200 U.S.-born Black Americans to gauge views on the levels of SSA ancestry (relative to European and other ancestry) that respondents believe the individual in each selected image has. Our experimental values, 4% and 36%, correspond with the 25th and 58th percentile of respondent guesses (we opt to use asymmetric percentiles because of the right-skewed distribution; the average guess was 32% SSA ancestry and the median guess was 29%).

racially ambiguous images. We focused on faces with a plausible level of White-Black ambiguity, without high levels of perceived Latino/a or Asian backgrounds. However, because our study focuses specifically on the perceptions of Black respondents, we also pretested these images to ensure that Black Americans perceived these images to be racially ambiguous, and that the images themselves were similar in their degree of White-Black ambiguity. As with the images, we selected names that would not send a strong White or Black signal to respondents. We selected 12 total names (6 for women and 6 for men) that were randomly assigned to respondents in the experiment. To select the names, we used birth data for the state of New York, which includes counts of baby names for the most popular names by race/ethnicity. We restricted to names with at least 100 counts of Black births and 100 counts of White births, and selected names that were approximately equally likely to be given to a Black versus White baby. To do so, we chose names that had Black/White proportions that matched the overall proportions of Black/White births in New York state. This led us to the following names: Samantha (Sam), Mia, Zoe, Isabella, Emily, Ava, Samuel (Sam), Michael, Alexander (Alex), Aaron, Andrew, and Daniel. All results include image and name fixed-effects, which ensure that our treatment effects are valid across a number of physical appearances and names (rather than only selecting one image, which might lead our results to be specific to the particularities of the image selected).

Quantitative Outcome Variables

We solicited three primary quantitative outcomes. First, we measured how respondents reacted to the individual in the assigned vignette condition identifying as Black/African-American in the given setting (measured using a 7-point Likert scale from “extremely positive” to “extremely negative”). In addition, we asked respondents to provide a classification of the

single best race/ethnicity[8] (drawn from census categories) that they believed described the vignette individual and the single best race/ethnicity that they believed most U.S.-Born Black Americans would use to describe the vignette individual.

Quantitative Mechanisms. We included several measures to better understand the factors that mediate responses to the individual in the assigned vignette condition. First, we created an index using principal component analysis that measures respondents' perceptions of the fairness, honesty, and legitimacy of this decision (hereafter, we describe this index as the *integrity index*, which measures perceptions of the integrity of the vignette individual's decision). Table A1 in the appendix includes principal component loadings for the integrity index. We also measured respondents' perceptions of the level of racial discrimination the vignette individual has faced in his/her life and how much shared cultural background and experiences respondents believe that the vignette individual shares with the U.S. Black community. Together, these measures help us to understand not only if identification is likely to be validated under different treatment conditions, but also why.

Furthermore, we investigated if there is moderation based on whether or not a respondent has ever taken a GAT and their perceptions of both their own percentage SSA geographic ancestry and the percentage SSA geographic ancestry of the average U.S.-born Black American. While, as discussed in previous sections, race and ancestry are distinct concepts, these moderation results provide insight into respondents' beliefs about race and the ancestry information provided by a GAT. Such beliefs are an important dimension to examine given that

[8] Pretest results indicated that responses were substantially similar when including questions asking for (1) the single best racial/ethnic category and (2) a response that allows for multiple race/ethnicities to be checked (see also Schacter et al. (2021)'s discussion of their choice to use single best category as well as Croll & Gerteis 2019). Furthermore, given the increased racialization of the ethnic category Hispanic, we include Hispanic alongside other standard racial categories (Frank, Akresh, and Lu 2010; Golash-Boza and Darity 2008; Morning and Saperstein 2018; Roth 2012). However, because YouGov collected background data from respondents using Hispanic as an ethnicity (separate from race), we preserve Hispanic as a standalone respondent covariate.

the average self-identifying Black American has an estimated 73% SSA ancestry (Bryc et al. 2015). Because Americans who self-identify as White have, on average, over 98% European ancestry, there is a possibility that respondents overestimate the average expected percentage of SSA ancestry for other Black Americans (i.e., by assuming that they have nearly 100% SSA ancestry, analogous to how White Americans have nearly 100% European ancestry), which might then shape how they engage with their assigned vignette condition. Alternatively, given historical patterns of classification using hypodescent, respondents may have a more accurate perception of the average percentage of SSA ancestry expected among Black Americans or may even underestimate.

Regression Models

We used a series of linear regression models to estimate the causal effect of the various vignette treatment conditions on respondents' reported feelings about the vignette individual's decision to identify as Black/African-American. To address the multiplicity issues raised by our various treatment conditions, we focused on 4 tests regarding the role of ancestry in the racial boundary-making of Black Americans: the effect of geographic SSA ancestry (low vs. high) across the four pairwise combinations of setting (census vs. scholarship) and prior identification (non-Black vs. Black). To do so, we estimated versions of the following equation:

$$y_{ijk} = \beta 1\left(HighAncestry_{ijk} \times NonBlack_{ijk} \times Census_{ijk}\right) + \beta 2\left(HighAncestry_{ijk} \times NonBlack_{ijk} \times Scholarship_{ijk}\right) + \beta 3\left(HighAncestry_{ijk} \times Black_{ijk} \times Census_{ijk}\right) + \beta_4\left(HighAncestry_{ijk} \times Black_{ijk} \times Scholarship_{ijk}\right) + \beta 5\left(NonBlack_{ijk} \times Census_{ijk}\right) + \beta 6\left(NonBlack_{ijk} \times Scholarship_{ijk}\right) + \beta 7\left(Black_{ijk} \times Census_{ijk}\right) + \beta 8\left(Black_{ijk} \times Scholarship_{ijk}\right) + \boldsymbol{X_{ijk}\Phi} + \pi_j + \gamma_k + \varepsilon_{ijk} \quad [1]$$

where y_{ijk} is the outcome of interest, $HighAncestry_{ijk}$ is a treatment indicator for respondent i given image j and name k indicating that they received the experimental vignette condition with high (rather than low) SSA ancestry. There are two additional experimental conditions: setting (where each respondent was randomly assigned to either $Scholarship_{ijk}$ or $Census_{ijk}$) and prior identification (where each respondent was randomly assigned to either $NonBlack_{ijk}$ or $Black_{ijk}$). $\boldsymbol{X_{ijk}}$ is a vector of individual-level covariates, including demographic characteristics collected pre-treatment from the YouGov panel (age, gender, income, ethnicity [Hispanic vs. non-Hispanic], education, political leanings, parent/grandparent immigration history, and state of residence). Finally, π_j is a fixed effect for vignette image and γ_k is a fixed effect for vignette name. Note that Equation 1 does not include a constant, which allows us to directly estimate the effects of ancestry across the four comparisons of interest. Furthermore, additional exploratory results also test the main effects of ancestry, prior identification, and setting using versions of the following equation:

$$y_{ijk} = \beta_0 + \beta_1 High\ Ancestry_{ijk} + \boldsymbol{W_{ijk}}\theta + \boldsymbol{X_{ijk}}\,\boldsymbol{\Phi} + \pi_j + \gamma_k + \varepsilon_{ijk} \quad [2]$$

where $\boldsymbol{W}_{ijk}$ is a vector containing the two non-focal treatment variables (here, setting and prior identification as ancestry is the focal treatment) and their interaction. Other variables in Equation 2 follow the naming conventions in Equation 1.

In addition, we conducted mediation analyses for the three mediators of interest (perceptions of integrity, discrimination, and shared heritage and culture) on the three outcomes that we model quantitatively (Karlson, Holm, and Breen 2012; VanderWeele 2016).

Text Analysis

To better understand the mechanisms underlying respondents' reactions, we also solicited free responses to analyze using text-as-data methods, specifically structural topic modeling (STM; Grimmer, Roberts, and Stewart 2022). STM, like other topic modeling methods, models word co-occurrence patterns across all of the responses simultaneously to generate high quality numerical representations of thematic content in text. STM is especially well-suited for our study because, unlike other topic modeling methods, it considers covariate information about each document (each free response in our case) in a way that is analogous to a linear regression framework (Roberts, Stewart, and Tingley 2019). This allows us to estimate the causal effect of the various vignette treatment conditions on the content of respondents' text responses.

Figure 1 displays our analytic approach to the text analysis. Following Egami et al. (2022), we use an ex ante train-test split approach to prevent overfitting and avoid the tautological issue of using training data to measure causal effects that arises when analyzing latent variables. We first randomly selected 50% of the data to use as our training set and the remaining 50% of our data for the testing set; this split was stratified to ensure equal representation of all of our various treatment groups in the training data. For a basic description of average word counts per response, see Appendix Table A2. This analytic approach was pre-registered, along with the ultimate STM model (which was estimated using only the training data, prior to accessing the test data). The text was pre-processed following standard approaches: all text was lowercased, stemmed (reduced to their root form such that words like "write", "writing" and "written" would all be reduced to "writ-"), and stopwords (high frequency function words like "the" and "an") were removed. We attended to the idiosyncrasies of the responses as well. For example, some respondents included emojis in their written responses (presumably

written on their mobile phones), which were removed. We also simplified variations of some terms that appeared frequently into one word, such as transforming "African American" and “African-American” to "AfricanAmerican". Percentage symbols were converted to "PERCENTAGE" in order to preserve their meaning in the topic modeling, and all references to the names of the vignette individuals (i.e., Mia, Sam, Daniel) were collapsed to "EXPERIMENTNAME".

[Figure 1]

After preprocessing the text, we next determined a suitable number of topics to generate for our final model. While other studies have used qualitative labeling of topics and documents, this approach can be time and resource intensive and typically benefits from more structured and formulaic text (e.g., political communication; Ying, Montgomery, and Stewart 2022). Our data comprised a large corpus of text, making it difficult to know how many different topics and themes would likely emerge in the free responses. Therefore, to determine the appropriate number of topics for our model, we took a more agnostic approach and used the ldatuning package in R (Murzintcev 2016). The ldatuning library generates topic models of different sizes and uses four different established methods to measure the quality of the model with a given number of topics (Arun et al. 2010; Cao et al. 2009; Deveaud, SanJuan, and Bellot 2014; Griffiths and Steyvers 2004). From there, the metrics are standardized and the model that best fits all four metrics is presented as an optimal number of topics. Once this process was complete, we generated the final model which contains the same covariates as our regression on quantitative outcomes variables (described above) and the suggested number of topics.

The training sample contains 1,549 respondents, each of whom provided written answers to two different prompts. We first transformed the individual data so that each row was now

associated with an individual-question (leaving us with 2 x 1,549 = 3,098 documents). The preprocessing ended up dropping a small number of documents, leaving us with 3,088 to use in our cleaned testing sample. 1,546 of these responses were written for the "Define Being Black / African American" prompt, and the other 1,542 were written for the "Reaction to Decision" prompt. Note that, while we responses to both text questions were combined into a single STM model fit on the training data, the eventual projection of these topics onto the testing set was done separately for each set of responses written for the two prompts (to allow for a different average prior in each projection). Though we incorporated the “Define Being Black / African American” prompt into the STM model to pull out important themes and topics that may have arisen, we were primarily interested in the effects of our treatments on the “Reaction to Decision” prompt given our theoretical motivation in understanding how respondents appraised the racial identification of the vignette individual.

Selecting Topics. Using ldatuning, we determined that an appropriate number of topics for our corpus of data was approximately 45 (see Figure A4); this information was then used in our STM model. The model also contained the standard covariate set in addition to a variable indicating which prompt a document corresponded to in order to better distinguish effects and topics for each type of response. After generating 45 topics with the training data, we investigated the topics to determine which merited further analytical attention. Selecting topics of interest is a primarily qualitative, inductive decision process. The document specific values for the selected topics are then measured using statistical frameworks widely used in the social sciences. We therefore left room for human discretion on what topics were substantively interesting knowing that they would also have to hold up to statistical scrutiny.

We used a multi-step, primarily qualitative process to isolate our confirmatory and exploratory topics. First, the entire authorship team examined the top 5-10 documents for each of the 45 topics to develop a tentative topic name and identify similar topics that might be combined into composite topics. Collectively, we examined each of the 45 topics in turn and corroborated our qualitative designations for each of them. Topics that were lexically distinct but also substantively similar were considered for composite topics. As a check on the similarities between topics under consideration for combination, we also examined the correlation between topics and privileged those with higher degrees of overlap, prioritizing those whose correlation was among the highest 5% ($\rho \geq 0.18$) of all pairwise topic correlations. Using a train-test split allowed for this process without introducing potential biases into our causal effect estimates.

Based on a combination of substantive interest, coherence, and meaningful relatedness to the research topic, as well as passing the correlation threshold in the case of composite topics, we ended up with 26 qualitatively meaningful topics from the 45 generated from the model. Our final list of topics included 5 composite topics. Given the multiplicity concerns raised by examining all of the 26 topics across ancestry, setting, and prior identification conditions, we chose to designate the topics for either confirmatory or exploratory analyses. To determine which of the 26 to prioritize for confirmatory analyses, we developed a list of our highest priority theoretical concepts (i.e., "Genetic Ancestry") and those that had meaningful treatment effects in the training data. Of these 26, we prioritized 7 topics for our confirmatory analyses and conducted exploratory analyses using the remaining 19.

We then used equation 2 (above) to estimate the causal effect of each of high ancestry, setting, and prior identification on respondent-level prevalence for each topic. Given our theoretical motivations on understanding appraisal processes, we focus these results only on the

"Reaction to Decision" free response, which includes respondents' written response to the following prompt:

> "*How do you feel about Daniel identifying as Black/African-American {on the government census / for a college scholarship intended for Black/African-American students} after taking a genetic ancestry test? Please specify your reactions, thoughts, and emotions about his decision."*

RESULTS

We begin by examining how geographic ancestry (as captured by a GAT), setting, and prior identification shape racial appraisals and classifications. To do so, we estimate the average treatment effects of the experimental conditions on shaping responses to the vignette individual. We also include results demonstrating the factors that mediate and moderate these results. Finally, we turn to the open-ended questions to examine computationally how the topics and sentiments used by respondents vary across treatment conditions. In doing so, we disentangle the mechanisms that explain how, why, and when racial self-identifications are likely to be validated or rejected by the in-group (in this case, Black Americans).

Predicting Approval and Racial Classifications

Regression results in Table 2 indicate the effects of high ancestry across the four pairwise conditions of setting and prior-identification. Panel A shows the causal treatment effect of high SSA ancestry (36%; relative to 4% SSA ancestry) on respondents' approval/disapproval of the vignette individual's decision to identify as Black (measured on a standardized 7-point Likert scale). As Table 2 shows, across all conditions we observe a statistically significant effect of high SSA ancestry on likelihood of higher approval. However, tests of coefficient equivalence indicate that this effect is statistically similar across setting and prior identifications, suggesting

that there is not a heterogeneous effect of ancestry depending on the setting or prior identification of the vignette individual. For this reason, we focus on the pooled results showing the average treatment effect of high SSA ancestry (Column 5). On average, respondents in the condition with an individual with high SSA ancestry are 0.22 SD ($p<0.001$) more likely to indicate approval of the decision to identify as Black than respondents in the low SSA ancestry condition. Figures A1 and A2 in the appendix illustrate the means and distributions of Likert approvals across treatment conditions.

[Table 2]

Panel B of Table 2 indicates respondents' likelihoods of classifying the vignette individual as Black, while Panel C indicates their perceptions of how most U.S. born Black-Americans would classify them. As with prior models, we focus on the pooled results given the statistical similarity between the effect of ancestry across prior identification and setting. On average, respondents in the high-ancestry condition are 11 percentage points ($p<0.001$), or 18%, more likely than respondents in the low-ancestry condition to classify the vignette individual as Black and 9 percentage points ($p<0.001$), or 16% more likely to believe that most other U.S.-born Black Americans would also classify them as Black. Figure 2 illustrates classification results by treatment condition. We organize Figure 2 from the condition that theoretically represents the lowest likelihood of classification as Black (low ancestry, scholarship, non-Black prior identification) to the condition that represents the highest likelihood of classification as Black (high ancestry, census, Black prior identification). Two patterns emerge from this figure. First, across all conditions, individuals tend to view themselves as more likely to classify the vignette individual as Black than most other Black Americans. This suggests that individuals view themselves as more inclusive along these dimensions than other members of their racial in-

group. Second, as we move from the theoretical lowest condition to the theoretical highest condition, we see an increased likelihood both that respondents classify the vignette individual as Black and that they perceive other Black Americans will do the same. However, we observe relatively high likelihoods of classification as Black overall: 53% of respondents in the condition with the theoretical lowest likelihood of classification (low SSA ancestry, scholarship, non-Black) classify the vignette individual as Black, compared to 74% of respondents in the condition with the theoretical highest likelihood of classification (high SSA ancestry, census, Black).

[Figure 2]

Next, given the statistical similarity between the effects of ancestry across the setting and prior identification conditions, we also conduct exploratory analyses examining the main effects of setting and prior identity. These can be seen in Table 3. Each of the rows and columns represent estimates from a different regression specification. Column 1 illustrates the effects of setting, while Column 2 illustrates the effects of prior identification. We observe statistically significant effects of the scholarship setting (relative to respondents in the census setting) on respondents' likelihoods of reporting approval of this decision (β=0.10 SD, p<0.01), but do not observe evidence of an effect of setting on racial classifications. In contrast, respondents assigned to read a vignette about an individual who previously identified as Black (relative to those reading a vignette about someone who has not identified as Black), were more likely to express approval (β=0.18 SD, p<0.001), more likely to classify the vignette individual as Black (β=0.05 percentage points, p<0.01; or 9% more likely), and more likely to believe that other Black Americans would be likely to do the same (β=0.08 percentage points, p<0.001; or 15% more likely).

[Table 3]

Mediation & Moderation

To better understand why higher SSA ancestry leads to increased approval of the vignette individual's identification decision and greater probability of being classified as Black, we investigate the extent to which observed effects are mediated by: (1) perceived fairness, honesty, and legitimacy of this decision (combined into a single integrity index) (2) perceptions of discrimination that the vignette individual has faced in their lifetime, and (3) perceptions of shared cultural heritage, background, and experiences with the broader U.S. Black community. These results can be seen in Table 4. As in Table 2, Panels A, B and C illustrate results from separate regressions predicting reaction to vignette (Panel A), respondents' classifications of the vignette individual (Panel B), and respondents' perceptions of how others would classify the vignette individual (Panel C). We report results from a pooled model across setting and prior identification. In Panel A, 81% of the total treatment effect of high SSA ancestry is mediated by the three included measures.[9] Approximately 64% of this effect is due to the effect of high SSA ancestry on perceptions of the fairness, honesty, and legitimacy of the decision. Stated differently, more than half of the total treatment effect of ancestry (0.14 SD of the total 0.22 SD effect) is explained by the fact that respondents who read a vignette about an individual with 34% SSA ancestry identifying as Black were more likely to view the respondent as acting with integrity than those who viewed the same image but learned that this individual had only 4% SSA ancestry. In addition, about 15% of the total effect of high SSA ancestry is mediated

[9] Like all mediation analyses where the mediator variables are not randomly assigned, there may also be unmeasured confounding that impacts both (1) the extent to which respondents are attuned to issues measured by the integrity index and (2) the outcome measure.

through perceptions of shared heritage, background, and experiences with the Black community (0.03 SD). Finally, perceptions of how much discrimination the vignette individual has faced in their life did not meaningfully explain the treatment effect of ancestry (0.002 SD; 1% of total effect).

Turning to Panels B and C, a similar pattern emerges. These measures explain 62% and 70%, respectively, of the total effect of ancestry in predicting respondents' own classifications of the vignette individual and their perceptions of how other Black Americans would classify the vignette individual. As in prior models, the bulk of this pattern is due to differences between treatment groups in perceived integrity of the vignette individual's decision (explaining 43% and 34%, respectively, of the two treatment effects). Likewise, perceptions of shared heritage, background, and experiences explain 19% and 32% of the treatment effect of high SSA ancestry), while perceptions of discrimination do not explain a meaningful portion of the effect. We also observe that culture mediates a higher fraction of respondents' perceptions of how others will classify the vignette individual compared to respondents' own classifications. Table A6 in the appendix also includes mediation results for the three separate measures (on perceived fairness, honesty, and legitimacy) that make up the integrity index.

[Table 4]

Finally, we examine heterogeneity in our treatment effects based on respondents' perceived own SSA ancestry and their perceptions of how much average SSA ancestry that the average Black American has (see Table 5). Panel A illustrates the main and interaction effects for being assigned to read a vignette about an individual with high SSA and respondents' perceptions of their own SSA ancestry percentages. Panel B illustrates the same information for perceptions of how much SSA ancestry the average Black American has, while Panel C

illustrates the interaction with the difference between perceptions of own and average SSA ancestry percentages. As can be seen across the table, we do not observe evidence that the treatment effect of high SSA ancestry varies based on respondents' perceptions of either their own or others' SSA ancestry profiles. Figure 3 (below) illustrates the distributions of perceptions of one's own SSA ancestry and perceptions of how much SSA ancestry the average Black American has.

[Table 5 & Figure 3]

Text Response Topics

Finally, we examine respondents' free text responses. As noted in the methods section, we uncovered 26 qualitatively meaningful topics, of which we prioritized 7 for confirmatory analyses, leaving the remaining 19 as exploratory outcomes. We first provide details on the 7 confirmatory topics themselves to provide background for our later results of the treatment effects of ancestry, setting, and prior identification on topic prevalence, which are based on the prompt soliciting their reactions to the vignette individual's decision. A full description of all of the topics, including the most frequent and exclusive (FREX) words and illustrative quotes, can be found in Table 6. The 7 confirmatory topics cover a range of different subjects and themes: Historical Adversity, Physical Features, Culture, 'One-Drop' Rule, Pride and Resilience, Genetic Ancestry, and Personal Choice. We provide a few brief examples of each topic before moving to the experimental treatment effects in the next section. Responses below focus on documents from both sets of free-response prompts, while we focus our treatment effects on the "Reaction to Decision" prompt.

[Table 6]

Respondents whose documents were grouped into the Historical Adversity topic tended to note the Black American community's longstanding struggle for equality. These documents included language about the history of racism and slavery in the U.S., along with contemporary examples that respondents connect to the long U.S. legacy of inequality. For example, when writing about how they define being Black, one respondent noted: [10]

> *The African American experience is years of slavery, oppression, calculated methods set in place by slave masters to keep Black people oppressed, during, and after slavery, and even to this day.* [high SSA ancestry, scholarship, Black][11]

Likewise, another respondent explained:

> *Basically what it means to be back [sic] to me is constant struggle day to day with equality or having to look over your shoulder, avoiding the police, being profiled by mostly whites. Constantly struggling with not being able to get a job, pay your bills, get yourself nice things.* [low SSA ancestry, census, Black]

To these respondents, the experience of being Black is marked by historical and ongoing oppression and a long history of the struggle for equality in America that continues into the present day.

Pride and Resilience – another topic identified by the STM model – also focused on hardships faced by the Black community. However, descriptions tended to be framed in terms of resilience and community pride. For example, one respondent wrote: *"To be Black is to be resilient, beautiful, strong, graceful, defiant in the face of a torrid history, current turmoil and an uncertain future"* [low SSA ancestry, census, non-Black]. Similar to the Historical Adversity topic, respondents invoking the topic of Pride and Resilience often referred to history when

[10] Note that we present all respondent-provided text verbatim after minimal preprocessing, which includes any misspellings.

[11] Text excerpts and their accompanying experimental condition are meant to provide an example of the types of responses included under a given topic. However, they are not meant to be representative of all respondents in a given experimental condition (low vs. high SSA ancestry / census vs. scholarship / Black vs. non-Black prior identification).

making qualifications about what it means to be Black in today's America. However, this topic tended to be focused more on resilience and overcoming struggle than on adversity itself:

> *In my opinion, to be Black/African-American in this melting pot commonly known as The United States of America is considered a privilege and honor! We have emerged, as a people, and due to refined liberties and justice our characteristics, experiences, attitudes, and values, combined, enriches the path forward of black excellence… Not to sound stereotypical, but I think my culture is more aware of our surroundings and the ongoing resilience it takes, to social climb, during our experiences despite the attitudes of others…I'm so proud of how my ancestors paved the way for a better today and more equality tomorrow. We have a bright future!* [high SSA ancestry, census, non-Black]

Cultural experiences also emerged as an important marker of a Black racial identity for respondents. Responses that measured high in the Culture topic focused on the culture in which the vignette individual was presumed to have been raised (i.e., the Black community or the community of another racial group). As an example, one respondent reflected:

> *If she feels that she was born with the* [Black] *culture then that is ok. She should celebrate that part of her if it is there and she is raised by that part but also celebrate her other cultures too*. [high SSA ancestry, scholarship, non-Black]

Another explained:

> *I feel he should go with how he was raised. The way he himself feels about his being. Life can be a feeling of how you carry and feel about who you feel you are.* [low SSA ancestry, census, non-Black]

A defining characteristic of how respondents invoking the Culture topic viewed the vignette individual hinged on the assumed cultural upbringing of the vignette individual and how that should affect his/her current racial identity.

In addition, our STM also generated Physical Features, a topic that focused on physical appearance and other features stereotypically associated with individuals racialized as Black. This included references to skin tone, hair color, and complexion in particular. Respondents used this topic both to affirm the vignette individual (e.g., "*Though she has fair skin, I don't discriminate whos [sic] black or not based on the color of skin*" [high SSA ancestry, census,

non-Black]) and to reject it (e.g., "*She does not have the phenotypes to be addressed as someone who is black/African-American*" [high SSA ancestry, census, Black]), based on their readings of the image shown of the vignette individual.

A number of respondents specifically referenced the 'One-Drop' Rule, an additional STM-generated topic, in reacting to the vignette individual. For example, in response to the prompt on defining Blackness, one respondent noted: "*the one-drop rule that ruled that if a person had one drop of black blood they were black*" [low SSA ancestry, scholarship, Black] while another clarified that: "*A person being black is a person that have black traits in there [sic] blood. They have black in there [sic] blood*" [low SSA ancestry, census, non-Black]. Similar to the Historical Adversity and Pride & Resilience topics, responses in this topic often referenced historical laws when making claims. At the same time, documents classified under the 'One-Drop Rule' topic were distinct in their descriptions of 'blood' as a way to discern Blackness.

In addition, a number of respondents invoked language that was captured by the Genetic Ancestry topic. This topic encapsulated confirmations and rejections of the vignette individual's decision and was based on how respondents appraised the importance or usefulness of the GAT result in shaping one's racial identity. For example, one respondent mentioned:

> *Since she took a genetic ancestry test and her results only showed 4% sub-Saharan ancestry she should not claim to be Black.* [low SSA ancestry, census, non-Black]

Another made clear that, in their opinion:

> *A % of her DNA shows she's part African and a higher % shows she's non- African, I'm sure the application doesn't care if you're 20/80 or 60/40 somewhere in there is the DNA of an African American, I feel Sam should apply [for the scholarship]!* [high SSA ancestry, scholarship, non-Black]

Finally, several respondents viewed racial identification as a personal choice and something that any given individual can define for him or herself; this was consolidated into a single topic: Personal Choice. For example, in responding to the vignette individual's decision, one respondent wrote: "*He can if he wants. Nobody should stop him*" [high SSA ancestry, census, Black]. In these documents, respondents tended to deemphasize any characteristics of the vignette individual and instead focus on the personal nature of this choice.

Effects of Ancestry, Setting, and Prior Identification on Topic Prevalence

While the topics identified by the STM model help us to understand the themes and subjects that emerge when respondents are asked to consider race, geographic ancestry, and setting, we do not yet know how the various experimental treatments might have affected the topics that respondents used in their appraisals. Figure 4 shows the treatment effect of each of the three experimental conditions (ancestry, setting, and prior identification) on the prevalence of a given topic on respondents' "Reaction to Decision" free responses, which details reactions to the vignette individual's decision to identify as Black. Tabulated treatment effects can also be found in the appendix (Table A3).

We do not observe statistically significant effects of high (relative to low) SSA ancestry treatments on document topic prevalence for any of the confirmatory topics of interest. In contrast, we find that respondents in the scholarship condition were less likely to invoke the Personal Choice topic (β=-0.017, p<0.001) or the Genetic Ancestry topic (β=-0.007, p<0.05) in their responses relative to those in the census condition. They were also more likely to write documents classified under the Historical Adversity topic (β=0.002, p<0.01). Moreover, we also observe a statistically significant treatment effect of prior identification: respondents reading a

vignette about an individual who previously identified as Black wrote documents that were more likely to be classified as the Physical Features topic (β=0.004, p<0.01) or under the historical 'One-Drop' Rule (β=0.002, p<0.01) than individuals who read a vignette about an individual who did not previously identify as Black. Taken together, these results suggest that respondents use distinct sets of reasonings when confronted with different scenarios in which the vignette individual has decided to identify as Black. This suggests that the strategies used to draw boundaries around Blackness vary along setting and prior identification lines.

Finally, we also consider how topic prevalence varied across conditions for the exploratory outcomes; these results can be found in the appendix (Figure A5 and Table A4). In particular, respondents in the scholarship condition were more likely to invoke the topics of Taking Advantage and Systemic Oppression, but were less likely to invoke the Multiracial, Integrity, or 'Don't Know' topics relative to those in the census condition. Likewise, we find that respondents reading about a vignette individual who previously identified as Black (relative to an individual who has not identified as Black) were more likely to write documents classified under Everyday Racism and Religious Concepts but were less likely to write documents classified as the topic on Integrity.

[Figure 4]

DISCUSSION

"It seems that everybody wants to be Black when it benefits them, but being Black is not just some costume you can take off at the end of the day. Will you proudly be Black when a cop pulls you over? Or when meeting your white partners family? Would you raise your children as Black?" – Anonymous Respondent

As genomic data become more available and accessible, a full accounting of how GATs fit into the broader, collective social processes of racial construction and boundary maintenance becomes increasingly important. Such a task requires, in part, studying the reactions of the social

world more broadly: that is, how a test-taker's self-identification is validated or rejected by those around them, and especially by members of the racial in-group. To answer these questions, we fielded a novel survey experiment to examine the cues and traits that Black Americans use to appraise the racial identification of others and also the mechanisms that help to explain why certain individuals are likely to be welcomed (vs. rebuffed) by the larger Black community.

We find that GATs are a powerful social force in shaping appraisals and classifications made by U.S.-born Black Americans when considering other potential members of the in-group, consistent with the use of hypodescent in these processes. Across settings and prior racial identifications, we consistently observe that individuals with high SSA ancestry are more likely to have their identification approved of by respondents, to be classified as Black by respondents, and to have respondents believe that the wider Black community would classify them as Black, relative to respondents with low SSA ancestry. While higher levels of SSA ancestry predicts higher levels of approval and likelihood of classification as Black, we find that even individuals with low SSA ancestry are classified as Black in most cases: 59% of respondents who were assigned to read about a vignette individual with 4% SSA ancestry classified that individual as Black. Likewise, over a quarter of respondents in this treatment condition responded that they felt "extremely positive" (the highest possible level of approval) about such an individual identifying as Black, more than all three variations of disapproval combined. Furthermore, we find that when an individual is identifying as Black on a census or in situations where the individual previously identified as Black, respondents were more likely to approve of their decision, relative to scholarship conditions and conditions where the vignette individual did not previously identify as Black.

In addition, our mediation results show that the bulk of the effects of high SSA ancestry are driven by respondents' perceptions of the integrity of the vignette individual's decision, rather than other competing factors such as perceptions of experienced racial discrimination or perceptions of shared cultural background with the Black community. In particular, the emphasis by respondents of the perceived honesty, fairness, and legitimacy of these decisions suggests that respondents believe that there exists an underlying honest, fair, or legitimate way to describe one's racial identity. Given that we find that GAT results bolster respondents' perceptions of the integrity of identifying as Black, these results suggest that respondents see GATs as a valid and relevant source of information for decision-making about racial identity. Results are also consistent with the use of hypodescent in classification logics. Finally, we find that respondents vary in the strategies they use to validate or reject the racial identifications of the vignette individual. Such strategies include (de)emphasizing the personal nature of the racial identification choice, relying on GAT results or the 'one-drop' rule, or writing about the physical features stereotypically associated with Black Americans.

In particular, we surface a phenomenon that we term *racial contextualism*, which describes the selective ways that respondents integrate information on contextual features about an individual's identification decision – such as their GAT results, setting, and prior identification – into the distinct processes of racial appraisal and classification. We observe notable differences when comparing the ways that respondents appraise the vignette individual's racial identification decision to the ways that respondents racially classify the vignette individual. For example, while ancestry has a large treatment effect on classification outcomes, we do not observe consistent or statistically meaningful effects of ancestry on the topics that respondents use to explain their appraisal processes. Along the same lines, while setting and

prior identification have smaller effect sizes than ancestry when predicting classification outcomes overall (which, in the case of setting, are not statistically significant), they have meaningful and large effects on free text responses: for example, respondents in the census condition were more likely to emphasize personal choices than those in the scholarship condition, and those reading about an individual who changed racial identifications were less likely to focus on physical features and historical 'one-drop' rules. The distinct treatment effects of contextual features such as ancestry, prior identification, and setting speaks to the differences between these dual processes.

To illustrate this pattern, consider the Directed Acyclic Graph (DAG; Pearl 2000) illustrating racial contextualism in Figure 5. The dark, solid lines illustrate a default model of the presumed effect of a change in a given contextual feature, which may include those randomly assigned in this study or a number of other features (e.g., skin color), on an observer's racial classification. If we were to assume that an observer's classification of another individual and their appraisal of that individual are coupled, we would expect that the influence of a contextual feature would affect an observer's racial appraisal only indirectly through its effect on classifications (which, in turn, may produce discordance between observer's classification and individual self-identification). Instead, however, results from this study importantly show that contextual features can also have effects on appraisals that do *not* operate through effects on classification; these direct effects are represented by the dashed line in Figure 5. In summary, results suggest that different patterns emerge when considering appraisal and classification processes. Future research might continue to disentangle these patterns to examine, for example, the extent to which these differences are strategic on the part of respondents, how other cues

(such as skin color) affect appraisal and classification processes differently, and if these patterns extend to other racial/ethnic groups.

[Figure 5]

Taken together, our results highlight the racial boundary work that Black Americans engage in when asked to appraise and classify another person, contributing to empirical and theoretical projects in sociology on how such boundaries are formed, negotiated, and permeated (Alba 2005; Gieryn 1983; Okamoto 2014; Wimmer 2013). We build upon prior calls to develop a sociology of racial appraisals (Roth 2018) which delineates the ways that GAT results, paired with other relevant features, shape reactions by in-groups. For example, the fact that GAT results provide a meaningful axis on which individuals mark their racial classification and appraisal logics suggests that geographic ancestry, as captured by GATs, continues to be an important marker that provides individuals with cues about a socially constructed racial category (Hu et al. 2023; Schachter et al. 2021). We also find that Black Americans engage differently with individuals who have not previously identified as Black, consistent with prior work on the salience (or even perceived threat) of potential crossovers (Abascal 2020; Alba 2005). These findings support prior work emphasizing the fact that, rather than a subjective individual decision alone, racial identification is a trait that, at times, requires collective approval (Brubaker 2016b; Roth 2016). Our methodological approach, which combined causal frameworks and quantitative outcomes with recent text-as-data methods, was integral to formulating this insight. Survey experiments that only use one modality, rather than a range of modalities and methods for analysis, may miss important nuance among respondents as they grapple with key social questions.

Interestingly, our empirical results also reveal meaningful differences between the average classification responses made by Black Americans and their perception of the typical classification response that would be made by members of the broader Black American community. Respondents tended to view themselves as more willing to classify the vignette individual as Black than other U.S.-born Black Americans; 13% of respondents classified the individual as Black while simultaneously believing that the average Black American would *not* classify them as Black, whereas only 5% of respondents did not classify the individual as Black while believing that the average Black American *would* classify them as Black. Another example of discordance between the actual and perceived classification behaviors of Black Americans comes from our mediation analyses. Treatment effects of SSA ancestry on respondent classification were mediated by perceptions of integrity (43%) at more than twice the rate that they were mediated by perceptions of shared culture (19%). However, treatment effects of SSA ancestry on a respondent's perception of Black America's classification were mediated *equally* by perceptions of integrity (34%) and shared culture (32%). So, while Black Americans themselves appear to care mostly about the integrity of an individual's identification decision when making their racial classifications, they view Black America writ large as caring about both integrity and shared culture to a very similar degree.

That the preferences and behavior of an in-group can meaningfully differ from the *perceived* preferences and behavior of that same group has important implications for theories regarding racial boundary-making. This discordance suggests that boundaries between racial lines can be maintained by, in addition to social interactions where individuals validate or reject the identification of others, inaccurate perceptions of the hypothetical reactions of the broader community. For example, certain individuals may choose not to adopt or disclose a racial

identity because they view negative responses among those within their social networks as likely even when, in actuality, the members of their social network might by and large approve. In addition, boundaries may fail to expand, even when a specific change garners widespread support among an in-group, because of a shared misperception that many fellow group members would disapprove of or reject such an expansion. These findings add nuance and specificity to understandings of the process of racial boundary-making among Black Americans.

These results have important implications when considering policies that hinge on notions of who 'counts' as Black, such as in affirmative action contexts or for reparations. Though the *Students for Fair Admissions* Supreme Court cases mentioned in the introduction eventually overturned the use of race-based affirmative action in higher education admissions contexts, questions of group membership remain salient for the consideration of race in other contexts. Individuals have already begun using the results of GATs to claim racial minority status (Karl 2020) and GAT results have been submitted as evidence in legal proceedings for reparations for descendants of slavery (Nelson 2016). These downstream applications of GAT results are unlikely to recede. Our findings suggest, at least in the case of the U.S.-born Black community, the information provided by GATs is considered by respondents to be a legitimate input into the racial identification process. Further, our results indicate that the use of GATs by individuals to claim racial group membership may find acceptance among members of the in-group. From this, it is conceivable that GATs may become a socially accepted mechanism to claim racial membership, though more research is needed to fully understand these ramifications across a wider range of physical appearances and for other racial/ethnic groups.

There are several important limitations to this work that merit additional discussion and scrutiny. First, though large-scale survey experiments provide an opportunity to statistically

examine responses to different vignette treatments, there may be differences between what people report on a survey and how they behave in real-world contexts (Jerolmack and Khan 2014). In addition, our interpretation of the topic models and their basis may not precisely match respondents' intentions. We aimed to address this by coding all of the topics individually before discussing them (and reaching consensus) between the four authors of this study, though we also acknowledge room for different interpretations of the identified topics. Finally, we intentionally limited this study to a small range of images that were similar in their White-Black racial ambiguity. Importantly, while this approach allowed us to precisely estimate how information about geographic ancestry categories, setting, and prior identification function over a range of similar appearances (all else equal), our results are not generalizable to the wider population of individuals who may claim a Black racial identity or may be racialized as Black by others. Nonetheless, studying the individuals on the margins of these identities can help us to understand the broader social process. We leave further discussions to future work, in hopes that our findings on the mechanisms and reasonings used by respondents will provide a useful first step in disentangling how Black Americans appraise and classify others. Further research might also consider how a continuous range of SSA ancestry percentages might shape classifications to uncover any tipping points. Finally, we also acknowledge that our results speak to the boundaries around Blackness specifically but are likely not generalizable to other racial boundaries.

In conclusion, this study builds upon prior empirical and theoretical work on how the information provided by GATs shape racial classifications and appraisals. If individuals are increasingly relying on a set of 'genetic options' in which the information provided by GATs are strategically or flexibly employed (Roth and Ivemark 2018), then understanding how such individuals will be received by others is an important step in understanding how racial

boundaries are drawn and maintained. The concept of *racial contextualism* adds important nuance to the boundary-making and meaning-making that Black individuals engage in when classifying others.

WORKS CITED

Abascal, Maria. 2020. “Contraction as a Response to Group Threat: Demographic Decline and Whites’ Classification of People Who Are Ambiguously White.” *American Sociological Review* 85(2):298–322. doi: 10.1177/0003122420905127.

Aizer, Anna, and Janet Currie. 2014. “The Intergenerational Transmission of Inequality: Maternal Disadvantage and Health at Birth.” *Science* 344(6186):856–61. doi: 10.1126/science.1251872.

Alba, Richard. 2005. “Bright vs. Blurred Boundaries: Second-Generation Assimilation and Exclusion in France, Germany, and the United States.” *Ethnic and Racial Studies* 28(1):20–49. doi: 10.1080/0141987042000280003.

Alvero, AJ, and Rebecca Pattichis. 2022. *Linguistic and Cultural Strategies: Identification and Analysis of Spanish Language Usage in College Admissions Essays*. *preprint*. SocArXiv. doi: 10.31235/osf.io/wmsre.

Arun, R., V. Suresh, C. E. Veni Madhavan, and M. N. Narasimha Murthy. 2010. “On Finding the Natural Number of Topics with Latent Dirichlet Allocation: Some Observations.” Pp. 391–402 in *Advances in Knowledge Discovery and Data Mining*. Vol. 6118, *Lecture Notes in Computer Science*, edited by M. J. Zaki, J. X. Yu, B. Ravindran, and V. Pudi. Berlin, Heidelberg: Springer Berlin Heidelberg.

Bailey, Stanley, Fabrício Fialho, and Mara Loveman. 2018. “How States Make Race: New Evidence from Brazil.” *Sociological Science* 5:722–51. doi: 10.15195/v5.a31.

Bliss, Catherine. 2013. “The Marketization of Identity Politics.” *Sociology* 47(5):1011–25. doi: 10.1177/0038038513495604.

Brubaker, Rogers. 2016a. “The Dolezal Affair: Race, Gender, and the Micropolitics of Identity.” *Ethnic and Racial Studies* 39(3):414–48. doi: 10.1080/01419870.2015.1084430.

Brubaker, Rogers. 2016b. *Trans: Gender and Race in an Age of Unsettled Identities*. Princeton: Princeton University Press.

Brunsma, David L. 2006. “Public Categories, Private Identities: Exploring Regional Differences in the Biracial Experience.” *Social Science Research* 35(3):555–76. doi: 10.1016/j.ssresearch.2004.10.002.

Brunsma, David L., and Kerry Ann Rockquemore. 2001. “The New Color Complex: Appearances and Biracial Identity.” *Identity* 1(3):225–46. doi: 10.1207/S1532706XID0103_03.

Bryc, Katarzyna, Eric Y. Durand, J. Michael Macpherson, David Reich, and Joanna L. Mountain. 2015. “The Genetic Ancestry of African Americans, Latinos, and European Americans across the United States.” *The American Journal of Human Genetics* 96(1):37–53. doi: 10.1016/j.ajhg.2014.11.010.

Campbell, Mary E., and Lisa Troyer. 2007. "The Implications of Racial Misclassification by Observers." *American Sociological Review* 72(5):750–65. doi: 10.1177/000312240707200505.

Cao, Juan, Tian Xia, Jintao Li, Yongdong Zhang, and Sheng Tang. 2009. "A Density-Based Method for Adaptive LDA Model Selection." *Neurocomputing* 72(7):1775–81. doi: 10.1016/j.neucom.2008.06.011.

Chen, Jacqueline M., Maria Clara P. de Paula Couto, Airi M. Sacco, and Yarrow Dunham. 2018. "To Be or Not to Be (Black or Multiracial or White): Cultural Variation in Racial Boundaries." *Social Psychological and Personality Science* 9(7):763–72. doi: 10.1177/1948550617725149.

Chetty, Raj, Nathaniel Hendren, Maggie R. Jones, and Sonya R. Porter. 2020. "Race and Economic Opportunity in the United States: An Intergenerational Perspective." *The Quarterly Journal of Economics* 135(2):711–83. doi: 10.1093/qje/qjz042.

Christensen, K. D., T. E. Jayaratne, J. S. Roberts, S. L. R. Kardia, and E. M. Petty. 2010. "Understandings of Basic Genetics in the United States: Results from a National Survey of Black and White Men and Women." *Public Health Genomics* 13(7–8):467–76. doi: 10.1159/000293287.

Condit, Celeste M. 2019. "Laypeople Are Strategic Essentialists, Not Genetic Essentialists." *Hastings Center Report* 49:S27–37. doi: 10.1002/hast.1014.

Croll, Paul R., and Joseph Gerteis. 2019. "Race as an Open Field: Exploring Identity beyond Fixed Choices." *Sociology of Race and Ethnicity* 5(1):55–69. doi: 10.1177/2332649217748425.

Davenport, Lauren D. 2016. "The Role of Gender, Class, and Religion in Biracial Americans' Racial Labeling Decisions." *American Sociological Review* 81(1):57–84. doi: 10.1177/0003122415623286.

Davis, F. James. 2001. *Who Is Black? One Nation's Definition*. 10th anniversary ed. University Park, Pa: Pennsylvania State University Press.

Desmond, Matthew. 2016. *Evicted: Poverty and Profit in the American City*. First Edition. New York: Crown Publishers.

Deveaud, Romain, Eric SanJuan, and Patrice Bellot. 2014. "Accurate and Effective Latent Concept Modeling for Ad Hoc Information Retrieval." *Document Numérique* 17(1):61–84. doi: 10.3166/dn.17.1.61-84.

Du Bois, W. E. Burghardt. 1903. *The Souls of Black Folk: Essays and Sketches*. Chicago: A.C. McClurg & Co.

Dubriwny, Tasha N., Benjamin R. Bates, and Jennifer L. Bevan. 2004. “Lay Understandings of Race: Cultural and Genetic Definitions.” *Public Health Genomics* 7(4):185–95. doi: 10.1159/000082261.

Egami, Naoki, Christian J. Fong, Justin Grimmer, Margaret E. Roberts, and Brandon M. Stewart. 2022. “How to Make Causal Inferences Using Texts.” *Science Advances* 8(42):eabg2652. doi: 10.1126/sciadv.abg2652.

El-Haj, Nadia Abu. 2007. “The Genetic Reinscription of Race.” *Annual Review of Anthropology* 36(1):283–300. doi: 10.1146/annurev.anthro.34.081804.120522.

Feliciano, Cynthia. 2016. “Shades of Race: How Phenotype and Observer Characteristics Shape Racial Classification.” *American Behavioral Scientist* 60(4):390–419. doi: 10.1177/0002764215613401.

Feliciano, Cynthia. 2018. “How Family, Immigrant Group, and School Contexts Shape Ethnic Educational Disparities.” *Ethnic and Racial Studies* 41(2):189–209. doi: 10.1080/01419870.2017.1355974.

Ford, Karly S., Ashley N. Patterson, and Marc P. Johnston-Guerrero. 2021. “Monoracial Normativity in University Websites: Systematic Erasure and Selective Reclassification of Multiracial Students.” *Journal of Diversity in Higher Education* 14(2):252–63. doi: 10.1037/dhe0000154.

Fox, Cybelle, and Thomas A. Guglielmo. 2012. “Defining America’s Racial Boundaries: Blacks, Mexicans, and European Immigrants, 1890–1945.” *American Journal of Sociology* 118(2):327–79. doi: 10.1086/666383.

Frank, Reanne, Ilana Redstone Akresh, and Bo Lu. 2010. “Latino Immigrants and the U.S. Racial Order: How and Where Do They Fit In?” *American Sociological Review* 75(3):378–401. doi: 10.1177/0003122410372216.

Gans, Herbert J. 1979. “Symbolic Ethnicity: The Future of Ethnic Groups and Cultures in America*.” *Ethnic and Racial Studies* 2(1):1–20. doi: 10.1080/01419870.1979.9993248.

Giebel, Sonia. 2023. “‘As Diverse as Possible’: How Universities Compromise Multiracial Identities.” *Sociology of Education* 96(1):1–18. doi: 10.1177/00380407221139180.

Gieryn, Thomas F. 1983. “Boundary-Work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists.” *American Sociological Review* 48(6):781. doi: 10.2307/2095325.

Golash-Boza, Tanya, and William Darity. 2008. “Latino Racial Choices: The Effects of Skin Colour and Discrimination on Latinos’ and Latinas’ Racial Self-Identifications.” *Ethnic and Racial Studies* 31(5):899–934. doi: 10.1080/01419870701568858.

Griffiths, Thomas L., and Mark Steyvers. 2004. “Finding Scientific Topics.” *Proceedings of the National Academy of Sciences* 101(suppl_1):5228–35. doi: 10.1073/pnas.0307752101.

Grimmer, Justin, Margaret E. Roberts, and Brandon M. Stewart. 2022. *Text as Data: A New Framework for Machine Learning and the Social Sciences*. Princeton: Princeton University Press.

Gullickson, Aaron. 2010. "Racial Boundary Formation at the Dawn of Jim Crow: The Determinants and Effects of Black/Mulatto Occupational Differences in the United States, 1880." *American Journal of Sociology* 116(1):187–231. doi: 10.1086/652136.

Gullickson, Aaron. 2016. "Essential Measures: Ancestry, Race, and Social Difference." *American Behavioral Scientist* 60(4):498–518. doi: 10.1177/0002764215613398.

Gullickson, Aaron, and Ann Morning. 2011. "Choosing Race: Multiracial Ancestry and Identification." *Social Science Research* 40(2):498–512. doi: 10.1016/j.ssresearch.2010.12.010.

Guo, Guang, Yilan Fu, Hedwig Lee, Tianji Cai, Kathleen Mullan Harris, and Yi Li. 2014. "Genetic Bio-Ancestry and Social Construction of Racial Classification in Social Surveys in the Contemporary United States." *Demography* 51(1):141–72. doi: 10.1007/s13524-013-0242-0.

Hamilton, Tod G. 2019. *Immigration and the Remaking of Black America*. New York: Russell Sage Foundation.

Hamilton, Tod G. 2020. "Black Immigrants and the Changing Portrait of Black America." *Annual Review of Sociology* 46(1):295–313. doi: 10.1146/annurev-soc-121919-054728.

Harmon, Amy. 2006. "Seeking Ancestry in DNA Ties Uncovered by Tests."

Ho, Arnold K., Nour S. Kteily, and Jacqueline M. Chen. 2017. "'You're One of Us': Black Americans' Use of Hypodescent and Its Association with Egalitarianism." *Journal of Personality and Social Psychology* 113(5):753–68. doi: 10.1037/pspi0000107.

Hu, Olivia Y., Xiang Lu, and Wendy D. Roth. 2023. "Linking Race and Genes: Racial Conceptualization among Genetic Ancestry Test-Takers." *Ethnic and Racial Studies* 1–23. doi: 10.1080/01419870.2023.2224871.

Huang, Tiffany J. 2023. "What We Talk about When We Talk about Ethnicity: Hispanic Self-Classification and Appraisal in an Online College Forum." *Sociology of Race and Ethnicity*. doi: doi.org/10.1177/23326492231187308.

Irizarry, Yasmiyn, Ellis P. Monk, and Ryon J. Cobb. 2023. "Race-Shifting in the United States: Latinxs, Skin Tone, and Ethnoracial Alignments." *Sociology of Race and Ethnicity* 9(1):37–55. doi: 10.1177/23326492221114813.

Jerolmack, Colin, and Shamus Khan. 2014. "Talk Is Cheap: Ethnography and the Attitudinal Fallacy." *Sociological Methods & Research* 43(2):178–209. doi: 10.1177/0049124114523396.

Johfre, Sasha Shen, Aliya Saperstein, and Jill A. Hollenbach. 2021. "Measuring Race and Ancestry in the Age of Genetic Testing." *Demography* 58(3):785–810. doi: 10.1215/00703370-9142013.

Johnson, Rucker C. 2019. *Children of the Dream: Why School Integration Works*. Basic Books.

Karl, Robert. 2020. "23andDiverseMe: Using Genetic Ancestry Tests to Establish Minority Status." *Health Matrix* 30(475).

Karlson, Kristian Bernt, Anders Holm, and Richard Breen. 2012. "Comparing Regression Coefficients Between Same-Sample Nested Models Using Logit and Probit: A New Method." *Sociological Methodology* 42(1):286–313. doi: 10.1177/0081175012444861.

Khanna, Nikki. 2010. "'if You're Half Black, You're Just Black': Reflected Appraisals and the Persistence of the One-Drop Rule." *Sociological Quarterly* 51(1):96–121. doi: 10.1111/j.1533-8525.2009.01162.x.

Khanna, Nikki, and Cathryn Johnson. 2010. "Passing as Black: Racial Identity Work among Biracial Americans." *Social Psychology Quarterly* 73(4):380–97. doi: 10.1177/0190272510389014.

Lamont, Michèle, and Virág Molnár. 2002. "The Study of Boundaries in the Social Sciences." *Annual Review of Sociology* 28(1):167–95. doi: 10.1146/annurev.soc.28.110601.141107.

Lee, Jennifer, and Frank D. Bean. 2012. *The Diversity Paradox: Immigration and the Color Line in Twenty-First Century America*. 1. Papercover ed. New York, NY: Russell Sage.

Lee, Sandra Soo-Jin, Deborah A. Bolnick, Troy Duster, Pilar Ossorio, and Kimberly TallBear. 2009. "The Illusive Gold Standard in Genetic Ancestry Testing." *Science* 325(5936):38–39. doi: 10.1126/science.1173038.

Lewis, Amanda E. 2004. "'What Group?' Studying Whites and Whiteness in the Era of 'Color-Blindness.'" *Sociological Theory* 22(4):623–46. doi: 10.1111/j.0735-2751.2004.00237.x.

López, Nancy, and Howard Hogan. 2021. "What's Your Street Race? The Urgency of Critical Race Theory and Intersectionality as Lenses for Revising the U.S. Office of Management and Budget Guidelines, Census and Administrative Data in Latinx Communities and Beyond." *Genealogy* 5(3):75. doi: 10.3390/genealogy5030075.

Lucas, Lauren Sudeall. 2014. "Undoing Race? Reconciling Multiracial Identity with Equal Protection." *California Law Review* 102(5):1243–1301.

Ma, Debbie S., Joshua Correll, and Bernd Wittenbrink. 2015. "The Chicago Face Database: A Free Stimulus Set of Faces and Norming Data." *Behavior Research Methods* 47(4):1122–35. doi: 10.3758/s13428-014-0532-5.

Ma, Debbie S., Justin Kantner, and Bernd Wittenbrink. 2021. “Chicago Face Database: Multiracial Expansion.” *Behavior Research Methods* 53(3):1289–1300. doi: 10.3758/s13428-020-01482-5.

Massey, Douglas S., and Nancy A. Denton. 2003. *American Apartheid: Segregation and the Making of the Underclass*. 10. print. Cambridge, Mass.: Harvard Univ. Press.

Mathieson, Iain, and Aylwyn Scally. 2020. “What Is Ancestry?” edited by J. Flint. *PLOS Genetics* 16(3):e1008624. doi: 10.1371/journal.pgen.1008624.

Monk, Ellis P. 2022. “Inequality without Groups: Contemporary Theories of Categories, Intersectional Typicality, and the Disaggregation of Difference.” *Sociological Theory* 40(1):3–27. doi: 10.1177/07352751221076863.

Morning, Ann. 2011. *The Nature of Race: How Scientists Think and Teach about Human Difference*.

Morning, Ann. 2018. “Kaleidoscope: Contested Identities and New Forms of Race Membership.” *Ethnic and Racial Studies* 41(6):1055–73. doi: 10.1080/01419870.2018.1415456.

Morning, Ann, and Marcello Maneri. 2022. *An Ugly Word: Rethinking Race in Italy and the United States*. New York: Russell Sage Foundation.

Morning, Ann, and Aliya Saperstein. 2018. “The Generational Locus of Multiraciality and Its Implications for Racial Self-Identification.” *The ANNALS of the American Academy of Political and Social Science* 677(1):57–68. doi: 10.1177/0002716218754774.

Murzintcev, Nikita. 2016. “Ldatuning: Tuning of the Latent Dirichlet Allocation Models Parameters.”

Nelson, Alondra. 2008. “Bio Science: Genetic Genealogy Testing and the Pursuit of African Ancestry.” *Social Studies of Science* 38(5):759–83. doi: 10.1177/0306312708091929.

Nelson, Alondra. 2016. *The Social Life of DNA: Race, Reparations, and Reconciliation after the Genome*. Boston: Beacon Press.

Nobles, Melissa. 2000. *Shades of Citizenship: Race and the Census in Modern Politics / Melissa Nobles*. Stanford, CA: Stanford University Press.

Okamoto, Dina G. 2014. *Redefining Race: Asian American Panethnicity and Shifting Ethnic Boundaries*. New York: Russell Sage Foundation.

Omi, Michael, and Howard Winant. 2014. *Racial Formation in the United States*. 3rd ed. New York: Routledge.

Orth, Taylor. 2022. *DNA Tests: Many Americans Report Surprises and New Connections*. YouGov.

Panofsky, Aaron, and Joan Donovan. 2019. “Genetic Ancestry Testing among White Nationalists: From Identity Repair to Citizen Science.” *Social Studies of Science* 49(5):653–81. doi: 10.1177/0306312719861434.

Pascoe, Peggy. 2009. *What Comes Naturally: Miscegenation Law and the Making of Race in America*. Oxford ; New York: Oxford University Press.

Pearl, Judea. 2009. *Causality: Models, Reasoning, and Inference*. 2nd ed. Cambridge, U.K. ; New York: Cambridge University Press.

Penner, Andrew M., and Aliya Saperstein. 2013. “Engendering Racial Perceptions: An Intersectional Analysis of How Social Status Shapes Race.” *Gender and Society* 27(3):319–44. doi: 10.1177/0891243213480262.

Perlmann, Joel, and Mary C. Waters, eds. 2002. *New Race Question, The: How the Census Counts Multiracial Individuals*. Russell Sage Foundation.

Reardon, Sean F., Demetra Kalogrides, and Kenneth Shores. 2019. “The Geography of Racial/Ethnic Test Score Gaps.” *The American Journal of Sociology* 124(4):1162–1121.

Reskin, Barbara. 2012. “The Race Discrimination System.” *Annual Review of Sociology* 38(1):17–35. doi: 10.1146/annurev-soc-071811-145508.

Roberts, Dorothy. 2011. *Fatal Invention: How Science, Politics, and Big Business Re-Create Race in the Twenty-First Century*. New York: New Press.

Roberts, Margaret E., Brandon M. Stewart, and Dustin Tingley. 2019. “Stm: An R Package for Structural Topic Models.” *Journal of Statistical Software* 91:1–40. doi: 10.18637/jss.v091.i02.

Roth, Wendy D. 2012. *Race Migrations: Latinos and the Cultural Transformation of Race*. Stanford, California: Stanford University Press.

Roth, Wendy D. 2016. “The Multiple Dimensions of Race.” *Ethnic and Racial Studies* 39(8):1398–1406. doi: 10.1080/01419870.2016.1140793.

Roth, Wendy D. 2018. “Unsettled Identities amid Settled Classifications? Toward a Sociology of Racial Appraisals.” *Ethnic and Racial Studies* 41(6):1093–1112. doi: 10.1080/01419870.2018.1417616.

Roth, Wendy D., and Biorn Ivemark. 2018. “Genetic Options: The Impact of Genetic Ancestry Testing on Consumers’ Racial and Ethnic Identities.” *American Journal of Sociology* 124(1):150–84. doi: 10.1086/697487.

Roth, Wendy D., and Katherine Lyon. 2018. “Genetic Ancestry Tests and Race: Who Takes Them, Why, and How Do They Affect Racial Identities.” *Reconsidering Race: Social Science Perspectives on Racial Categories in the Age of Genomics* 1:133–69.

Roth, Wendy D., Elena G. van Stee, and Alejandra Regla-Vargas. 2023. "Conceptualizations of Race: Essentialism and Constructivism." *Annual Review of Sociology* 49(1):annurev-soc-031021-034017. doi: 10.1146/annurev-soc-031021-034017.

Rothstein, Richard. 2017. *The Color of Law : A Forgotten History of How Our Government Segregated America*. Array. New York: Liveright Publishing Corporation.

Saperstein, Aliya, Jessica M. Kizer, and Andrew M. Penner. 2015. "Making the Most of Multiple Measures: Disentangling the Effects of Different Dimensions of Race in Survey Research." *American Behavioral Scientist* 60(4):519–37. doi: 10.1177/0002764215613399.

Saperstein, Aliya;, and Andrew M. Penner. 2012. "Racial Fluidity and Inequality in the United States." *American Journal of Sociology* 118(3):676–727.

Schachter, Ariela, René D. Flores, and Neda Maghbouleh. 2021. "Ancestry, Color, or Culture? How Whites Racially Classify Others in the U.S." *American Journal of Sociology* 126(5):1220–63.

Sen, Maya, and Omar Wasow. 2016. "Race as a Bundle of Sticks: Designs That Estimate Effects of Seemingly Immutable Characteristics." *Annual Review of Political Science* 19(1):499–522. doi: 10.1146/annurev-polisci-032015-010015.

Students for Fair Admissions v. University of North Carolina. 2022. *Students for Fair Admissions, Inc. v. University of North Carolina*.

The 1000 Genomes Project Consortium. 2015. "A Global Reference for Human Genetic Variation." *Nature* 526(7571):68–74. doi: 10.1038/nature15393.

Tilly, Charles. 2005. *Identities, Boundaries, and Social Ties*. Nachdr. Boulder, Colo.: Paradigm Publ.

Van Evrie, John H., 1814-1896. 1853. *Negroes and Negro "Slavery" : The First an Inferior Race, the Latter Its Normal Condition*. New York : Day Book Office, 1853.

VanderWeele, Tyler J. 2016. "Mediation Analysis: A Practitioner's Guide." *Annual Review of Public Health* 37(1):17–32. doi: 10.1146/annurev-publhealth-032315-021402.

Vasquez, Jessica M. 2010. "Blurred Borders for Some but Not 'Others': Racialization, 'Flexible Ethnicity,' Gender, and Third-Generation Mexican American Identity." *Sociological Perspectives* 53(1):45–71. doi: 10.1525/sop.2010.53.1.45.

Wang, Hansi Lo. 2022. "Who Counts as Black in Voting Maps? Some GOP State Officials Want That Narrowed." *NPR*.

Waters, Mary C. 1990. *Ethnic Options: Choosing Identities in America*. Berkeley: University of California Press.

Weber, Max. 1968. *Economy and Society: An Outline of Interpretive Sociology*. New York: Badminster.

Weedow, Robbee, Daphne O. Martschenko, and Sam Trejo. 2022. "Scientists Must Consider the Risk of Racist Misappropriation of Research." *Scientific American*.

Wimmer, Andreas. 2008. "The Making and Unmaking of Ethnic Boundaries: A Multilevel Process Theory." *American Journal of Sociology* 113(4):970–1022. doi: 10.1086/522803.

Wimmer, Andreas. 2013. *Ethnic Boundary Making: Institutions, Power, Networks*. New York: Oxford University Press.

Xu, Janet, Aliya Saperstein, Ann Morning, and Sarah Iverson. 2021. "Gender, Generation, and Multiracial Identification in the United States." *Demography* 58(5):1603–30. doi: 10.1215/00703370-9334366.

Ying, Luwei, Jacob M. Montgomery, and Brandon M. Stewart. 2022. "Topics, Concepts, and Measurement: A Crowdsourced Procedure for Validating Topics as Measures." *Political Analysis* 30(4):570–89. doi: 10.1017/pan.2021.33.

Young, Danielle M., Diana T. Sanchez, Kristin Pauker, and Sarah E. Gaither. 2021. "A Meta-Analytic Review of Hypodescent Patterns in Categorizing Multiracial and Racially Ambiguous Targets." *Personality and Social Psychology Bulletin* 47(5):705–27. doi: 10.1177/0146167220941321.

Zuberi, Tukufu. 2001. *Thicker than Blood: How Racial Statistics Lie*. Minneapolis: University of Minnesota Press.

TABLES

Table 1. Summary statistics of survey respondents.

	Mean	SD
Age	45.12	16.71
Female	.53	
Education		
No High School	.07	
High School Graduate	.39	
Some College	.23	
2-Year Degree	.11	
Four-Year Degree	.13	
Post-Grad	.08	
Household Income ($1000)	47.30	58.64
Immigration Background		
Parents & Grandparents Born in US	.88	
Parents Born in US	.05	
Parents Immigrants to US	.07	
Political Party		
Democrat	.62	
Republican	.08	
Independent	.21	
Other / Not Sure	.10	
Observations	3100	

Notes: Weighted averages are displayed. Survey weights were provided directly by YouGov to approximate a nationally-representative sample of U.S.-born Black Americans. Weights were created using a sampling frame generated from ACS using age, gender, race and education, and then matched back to the respondent sample. Weights correspond to the inverse probability of selection into the sample.

Table 2. Experimental treatment effects of high Sub-Saharan African ancestry.

	(1) Black Census	(2) Black Scholarship	(3) Non-Black Census	(4) Non-Black Scholarship	(5) Pooled
A. Likert Approval					
High Ancestry	0.22**	0.20**	0.27***	0.18*	0.22***
	(0.07)	(0.07)	(0.07)	(0.08)	(0.04)
B. Respondent's Racial Classification = Black					
High Ancestry	0.09*	0.08*	0.12***	0.14***	0.11***
	(0.04)	(0.04)	(0.03)	(0.04)	(0.02)
C. Perceived Avg. Black American's Classification = Black					
High Ancestry	0.11**	0.02	0.10**	0.13***	0.09***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.02)
Observations	749	806	819	726	3100

Notes: Standard errors in parentheses. * p<0.05; ** p<0.01; *** p<0.001. Panels A, B, and C display treatment effects from separate regressions.

Table 3. Experimental treatment effects of setting and prior identification

	(1)	(2)
	Setting	Prior Identification
A. Likert Approval		
Treatment	0.10**	0.18***
	(0.04)	(0.04)
B. Respondent's Racial Classification = Black		
Treatment	0.02	0.05**
	(0.02)	(0.02)
C. Perceived Avg. Black American's Classification = Black		
Treatment	0.03	0.08***
	(0.02)	(0.02)
Observations	3100	3100

Notes: Standard errors in parentheses. * $p<0.05$; ** $p<0.01$; *** $p<0.001$. Panels A, B, and C display treatment effects from separate regressions.

Table 4. Mediation of Sub-Saharan African ancestry effects.

	Mediator Effect	SE	Fraction of Total Effect
A. Likert Approval			
Integrity Index (standardized)	0.14	0.02	0.64
Perceived Discrimination	0.00	0.00	0.01
Perceived Shared Culture	0.03	0.01	0.15
Total	0.18	0.02	0.81
B. Respondent's Racial Classification = Black			
Integrity Index (standardized)	0.05	0.01	0.43
Perceived Discrimination	0.00	0.00	-0.01
Perceived Shared Culture	0.02	0.00	0.19
Total	0.07	0.01	0.62
C. Perceived Avg. Black American's Classification = Black			
Integrity Index (standardized)	0.03	0.01	0.34
Perceived Discrimination	0.00	0.00	0.03
Perceived Shared Culture	0.03	0.01	0.32
Total	0.07	0.01	0.70

Notes: n=3100. SE=Standard Error. Panels A, B, and C display mediation results for separate outcomes.

Table 5. Moderation of Sub-Saharan African ancestry treatment effects.

	(1) Likert Approval	(2) Respondent's Racial Classification = Black	(3) Perceived Avg. Black American's Classification = Black
A. Perceived Own SSA Ancestry			
High Ancestry	0.18*	0.08*	0.09*
	(0.08)	(0.04)	(0.04)
Perceived Ancestry %	0.02*	0.00	0.01
	(0.01)	(0.00)	(0.00)
High Ancestry X Perceived Own Ancestry %	0.01	0.01	-0.00
	(0.01)	(0.01)	(0.01)
B. Perceived Avg. SSA Ancestry			
High Ancestry	0.14	0.04	0.08
	(0.09)	(0.04)	(0.04)
Perceived Avg. Ancestry %	0.02	0.01	0.01*
	(0.01)	(0.00)	(0.00)
High Ancestry X Perceived Avg. Ancestry %	0.01	0.01	0.00
	(0.01)	(0.01)	(0.01)
C. Diff Perceived Avg. & Own SSA Ancestry			
High Ancestry	0.22***	0.11***	0.09***
	(0.04)	(0.02)	(0.02)
Avg. - Own Ancestry %	-0.01	0.00	0.00
	(0.01)	(0.01)	(0.01)
High Ancestry X (Avg. - Own Ancestry %)	0.01	0.01	0.00
	(0.02)	(0.01)	(0.01)
Observations	3100	3100	3100

Notes: Each column reports results from separate regressions, while Panels A, B, and C display results for separate potential moderators. The treatment effects of High Ancestry on each of the three outcomes can be found in Table 3.

Table 6. Description of confirmatory text topics derived from structural topic model.

Topic Name	Topic Number	Top Words (FREX)	Document Example	Example Topic Value
Historical Adversity	23	fight, surviv, struggl, equal, fear, slaveri, god, basic, racist, year	For me, Black reresents pride, strength, resilience. A rich culture defined by large a continent and 54 countries. A culture apparently envied by Europeans. Stolen from our homes, enslaved, and treated with disdain and ignorance,we survived. We bring spice to lives we encounter and have the ability to come back, rise, and survive in spite of continued disrespect, hostility, and hatred. Many shades of color, we have transcended and colorized our world in spite of and because of those who choose to see it and fear it any other way.	0.680
Physical Features	27	skin, dark, color, tone, hair, brown, light, complexion, featur, textur	Your skin tone & hair texture. Your facial features and body frame.	0.754
Culture	31	cultur, music, background, food, rais, econom, involv, celebr, environ, ethnic	How Mia identifies has more to do with the culture in which she was raised. If she'd never taken the DNA test, her culture would have been her major identifier. Her culture includes her music, culinary tastes, and perspective.	0.562
One-Drop Rule	33	characterist, person, attitud, experi, valu, defin, evolv, definit, usual, collect	I think the amount of blood that can contributed to a person determines if they are black or not. Off the record, I think it is a 1% or 2% rule.	0.437
Pride & Resilience	2, 5 & 13	import, communiti, uniqu, grow, character, strong, beauti, challeng, advers, resili, mean, proud, love, somebodi, lot	In my opinion, being Black means to be strong, innovative, and resilient, especially, in the face of oppression and ignorance. Because, we, as Black people, have had to endure so much negativity in our history, that we have learned how to overcome any obstacle.	0.671
Genetic Ancestry	36 & 39	percentag, small, percent, larg, consid, test, genet, result, ancestri, dna	It is not anyone's decision to select their identity. It is the presence of the gene discovery that determines that. It doesn't matter what region or percentage of the gene. Five percent is the lowest gene recognition but it still represents it.	0.607
Personal Choice	7 & 32	feel, choic, chose, right, comfort, want, can, truth, whatev, tell	It is her choice. She has a right to decide what she wants to call her self. If she wants to change it later she can.	0.363

Notes: FREX top words includes many words that have been stemmed (reduced to their root form such that words such as “write”, “writing”, and “written” would all be reduced to “writ-”). We also include responses as respondents wrote them, including misspellings and capitalization choices.

FIGURES

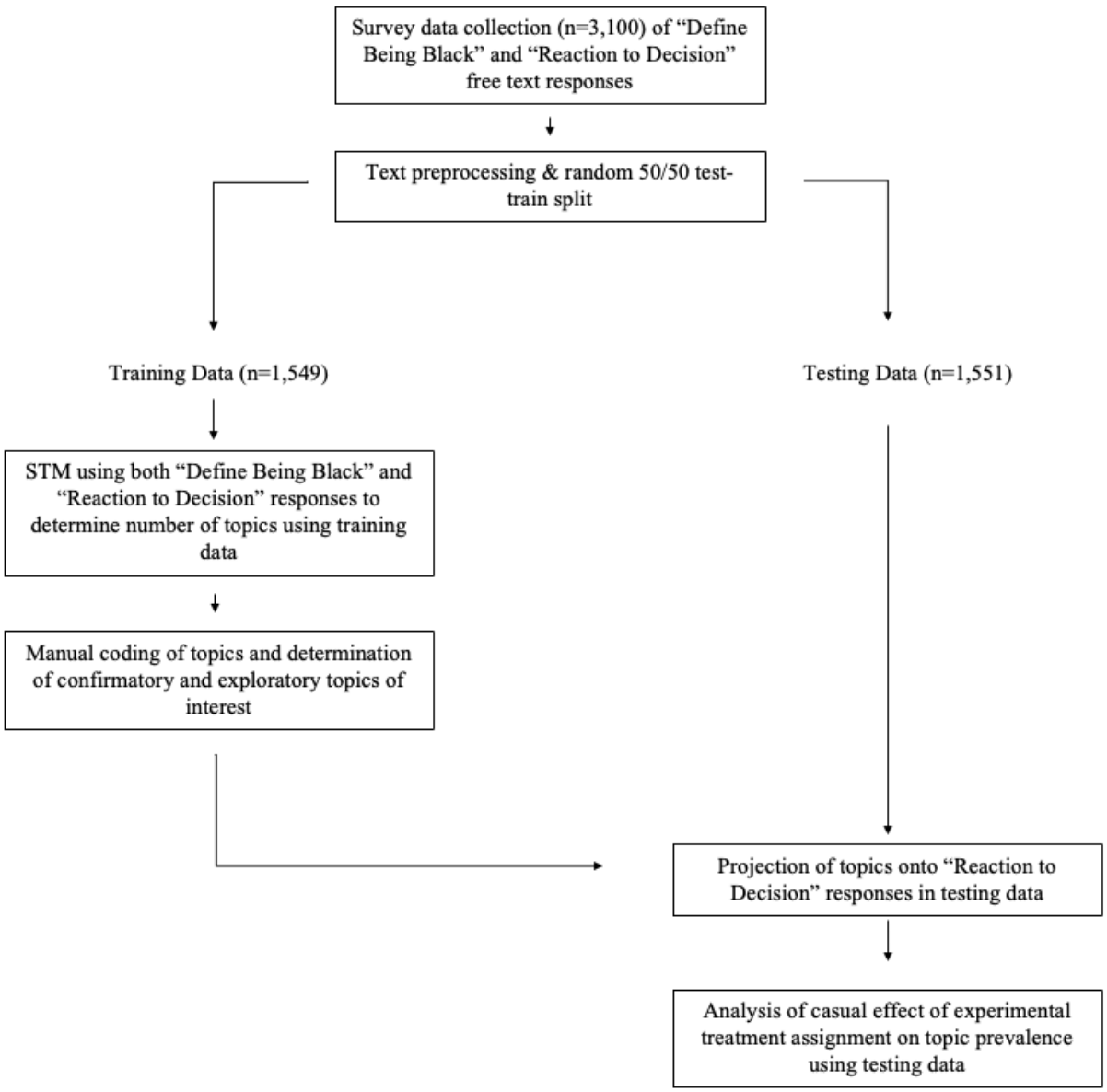

Figure 1. Flow chart of methodological approach to text analyses.

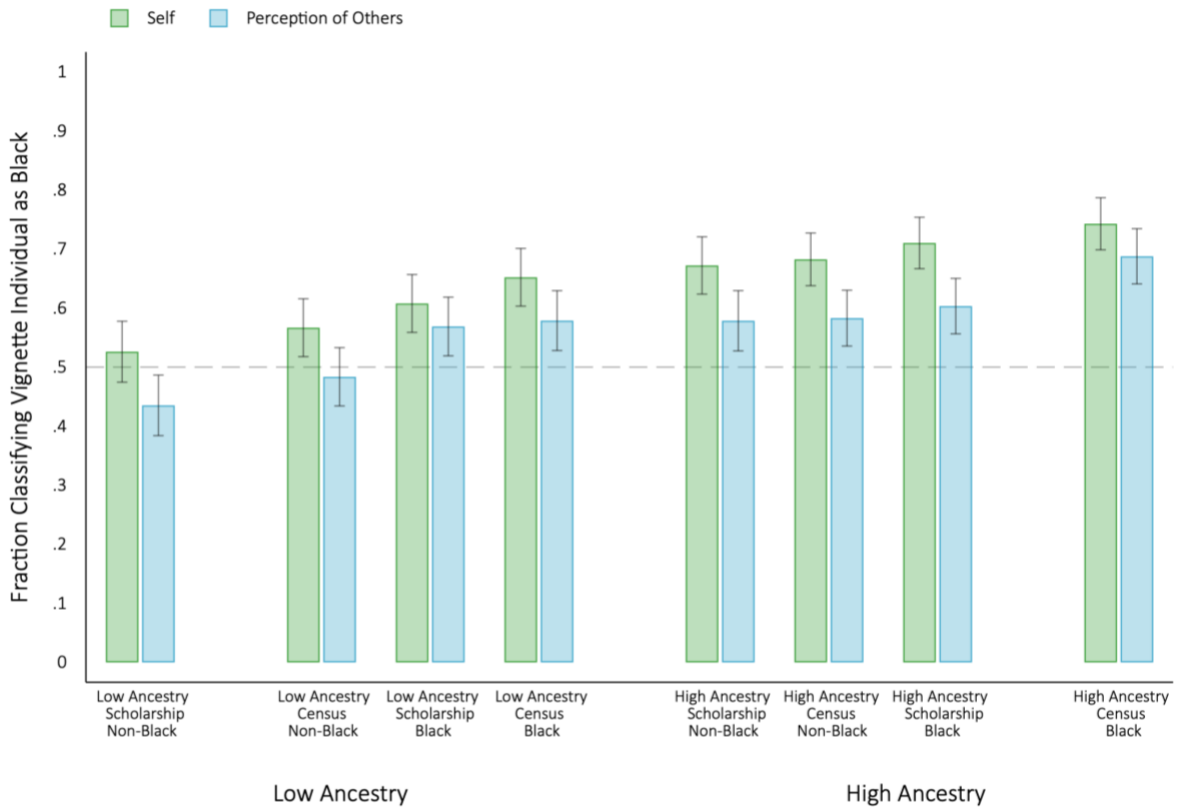

Figure 2. Likelihood of classifying as Black by treatment assignment.

Notes: Green "self" columns indicate responses to "In your opinion, which of the following best describes {NAME}'s race/ethnicity?". Blue "perceptions of others" columns indicate responses to "In your opinion, how do you think most U.S.-born Black Americans would describe {NAME}'s race/ethnicity?".

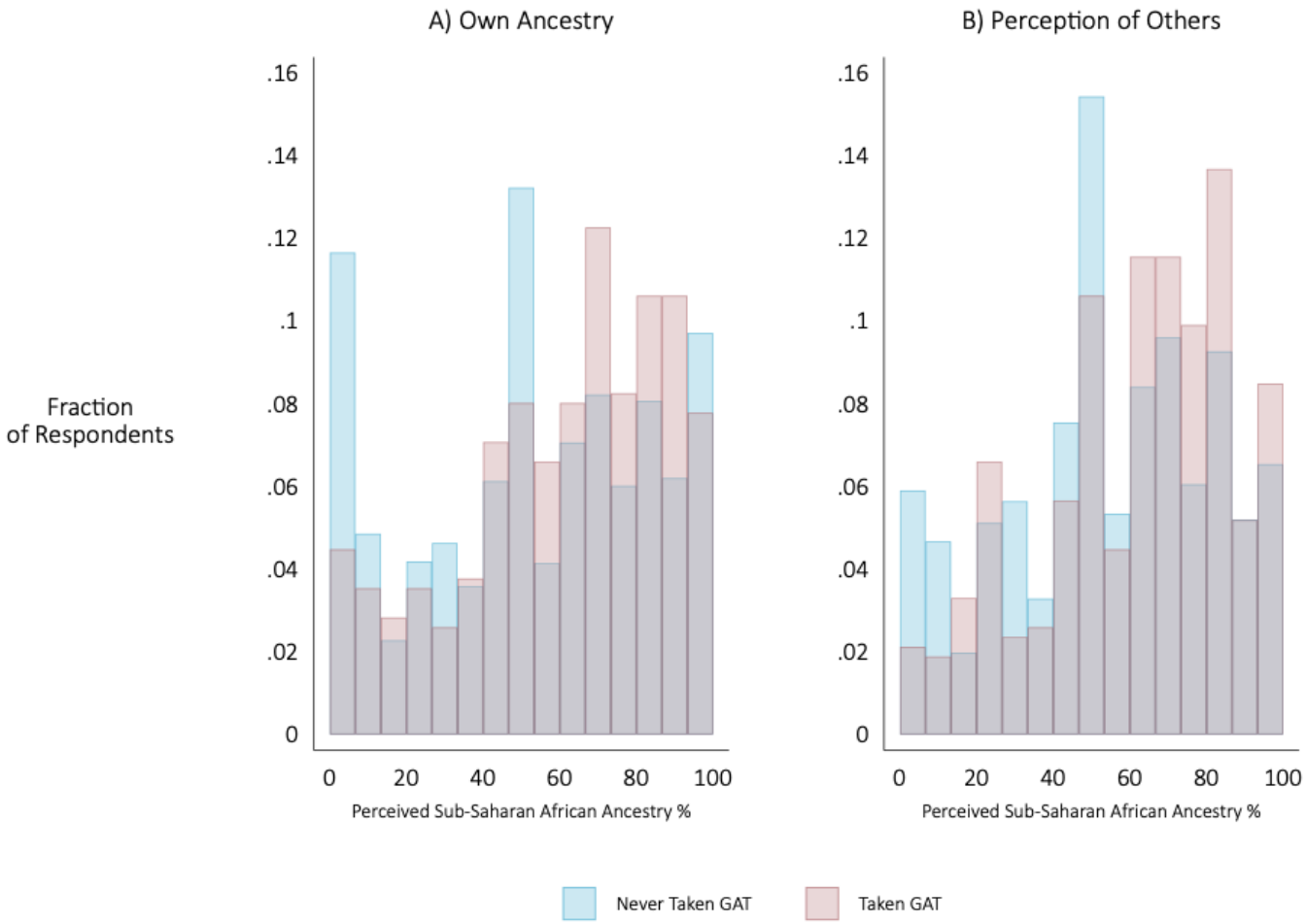

Figure 3. Perceptions of own and average Sub-Saharan African ancestry percentages.
Notes: This figure shows responses to the following questions: (A) "To the best of your knowledge, what percentage Sub-Saharan African genetic ancestry do you believe you have?" and (B) "To the best of your knowledge, what percentage Sub-Saharan African genetic ancestry do you believe that the average U.S.-born Black American has?". Respondents are separated by whether or not they reported having taken a genetic ancestry test (GAT).

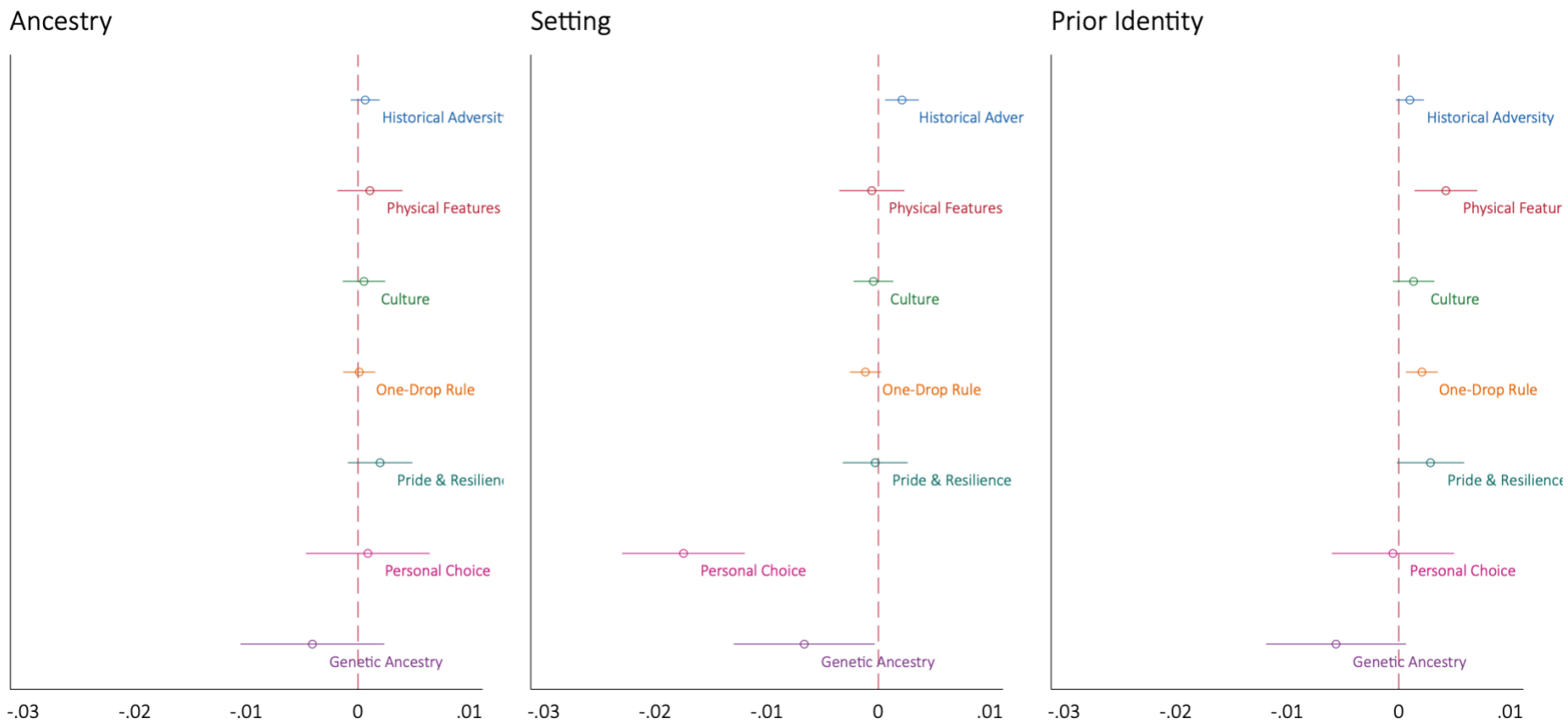

Figure 4. Experimental treatment effects on prevalence of topics in text responses (confirmatory).

Figure 5. Directed Acyclic Graph (DAG) of *racial contextualism*: the conceptual relationship between contextual features, observer racial classification, and observer racial appraisal.

EFFECTS OF GENETIC ANCESTRY TESTS ON RACIAL APPRAISALS AND CLASSIFICATIONS

APPENDIX TABLES

Table A1. Principal component loadings for the integrity index.

Survey Question	**Factor Loadings**		
	Component 1	Component 2	Component 3
Fair	0.58	-0.48	0.66
Legitimate	0.57	0.82	0.09
Honest	0.58	-0.33	-0.75
Fraction of Variance Explained:	0.86	0.08	0.06

Notes: n=3,100. Results are from principal components analyses (PCA) of survey items related to perceived integrity of the vignette individual's decision to identify as Black. See the Experimental Items section of the appendix for the exact wording of each survey item.

Table A2. Word counts of text responses.

Prompt	Average	Range	Median	10th Percentile	90th Percentile
Define Being Black	32.36	(2, 423)	26	12	57
Reaction to Decision	27.87	(0, 392)	25	14	43
Combined	30.12	(0, 423)	25	13	49

Table A3. Description of exploratory text topics derived from structural topic model.

Topic Name	Topic Number	Top Words (FREX)	Document Example	Example Topic Value
Parents & Grandparents	3	parent, grandpar, born, came, father, least, africanamerican, two, remain, 100percentag	Two parents both with black parents and more black relatives all in each generation from grand parents to great grand parents	0.550
Stereotypes	4	also, act, way, opinion, parti, carri, talk, dress, upon, major	I can't quite answer that as the way you would like, if u want honesty that's what I will give u, a lot of characteristics, attitudes, and experiences of an African-American R NOT so positive. Growing up as well as my son now in present day, have only had problems physically N mentionally w/ African-American men and women/boys N girls. It's how they R taught w/ignorance cuz of the past.sadly	0.595
Passing	10	great, like, look, seem, plus, hip, target, worri, stuff, tri	I think it's weird because how didn't he know yes he is white passing but he should've known he had some African in him	0.213
Taking Advantage	12	take, advantag, now, someon, away, truli, whole, true, although, incred	She never identified as Black until she could profit from it. Plus, these programs are to give blacks a chance they have denied. She is taking one away f4om someone who deserves it	0.431
Respondent Indecision	14	answer, make, question, prefer, sure, actual, howev, dont, enough, abl	It's hard to say or answer this question for myself as I never gave it a thought. So that's why I said I have no answer to your question.	0.544
Integrity	15	think, claim, heritag, embrac, didn, weird, necessari, form, need, hide	It depends. If Sam is genuinely embracing and exploring this aspect of her heritage in all parts of her life, then I might feel that the scholarship application is one part of a larger life transformation for her. However, if Sam doesn't embrace and own this aspect of her genetic heritage but only uses it strategically for material gain, then I might she the application as disingenuous, exploitative, and odious.	0.369

Not My Business	16	honest, chang, reason, kind, said, busi, wouldn, neutral, mind, care	My first reaction was disbelief, mathematically it does not make sense. However, my next thought was do I care? In the grand scheme of things, Sam can identify however Sam sees fit and it does not really concern me in the slightest. To be honest, I am not sure why the government cares that much, but if they need those demographics to prove some kind of point, good for them.	0.630
Religious Concepts	17	hypothet, generat, heart, usa, consequ, cuz, honesti, region, fellow, identif	Race is creation of men,we are all children of the one and only god and his Jesus christ	0.721
Aspects of Blackness	18	physic, individu, nose, negroid, label, lip, domin, broad, children, may	As an African American it is very important to be strong mentally, physically, and emotionally. We have all the odds against us. We can not be too verbal or passionate because that translates as aggression. We can not be too quiet because that makes in-us appear weak. We can not express our concerns about unfair treatment because then we are complaining and deemed untruthful. I have been racially profiled and stereotyped various times throughout my 18 years on this Earth. It angers me that there are people using their genetics to apply for scholarships when they have not lived or experienced the life of a typical African American. We have endured so much and our feelings are often pushed aside. Very rarely if ever do we get treated as equals. Most may disagree with what I say and majority of those who do are not of African Descent and those who are, are simply to scared or ignorant to realized that their race is the most oppressed in the world.	0.755
Tolerance	21	noth, probabl, wrong, special, lie, part, everi, absolut, side, mexican	It's nothing wrong with him identify the African-American part of it is beautiful to celebrate each and every part of you even if the other part is non-African-American	0.348

Family History	25	famili, thank, time, around, member, histori, first, second, tradit, space	All from family history talking to family members and learning background and jot allowing others defining who you are	0.479
Don’t Know	28	don, anyth, realli, know, doesn, unsur, bother, doubt, unless, sinc	I don't have an opinion right now , I don't know if those test were true or not. I will npt be forced to say anything else.	0.333
Thresholds	29	african, africa, american, ancestor, 50percentag, decent, descent, sub, saharan, origin	You should have more than 50PERCENTAGE of African ancestry to be classified as solely African/American/Black.	0.596
Systemic Oppression	35	get, use, benefit, help, job, let, tri, money, day, polic	The racially oppressed government and systemic system. Being racially profiled and police doing hate crime.	0.606
Multiracial	37	identifi, mix, problem, race, fine, africanamerican, therefor, 96percentag, anoth, closer	In actuality, Sam should identify with a mixed race, due to the fact that she identifies as African American but is in actuality mostly of non-African American decent and is 94PERCENTAGE another race and 4PERCENTAGE African American.	0.488
Everyday Racism	38	life, deal, live, sometim, racism, everyday, folk, child, best, enjoy	Being black in America is cops threatening your life if you don't comply. A broken justice system that Congress and the government doesn't want to fix. discrimination all over the United States of America. Not being paid equally to the standards of being able to eat.	0.462
American Dream / Bootstraps	41	hard, find, belief, minor, work, area, respect, smart, worker, far	Smart and hard working in area of engineering and sciences ,African American are innovative individuals with great ideas that can be translated into a better and useful matter	0.636
Scholarship	1 & 22	scholarship, appli, colleg, student, shouldn, decis, EXPERIMENTNAME, emot, thought, census	If she knew before applying for the scholarship. This is very disappointing. If she didn't know. I can't be upset. With her finding out the truth she should let the college know also.	0.514

Defining Blackness	20 & 45	even, still, black, biraci, shes, black, sensit, gun, vast, possess	Being black is having a collective experience with people who are brown and/or black and grow up in brown and/or black households. They are recognized as Black by society. As Black people, they will experience both personal and systemic racism. That the defining factor.	0.231

Table A4. Experimental treatment effects on prevalence of topics in text responses (confirmatory).

	(1) Ancestry	(2) Setting	(3) Prior Identification
Historical Adversity	0.001	0.002**	0.001
	(0.001)	(0.001)	(0.001)
Physical Features	0.001	-0.001	0.004**
	(0.001)	(0.001)	(0.001)
Culture	0.001	-0.000	0.001
	(0.001)	(0.001)	(0.001)
One-Drop Rule	0.000	-0.001	0.002**
	(0.001)	(0.001)	(0.001)
Pride & Resilience	0.002	-0.000	0.003
	(0.001)	(0.001)	(0.002)
Personal Choice	0.001	-0.017***	-0.001
	(0.003)	(0.003)	(0.003)
Genetic Ancestry	-0.004	-0.007*	-0.006
	(0.003)	(0.003)	(0.003)

Notes: Each panel row represents results from 3 different regressions: the effect of each ancestry (column 1), setting (column 2), and prior identification (column 3) on the prevalence of the listed topic.

Table A5. Experimental treatment effects on prevalence of topics in text responses (exploratory).

	(1) Ancestry	(2) Setting	(3) Prior Identification
Parents & Grandparents	0.000	0.000	0.002
	(0.001)	(0.001)	(0.001)
Stereotypes	0.000	-0.000	0.001
	(0.000)	(0.000)	(0.000)
Passing	-0.000	-0.001	0.001
	(0.001)	(0.001)	(0.001)
Taking Advantage	-0.002	0.008***	-0.000
	(0.001)	(0.001)	(0.001)
Respondent Indecision	0.001	-0.003*	-0.002
	(0.001)	(0.002)	(0.001)
Integrity	-0.001	-0.002*	-0.003*
	(0.001)	(0.001)	(0.001)
Religious Concepts	0.001	0.000	0.001*
	(0.000)	(0.000)	(0.000)
Not My Business	-0.001	-0.002*	0.001
	(0.001)	(0.001)	(0.001)
Aspects of Blackness	-0.000	-0.001	0.000
	(0.001)	(0.001)	(0.001)
Tolerance	0.003	0.002	-0.000
	(0.001)	(0.001)	(0.001)
Don't Know	-0.001	-0.005***	-0.001
	(0.001)	(0.001)	(0.001)
Family History	-0.001	-0.000	-0.000
	(0.001)	(0.001)	(0.001)
Thresholds	0.000	0.000	-0.001
	(0.002)	(0.002)	(0.002)
Systemic Oppression	-0.002	0.018***	0.000
	(0.002)	(0.002)	(0.002)
Multiracial	-0.002	-0.009***	0.003
	(0.002)	(0.002)	(0.002)
Everyday Racism	-0.001	0.001	0.003**
	(0.001)	(0.001)	(0.001)
American Dream / Bootstraps	0.000	0.001*	-0.000
	(0.001)	(0.001)	(0.001)

Scholarship	0.004	0.024***	-0.009*
	(0.004)	(0.004)	(0.004)
Defining Blackness	-0.002	0.001	0.003
	(0.002)	(0.002)	(0.002)

Notes: Each panel row represents results from 3 different regressions: the effect of each ancestry (column 1), setting (column 2), and prior identification (column 3) on the prevalence of the listed topic.

Table A6: Mediation of Sub-Saharan African ancestry effects using the components of the integrity index.

	Mediator Effect	SE	Fraction of Total Effect
A. Likert Approval			
Perceived Fairness	0.07	0.01	0.30
Perceived Legitimacy	0.04	0.01	0.16
Perceived Honesty	0.06	0.01	0.29
Total	0.16	0.02	0.75
B. Respondent's Racial Classification = Black			
Perceived Fairness	0.02	0.01	0.22
Perceived Legitimacy	0.01	0.00	0.11
Perceived Honesty	0.02	0.01	0.22
Total	0.06	0.01	0.55
C. Perceived Avg. Black American's Classification = Black			
Perceived Fairness	0.02	0.00	0.19
Perceived Legitimacy	0.01	0.00	0.11
Perceived Honesty	0.03	0.01	0.28
Total	0.05	0.01	0.57

Notes: n=3100. SE=Standard Error. Panels A, B, and C display mediation results for separate outcomes.

APPENDIX FIGURES

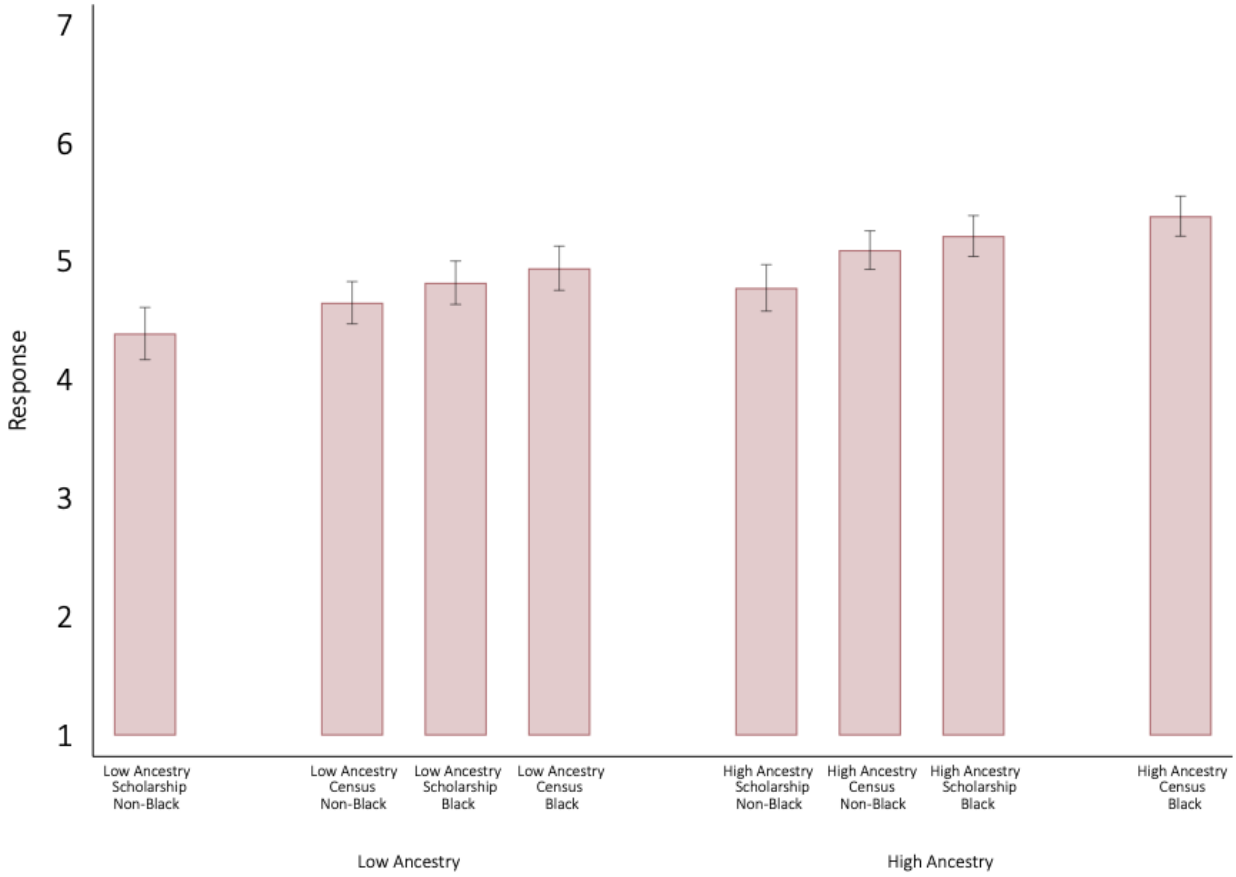

Figure A1. Likert approval of vignette individual's decision, by treatment assignment.

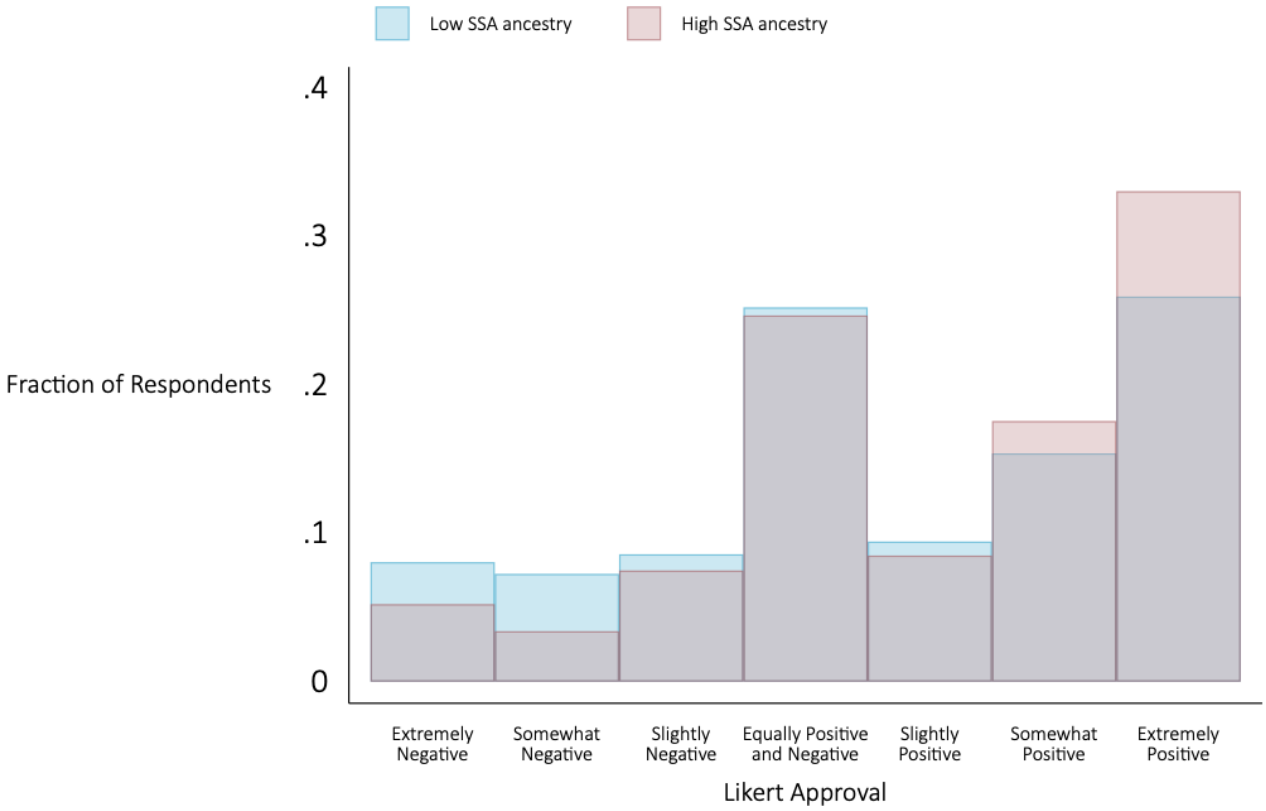

Figure A2. Histogram of Likert approval of vignette individual's decision, by ancestry treatment assignment.

Figure A3. Likelihood of classification (all races), by treatment assignment.

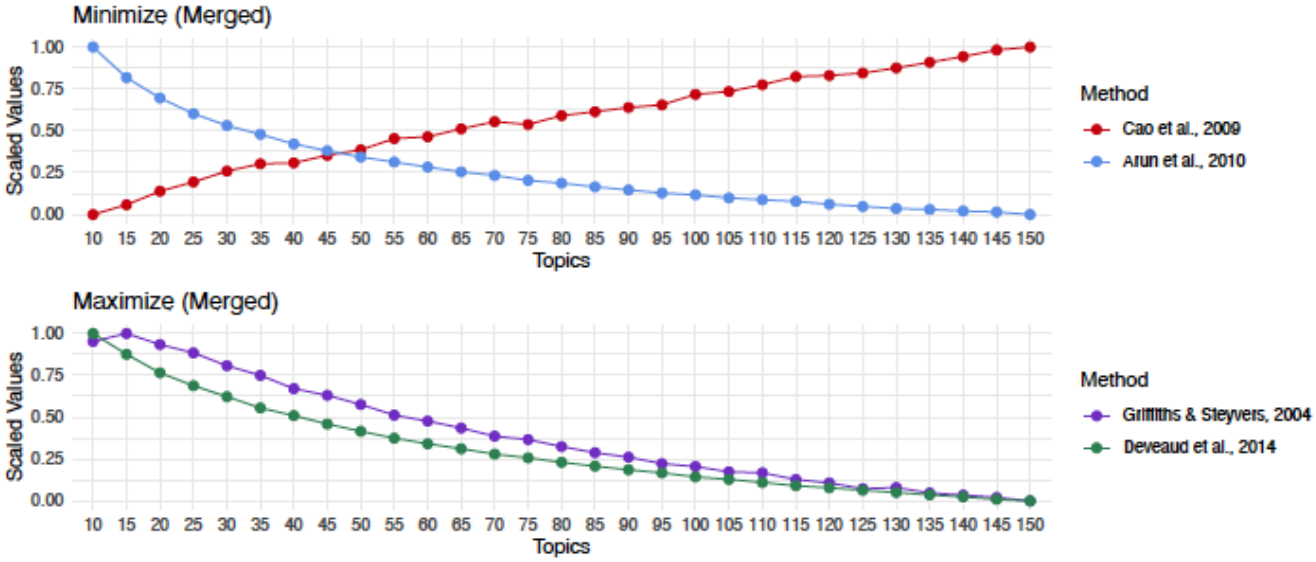

Figure A4. Selecting the number of topics for structural topic model.

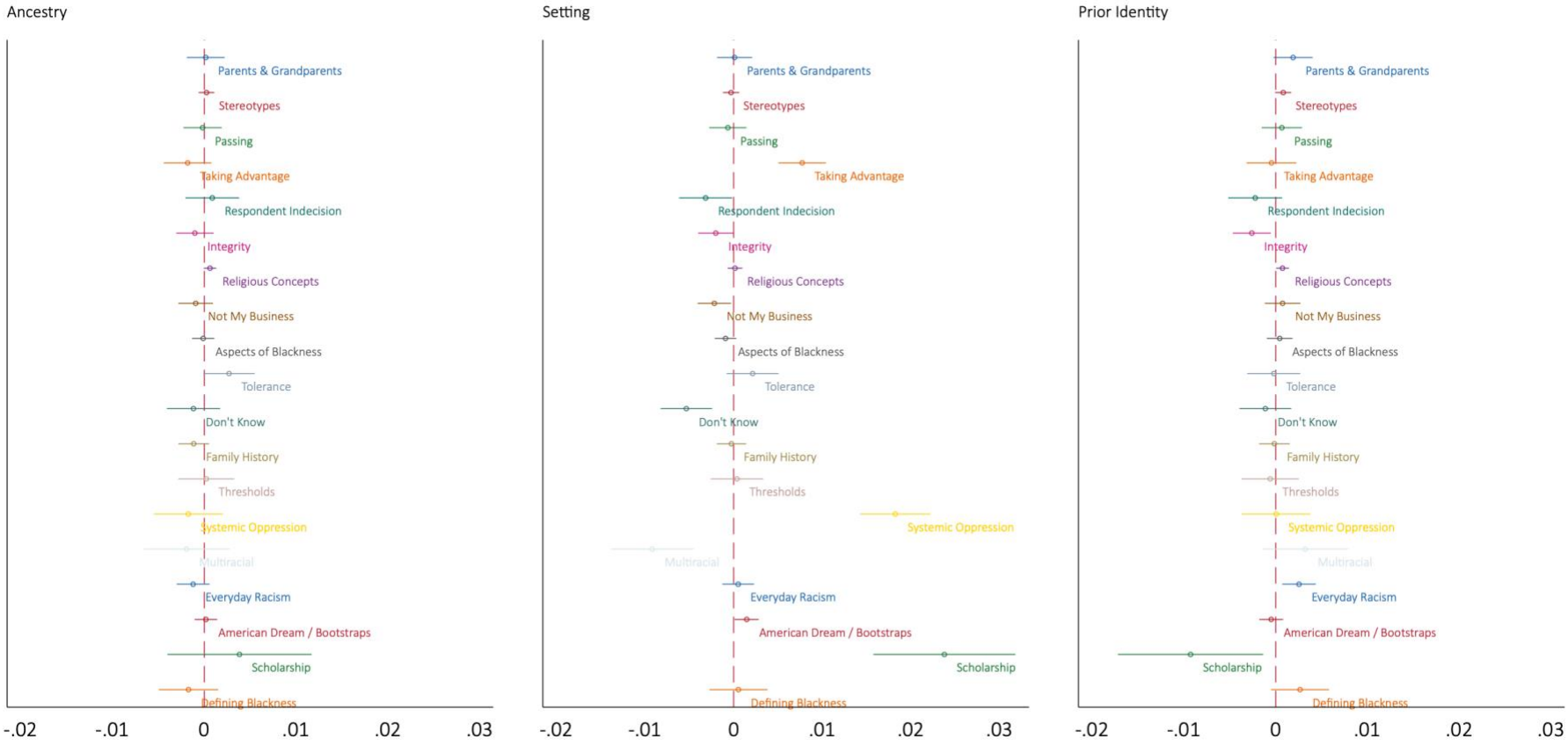

Figure A5. Experimental treatment effects on prevalence of topics in text responses (exploratory)

Figure A6. Differences between training and testing set treatment effect estimates (confirmatory topics).

EFFECTS OF GENETIC ANCESTRY TESTS ON RACIAL APPRAISALS AND CLASSIFICATIONS

SURVEY ITEMS

Meet {NAME}. {NAME} is an American citizen whose family has been in the U.S. for generations. {NAME} is usually unsure of how to identify, but mostly {has/ has not} identified as Black/African-American.

{NAME} recently received {his/her} genetic ancestry test results from a company such as *23andMe* or *Ancestry.com*. Genetic ancestry tests use a person's DNA to make an informed guess regarding where a person's ancestors lived. {NAME}'s genetic ancestry test results estimate that {he/she} has approximately {4% / 36%} Sub-Saharan African ancestry (from countries such as Ghana and Nigeria) and {96% / 64%} non-African ancestry.

1. A few weeks after receiving these genetic ancestry test results, {NAME}{filled out a government census and identified as Black/African-American / applied for a college scholarship intended for Black/African-American students (e.g., NAACP)}. How negative or positive[12] do you feel about {NAME}'s decision to identify as Black/African-American {on the government census / for a college scholarship intended for Black/African-American students}?

    - Extremely negative
    - Somewhat negative
    - Slightly negative
    - Equally positive and negative
    - Slightly positive
    - Somewhat positive
    - Extremely positive

2. In a paragraph, please answer the following question. We are interested in your beliefs on what it means for a person to be Black/African-American. In your opinion, what are the characteristics, experiences, attitudes, and values that define being Black/African-American?

[PARAGRAPH TEXT ENTRY]

3. In a paragraph, please answer the following question. How do you feel about {NAME} identifying as Black/African-American {on the government census / for a college scholarship intended for Black/African-American students} after taking a genetic ancestry test? Please specify your reactions, thoughts, and emotions about {his/her} decision.

[12] The order in which 'negative' and 'positive' appear were randomized for this question.

[PARAGRAPH TEXT ENTRY]

4. In your opinion, which of the following best describes {NAME}'s race/ethnicity? Please select only one option[13].
    - White
    - Black or African American
    - Asian
    - American Indian or Alaska Native
    - Native Hawaiian or Other Pacific Islander
    - Hispanic/Latino
    - Some Other Race

5. In your opinion, how do you think **most U.S.-born Black Americans** would describe {NAME}'s race/ethnicity? Please select only one option.
    - White
    - Black or African American
    - Asian
    - American Indian or Alaska Native
    - Native Hawaiian or Other Pacific Islander
    - Hispanic/Latino
    - Some Other Race

[Questions 6-8 presented in random order]

6. In your opinion, how honest is {NAME}'s decision to identify as Black/African-American?
    - Extremely dishonest[14]
    - Somewhat dishonest
    - Neither dishonest nor honest
    - Somewhat honest
    - Extremely honest

7. In your opinion, how legitimate is {NAME}'s decision to identify as Black/African-American?
    - Extremely illegitimate
    - Somewhat illegitimate

[13] Respondents were only able to select one answer for questions 4 & 5

[14] Order of the scale from extremely dishonest/illegitimate/unfair to extremely honest/legitimate/fair was randomized match the orderings of the other Likert scales. For example, if respondents saw "Extremely negative" as the first option in question 1, they also saw "Extremely dishonest/illegitimate/unfair" first for these questions.

- Neither illegitimate nor legitimate
- Somewhat legitimate
- Extremely legitimate

8. In your opinion, how fair is {NAME}'s decision to identify as Black/African-American?
    - Extremely unfair
    - Somewhat unfair
    - Neither unfair nor fair
    - Somewhat fair
    - Extremely fair

[Questions 9-10 presented in random order]

9. In your opinion, how much discrimination has {NAME} ever faced on the basis of {his/her} race/ethnicity?
    - None
    - A little
    - A moderate amount
    - A lot
    - A great deal

10. In your opinion, how much shared cultural heritage, background, and experience does {NAME} have in common with the U.S. Black/African-American community?
    - None
    - A little
    - A moderate amount
    - A lot
    - A great deal

11. Around the same time that {NAME} received {his/her} genetic ancestry test results ({4% / 36%} Sub-Saharan African ancestry and {96% / 64%} non-African ancestry), {he/she} also {filled out a government census and identified as Black/African-American /applied for a college scholarship intended for Black/African-American students (e.g., NAACP)}.

How negative or positive[15] do you feel about{NAME}'s decision to identify as Black/African-American {on the government census/for a college scholarship intended for Black/African-American students}?

- Extremely negative

[15] The order in which 'negative' and 'positive' appear was randomized for this question (and mirrored the order presented in question 1).

- Somewhat negative
- Slightly negative
- Equally positive and negative
- Slightly positive
- Somewhat positive
- Extremely positive

12. To the best of your knowledge, what percentage Sub-Saharan African genetic ancestry do you believe **you** have?

Sub-Saharan Africa is the entire region of Africa that is south of the Sahara Desert. It includes countries such as Ghana, Nigeria, Kenya, Ethiopia, and Uganda. It does not include Northern African countries such as Egypt, Morocco, and Algeria.

[Sliding scale response from 0 - 100]

13. To the best of your knowledge, what percentage Sub-Saharan African genetic ancestry do you believe that the **average U.S.-born Black American** has?

[Sliding scale response from 0 - 100]

14. Have you ever taken a genetic ancestry test?
    - Yes
    - No

IMAGES

A

B

C

D

E

F