

Article

DNA Ancestry Testing and Racial Discourse in Higher Education: How the (Re)Biologization of Race (Un)Settles Monoracialism for Graduate Students

Orkideh Mohajeri ^{1,*} , Marc P. Johnston-Guerrero ² , Anita Foeman ³ and Bessie Lawton ³

¹ Educational Leadership & Higher Education Administration, West Chester University, West Chester, PA 19383, USA

² Educational Studies, The Ohio State University, Columbus, OH 43210, USA; guerrero.55@osu.edu

³ Communication & Media, West Chester University, West Chester, PA 19383, USA

* Correspondence: omohajeri@wcupa.edu

Abstract: The recent proliferation of DNA testing in both popular culture and higher education calls to question whether such testing reifies race as a biological construct and, in particular, whether or not it disrupts or reinforces monoracial categorizations. Graduate students, who are often at a point in their educational journeys to further question and critique commonly held ideas, provide a unique lens through which to investigate discourses surrounding DNA testing. In this qualitative study, we analyze data from four focus groups with 22 racially diverse U.S. graduate students who had recently completed an ancestry test. We identify two specific discourses that graduate student participants engaged in, including (a) a biological race discourse and (b) an agentic choice discourse. Together, these discourses produced distinct unsettled subjectivities for Black and White participants. Our findings suggest the need to more critically consider the usage of DNA ancestry testing in and out of higher education and to provide further nuance around the validity of these tests as they relate to the social construction of race.

Keywords: DNA ancestry testing; higher education; graduate students; discourse



Citation: Mohajeri, Orkideh, Marc P. Johnston-Guerrero, Anita Foeman, and Bessie Lawton. 2023. DNA Ancestry Testing and Racial Discourse in Higher Education: How the (Re)Biologization of Race (Un)Settles Monoracialism for Graduate Students. *Genealogy* 7: 42. <https://doi.org/10.3390/genealogy7020042>

Received: 14 March 2023

Revised: 11 June 2023

Accepted: 12 June 2023

Published: 14 June 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

The U.S. population is witnessing remarkable changes in demographics (Galvan and Schneider 2021; Jones et al. 2021). Notably, racially minoritized groups will soon constitute a numerical majority (some estimates suggest by 2045; Frey 2018). Between 2010 and 2020, the “White alone” U.S. population declined by 8.6%, and the multiracial population increased by some 276% (Jones et al. 2021). The Hispanic or Latino population grew by 23%, and growth was also reported for groups who identified as “Asian alone” and others (Jones et al. 2021). Such demographic growth is measured by racial classifications that have become more fluid (including more open-ended responses to the Census questions that are coded in various ways), which to some extent has been influenced by the increased accessibility and usage of direct-to-consumer DNA ancestry testing (Wang 2021). Such testing is also being used in various ways in U.S. higher education, which might challenge the ubiquitous idea in higher education that “race is a social construct” (Morning 2007).

The recent proliferation of DNA ancestry testing calls into question whether such testing reifies race as a biological construct (Foeman 2009, 2012; Phelan et al. 2014; Roth and Ivermark 2018; Suzuki and Von Vacano 2018). During a time marked by George Floyd’s murder and subsequent uprisings around the Movement for Black Lives (Bloom 2020; Hailu and Sarubbi 2019), white supremacists are also utilizing ancestry tests to prove the “purity” of their European backgrounds (Panofsky and Donovan 2019). Simultaneously, more mixed and multiracial people are pushing boundaries of racial categories to demonstrate that racial identity is a choice, with some white people using phenotypic ambiguity (and

ancestry test results) to fraudulently identify themselves racially in ways that do not align with socially held rules of race (Johnston-Guerrero 2021). How might the increasing usage of DNA ancestry testing reify or unsettle monoracial categorizations, especially if more people find themselves categorized into multiple racialized groups?

One perspective is that DNA ancestry testing may signal to students the validity behind identifying one's race through science. Indeed, Daniel (2006) discussed how the biological understandings of race could be reified through the new technologies associated with DNA ancestry testing. These tests compare an individual's various genetic markers to frequencies of these markers in population groups and are used to infer geographical origins (i.e., racial or ethnic backgrounds) and/or aid in family history research (see also Nelson 2008). While Daniel (2006) was optimistic that these tests would actually help people understand that racial purity (and therefore, racial essentialism) does not exist in any genetic sense (potentially also disrupting monoracial categorical borders), Daniel and Haddow (2010) described how DNA tests "tend to conflate geography with ancestry and culture" and how that contributes to their interpretations by "lay public and even by some less conscientious scientists as a proxy for race" (p. 330).

As discussed in the literature review below, genetic ancestry testing is being utilized in higher education; yet there has been a lack of attention to investigating whether these tests might be reifying race as biological among U.S. college and graduate students, potentially because scholars tend to take the academic mantra that "race is a social construct" as a given. We must further investigate common discourses associated with race, DNA, and testing to identify the potential ways these tests might unsettle monoracialism or the social force maintaining a preference for monoracial categorization (Johnston-Guerrero and Renn 2016). This qualitative inquiry takes up a critical analysis of discourse and its enactments as reflected in focus group interviews among 22 higher education and student affairs (HESA) master's students who participated in a larger research project centering on DNA ancestry testing. Two research questions guided this study:

1. How do graduate students make sense of their DNA ancestry test results?
2. In what ways do their understandings uphold or unsettle monoracialism (or monoracial conceptions of race)?

By answering these questions, this study aims to shed further light on the complexities of race in relation to technological advances that have the opportunity to further disrupt monoracialism, yet may actually be reinforcing it. As discussed later in the Findings, participant narratives elucidated how their sense-making around testing fell into two main discourses that tended to reify race as biological and uphold monoracialism rather than unsettle it. To lay the foundation for this study, we briefly review the literature related to race and DNA testing in and outside of higher education.

2. Literature Review

Not many topics seem to garner as much controversy as the relationship between race and biology, and specifically, genetics. Some might suggest that the atrocities associated with the pseudo-scientific Eugenics movement and scientific racism are primarily a historical phenomenon (Duster 2003; McWhorter 2009; Morning 2007). However, recent evidence confirms that both student and popular perceptions of race and genetics continue to perpetuate ideas that races have underlying essences that are largely determined by biology (Byrd and Ray 2015; Dar-Nimrod and Heine 2011; Hughey and Byrd 2015; Morning 2011; Williams and Eberhardt 2008). In the case of college students, perhaps they are influenced by encounters with DNA testing on college campuses such as a UC Berkeley initiative that sent DNA testing kits to all incoming first-year students (Hebbbar 2010). Researchers at Cornell University in February 2011 launched a "Genetic Ancestry Project" where a random sample of 200 undergraduates had their DNA tested to learn about "their ancestors' human origins and migrations" (Ramanujan 2011, para. 3). Similarly, the "DNA Discussion Project" at West Chester University in Pennsylvania uses DNA ancestry testing to engage the campus in discussions of diversity across different levels of students, faculty,

and staff (Foeman 2009). Although the project organizers claim the testing encourages the understanding of the social construction of race (Foeman 2012), others suggest that these DNA tests can actually reinforce college students' racial conceptions as biological (Johnston 2014), especially given the ways genetic technologies are used to provide students with racialized percentages for their ancestry (e.g., "9 percent West African"; Harmon 2007; Omi 2010). This can lead to racial reification, or the ways race as an abstract idea (not real) becomes concrete (real) through thought and discourse (Duster 2005).

Given these tests align with a post-genomic context where DNA testing has become commonplace (Sunder Rajan 2011), more attention is needed to how students are developing within this context. Additionally, more attention needs to be paid to how students are making meaning of race, including any notion of biology informing such meaning-making. Although the biological concept of race has been well-refuted (American Anthropological Association 1998; Smedley 2007), some suggest a recent "rebiologization" of race (Omi 2010), or resurgence of biological race thinking (Fitzgerald 2014). Fitzgerald (2014) described this phenomenon as racial genomics, or the current mechanisms for understanding race as biological whereby individuals seek genetic evidence of race to maintain the established racial hierarchy. Further, research suggests college students continue to conceptualize race in biological terms (Johnston 2014; Lee et al. 2021). However, these extant studies have tended to focus on undergraduate students.

In the almost two decades that have passed since the completion of the Human Genome Project in 2003, biotechnical advancements and innovations such as DNA ancestry testing have become widespread in popular culture and in curricular and co-curricular experiences (Sunder Rajan 2011), correlating with what Nelkin and Lindee (2004) called the "DNA mystique". These technologies may in fact increase genetic determinism, or beliefs that human characteristics and behaviors are shaped largely by one's genes (Condit 2011). Some attention has been paid to investigating understandings of race and identity associated with ancestry tests (Foeman et al. 2014; Foeman and Lawton 2017; Nelson 2008; Phelan et al. 2014; Roth and Ivermark 2018). This research comes largely out of the fields of communication, sociology, and science/technology studies; more attention is needed centering higher education as a context for making meaning of race (Cabrera 2018) and identity (Patton et al. 2016). In operationalizing race, it is important to connect race to systems of oppression (e.g., racism) and the maintenance of hierarchies, otherwise we might fail to see its real purposes and productions (Bliss 2020; Harper 2012).

3. Theoretical Framework

Social forces continue to shape our constructions of race, ethnicity, mixedness, indigeneity, ancestry, geographic origin, and related concepts. Though difficult to define and distinguish these constructs, they all relate in various ways to racialization, or the social, cultural, historical, political, and economic processes and outcomes in which different demographic groups become racialized based on various metrics (Gans 2017; Omi and Winant 2014). The social force of monoracialism, or the maintenance of discrete, singular racial groups and the preference for every individual to fit these monoracial groupings (Johnston-Guerrero and Renn 2016), remains dominant. However, there are outliers or constructions that do not seem to fit these monoracial ideals. For example, in higher education, Latino/a/x students often confound institutional researchers on how to categorize Hispanic ethnicity versus race, with current practices not able to accurately distinguish Afro-Latinx students from those who identify as biracial/multiracial (Dache et al. 2019; Vargas 2015; Vargas and Stainback 2016). Moreover, the terms "Latinx" and "multiracial" are also contested (Salinas 2020; Wijeyesinghe 2021), adding to the importance of engaging students' meaning-making of racialized terms associated with identity and ancestry. Furthermore, it can be argued that Black Americans have seen a progression in moving away from dependence on the "one-drop rule" to identify one's race, especially with the increasing prominence of biracial and multiracial Americans who proudly assert those identities.¹

These examples of not fitting monoracial norms correspond to anti-essentialist views on race that can help to reduce the social force of monoracialism. Essentialism is a concept that has been explored at length by scholars in various fields (Dar-Nimrod and Heine 2011; Fuss 1989; Prentice and Miller 2007), yet has not been given as much attention in higher education scholarship (see Ashlee and Quaye 2021). Part of this gap in the literature may be due to the negative framing of essentialism, particularly around race. Racial essentialism deals with beliefs about what makes someone a certain kind of race, reflecting some sort of hidden or underlying essence, which is shared by all members of that race (Donovan 2015; Haslam et al. 2006). When racial groups are essentialized, they are viewed as having a uniting essence that is unchangeable, inborn, natural, discrete, and informative about the people within that group (Haslam et al. 2006; Williams and Eberhardt 2008). These essentialist views often result in or correlate with a higher amount of stereotype endorsement and prejudice than non-essentialist views (Prentice and Miller 2007; Williams and Eberhardt 2008). Indeed, others have theorized that this essentialist notion of race is at the foundation of racism (Fredrickson 2002).

Within the higher education literature, Ashlee and Quaye (2021) connected racial essentialism as foundational to the questioning of group belonging and “being enough” for those who do not fit essentialist notions of racial groups. If racial essentialism influences beliefs that an underlying essence is shared among all members of a particular racial group, then essentialism—or the sense that a race has a “settled essence”—helps to maintain monoracialism by reinforcing those essences as being tied to a singular racial group. Some evidence even suggests biology and genetics as key components of racial essentialism (Byrd and Hughey 2015; Zack 2016). Yet, if people receive DNA ancestry test results indicating their background includes multiple ancestry groups, would this help disrupt singular categorization? Or might it reinforce genetics as an essentializing influence?

4. Methods

This study examined the perceptions of graduate students in focus group settings as they processed their DNA data. Twenty-two master’s students, each individually, took a DNA ancestry test, mailed-in their saliva samples to the processing lab, and later individually received and read their results. These tests are inherently individual experiences, with each person collecting and submitting their individual saliva samples into a test tube. It is not uncommon that after receiving the results, a participant might feel compelled to share the results with others, but these are unstructured, arbitrary conversations. It is important, therefore, to bring individual participants together to share their perceptions of the DNA testing and results and to build off of individual conceptualizations.

Focus groups do not constitute just a group of friends getting together to socialize nor even a group of individuals who like to discuss and debate topics of the day. Well-facilitated focus groups constitute “a permissive environment” where participants who share some common characteristics or experiences feel comfortable enough to “share perceptions and points of view” with one another and the facilitator, so that a better understanding of “how people feel or think about an issue, idea, product, or service” can be arrived at (Krueger and Casey 2015, p. 26). A carefully planned series of discussions designed to facilitate conversation, energy, connection, and deeper understanding is required. When using focus groups as a form of qualitative research, it is vital to conduct more than one focus group, so that the themes and understandings generated can be compared and contrasted to one another (Krueger and Casey 2015). There is a balance between seeking as wide a range of opinions as possible and the desire to identify depth and nuance of common themes.

The research questions focused on meaning-making and the reification or unsettling of monoracialism—a social construct. Thus, it follows that a qualitative data collection through focus group interviews helped unearth how these particular graduate students made meaning of their results and then situated them within their shared understandings of race in a social setting. The research questions were grounded in a constructivist approach; the focus groups constitute one method for the exploration and collection of

socially constructed, shared meanings among a group of participants. We also noted the complexities related to how people are categorized into different social locations based on various power dynamics or grids and how these can be similar to or different from one's narrative notions of identity and belonging (see Yuval-Davis 2011). In this study, we privileged the participants' narratives and meanings associated with their DNA ancestry results in relation to race. Future studies can connect these ideas more closely to social locations.

4.1. Participants

Twenty-two first- and second-year master's students were recruited through email solicitation by a faculty member in their HESA degree program. The study entailed completion of a pre- and post-survey, a private and individual collection of a saliva sample by each participant which was subsequently mailed to a DNA processing company for analysis, and participation in one of four focus group discussions. In line with the focus of our study on meaning-making, this paper exclusively used data from the focus groups. The DNA kits were paid for by the DNA Discussion Project at West Chester University, which includes resources for ongoing engagement and learning about DNA testing and identity. Though the categorization of the participants proved difficult given the varied ways they identified (see Table 1), our broad groupings of the 22 focus group participants included 7 who self-identified as Black alone, 11 who identified as white alone, 1 who identified as Latinx alone, and 3 who identified as more than one race. No participants identified as Asian, thus representing a gap in the range of backgrounds. Given this diversity, we gave participants options to participate in affinity focus groups: one group was open (did not focus on a particular racial or ethnic identity), while two focused on Black-identifying graduate students, and one focused on White-identifying students. We acknowledge that the Black-White binary may have influenced which affinity group participants chose.

Each focus group lasted 1.5 h and was held via Zoom in Spring 2021. One member of the research team facilitated all four discussions and led the participants through a series of open-ended questions, soliciting their sense-making about their DNA results. Questions included: "How did you identify yourself racially before you got your DNA ancestry results, and has that changed?" "Have you talked to family and friends about your results? Have any elements of those conversations been helpful, unexpected, or even difficult?" "Is there anything from what you're learning in your graduate courses that relates to this experience or learning your results?" The conversations were rich with discussion, some humor, and the sharing of ideas and meaning-making.

Given that our study focused on better understanding the stories participants were sharing related to how they made sense of DNA ancestry testing results, we analyzed the focus groups using a combination of narrative inquiry and discourse analysis. Storytelling is a natural and pervasive instinct, and part of how humans make sense of experiences (Riessman 1993). Through stories, participants can reveal the ways they order social worlds. Stories and narratives are sites where the operations of discourse and power, and the creation of subjectivity, can be examined (Tamboukou 2008). Therefore, our analysis focused on identifying "Big D" discourses (Gee 2014) active in shaping graduate students' subjectivity as we laid the narratives up against one another. We each individually reviewed the focus group transcripts while asking questions about narrative production and digestion (Gubrium and Holstein 2009), including the purposes of any given story, the discourses that shaped meaning-making in the story, and the power/knowledge relations implicit in the narrative. Through open-coding and the sharing of memos, we then came together to discuss emergent themes. Once identified, we went back through the focus group transcripts to pull out exemplary quotes that best illustrated the findings presented in this paper.

Table 1. Participant Pseudonyms and Demographics.

Pseudonym	Gender	Age	Ethnicity *	Race *	Census Category **
Amanda	Female	28	Italian, Irish, Polish	White/Italian	White
Bella	Female	23	White, Hispanic, Irish	White, Hispanic	Hispanic/Latino/Spanish, White
Briana	Female	26	Black, White, Mexican	Biracial	Hispanic/Latino/Spanish, White, Black/African American/Negro
Carla Smith	Female	25	Native American, African American	Native American, African American	Black/African American/Negro, American Indian or Alaska Native
Christopher	Male	24	African American	Black	Black/African American/Negro
Clarice	Female	25	German, Irish, Scottish, Hungarian, English	White	White
Emily	Female	24	White	White	White
Gigi	Female	23	Portuguese, Italian	White/Caucasian	White
Imelda	Female	25	Puerto Rican	Latinx	Hispanic/Latino/Spanish, Black/African American/Negro
Jane	Female	24	Scottish, Irish	White	White
Jennifer Robin	Nonbinary	26	German, Scandinavian, French Canadian, Cherokee	White	White
Lucky	Female	27	U.K., Polish	Caucasian	White
Madame Sekou	Female	30	Italian, Native American	Black American	Black/African American/Negro
Maya	Female	25	American	Black American	Black/African American/Negro
Mia	Female	25	Ghanaian	African American	Black/African American/Negro
Michelle	Female	26	U.S., Trinidad	Black	Black/African American/Negro
Panthea	Female	26	Irish, Greek, Dutch, German	White	White
Rose	Female	29	Irish, Italian	Caucasian	White
Sasha	Female	29	Polish, Ukrainian, Slovakian, Greek, Balkan	White	White
Summie	Female	23	British, other Euro mix	White	White
Zahra	Female	30	Black, Afro-Caribbean, Jamaican, Scottish, Irish	Black	Black/African American, Negro
Zion	Male	25	[N/A]	African American/Black	Black/African American/Negro

* Responses for Ethnicity and Race constitute participants' own open-ended wording before having submitted their DNA samples, except for Madame Sekou where we altered the word choice to more clearly indicate her Native ancestry. ** Responses for Census Category were selected by the participants from a list of options based on the actual language used by the U.S. Census.

4.2. Positionality and Reflexivity

Our positionalities inform all aspects of this study. It is important to acknowledge that the lead authors of this study included a generation 1.5 SWANAA immigrant cis woman and multiracial Filipino/white cis man. The third and fourth authors were only involved in data collection for the larger project and included an African American cis woman of mixed ancestry and an East Asian American immigrant cis woman. The first author took the DNA test during this study, and that experience helped us gain additional insights into the likely student experience of accessing results and making sense of the data. The second author never took a test, also adding some distance to the experience.

Together, the lead authors have been collaborating on various projects since 2018, all with a focus on elucidating how monoracism is an invisible yet still powerful system influencing higher education and the larger society. With regard to higher education, both lead authors grew up in households where neither parent earned a four-year degree. Through our own experiences navigating U.S. higher education as contested and mixed-race individuals, as well as our continuous dialogues on DNA ancestry testing, our perspectives on this study have developed and advanced over time. Thus, we interpreted participants' experiences through a shared commitment to interrogating and nuancing how monoracialism and white supremacy uphold power dynamics.

5. Findings

The purpose of this study was to explore how graduate student discourses surrounding DNA ancestry testing aligned with notions of monoracialism. In response to the two research questions on how graduate students make sense of their DNA ancestry test results and how their understandings uphold or unsettle monoracialism, two discourses seemed particularly active across the focus group narratives. As students sought to make sense of their DNA ancestry test results, they engaged in (a) a biological race discourse; and (b) an agentic choice discourse. Below, we share narratives which align with each discourse and we include participant quotes to both elucidate the breadth of meaning-making and, at times, focus more deeply on individual stories.

5.1. Biological Race Discourse Upholding Monoracialism

Though much has been written related to the biological construction of race and essentialism (e.g., [Condit et al. 2004](#); [Duster 2005](#); [McWhorter 2009](#); [Morning 2011](#); [Phelan et al. 2014](#)), the focus group narratives revealed key components of how the biological race discourse manifested in the participants' meaning-making around DNA testing. Specifically, the biological race discourse promoted beliefs about the innateness and heritability of race. That is, an individual's race was conceptualized as being inherited in consistent units, only divisible in discrete proportions. For example, a common understanding is that an individual inherits half of their race from their mother and half from their father or, stated differently by going back a generation, each grandparent contributes 25% of an individual's racial composition. Furthermore, as discussed in the findings below, it is commonly (mis)understood that all siblings should all have the same proportion of racial material, since they are assumed to all originate from the same parental combination (see also [Theunissen 2022](#)). The biological race discourse assumes that there is a large degree of consistency between phenotype and race and that phenotype is a consistent indicator of race ([McWhorter 2009](#)). Below, we discuss various elements from the focus group conversations that seemed to draw on this biological race discourse and thus uphold monoracialism.

5.1.1. Interpreting the DNA Results through Race and Biology

As the participants reported through the focus groups, the language used and the ways they described their results reflected underlying beliefs in race being biological. That is, race could be calculated in different percentages reflecting its innate heritability from parents and grandparents. All the focus groups contained phrases that quantified one's ancestry, such as Bella's comment that "I'm 30% Mexican" or Amanda's exclamation that "I'm 30% Scottish and . . . 15% southern Italian." Clarice explained,

I was German, Irish, Scottish, Hungarian, and each of my parents were one [half], so I grew up thinking, I was like quarter, quarter, quarter, quarter. And then to get my test back, I am like almost half Irish! . . . and then there were other ethnicities in there that I wasn't expecting, like French.

Since the test results reported out percentages, it is no wonder that the participants mimicked this, using percentages. However, believing in the scientific validity of the tests reinforced race as biological. There was a sense of "truth" associated with the tests because

in the participants' eyes, the tests were based on biology (rather than on algorithms created by companies). This idea showed up in participants' phrasing about their lineage such as "we thought [they] had some Austrian in them" or "have some type of Native in them." Though common and simple, the conflation of national origin groups (e.g., Austrian) with broader ethnoracial groups (e.g., Native) and the internalizing language (i.e., "in them") seem to indicate a sense that nationality and race are biologically inscribed within bodies or the blood.

As described further below in the next subtheme, the specificity of European ancestry within the DNA profiles allowed the White participants to see themselves more clearly and make connections to ethnicities and nationalities often lost in the past. However, the articulation of "White DNA" also appeared in Black students' narratives. Carla Smith, a Black cis woman, shared:

There's definitely a difference in, like, the European and African continent designation of my tree, but there's also a very personal . . . like my parents are very different, like, different melanin-wise . . . so, like, I definitely wanna know, like who's carrying that 20% European, or who has the stronger European tree?

Carla connected race to biology in terms of phenotype (melanin) and later explained how her siblings were trying to figure out their identities stating, "the youngest two have more genetic traits than the older two" because the "two younger siblings look more, uh, closely match" and how that meant something to her DNA-wise. The participants seemed confused about how to make sense of race as biological makeup, phenotypic presentation, and this whole notion of "carrying" particular DNA within them.

Maya, another Black cis woman, also discussed the testing and connected it to science and how "all people come from Africa. It's been proven scientifically." She believed that the test "shows that no matter who you are, what you look like, what economic status you're from, or what community you're from, we're all connected." Maya went on to share that even though she considered herself "to be 100% Black, and I say that very much [with] air quotes," her test results included "1% Ireland, and Norway, all these different places, and it just shows like we are more connected than we think." For Maya and other participants, their sense of race as biological was connected to the validity of science. Moreover, how participants interpreted the results was also connected to how they shared the results—both surprising and unsurprising results—with others, particularly family members.

5.1.2. Sharing Surprises and Familial Dynamics

Nearly every single participant expressed being surprised or shocked by various elements of their ancestry testing results, while simultaneously insisting that they were "not that surprised" when they really thought about it or connected pieces of their family histories or physical features. This polarized dynamic of "surprised–not surprised" ran throughout the focus group discussions. Other wording used to express this same dynamic included "shocked–not shocked." Some participants included wording such as "intriguing," "interesting," "frustrating," and "nice" when describing how they initially perceived their test results. This dualistic dynamic was noted throughout the focus group discussions.

For participants who identified as White, the surprised/not surprised dynamic seemed to focus on the actual percentages and overall rankings of various European national origin groups, particularly whether they were more Irish or more Scottish in ancestry. Rose, a white cis woman, shared:

The most shocking for me would have been the percentages . . . so there was Scottish in there, which I was not expecting at all . . . the Irish we knew . . . but the other, the Scottish, was what took me for a spin, and then the actual amounts of percentage that I had.

Similarly, Lucky, another white cis woman, shared:

I've always been told that our family is, like, extremely Irish and Polish, and it was interesting to see it was like a 20% difference from [a past ancestry test] to

this test within Scottish and Irish heritage . . . I was like, ‘Oh my gosh! What is this?’

Lucky did not question the validity of the two different test results and how a company might actually distinguish between Scottish and Irish ancestry. Instead, these Scottish and Irish ancestries were viewed as distinct groups that would never have mixed, while also not questioning why one group might be claimed by her family over another.

The focus group discussion revealed strains of pride around White ethnicities, such as Irish and Scottish, and it seemed important to the White participants to distinguish their exact percentages. For instance, Panthea, a white cis woman, shared, “something that was really surprising was that I thought I was basically all Irish, but I’m actually the majority Scottish, which I thought was like 42% Scottish . . . that was equally [sic] parts frustrating but also intriguing.” The sense of frustration likely came when the percentages contradicted the family lore, which was challenging and important for graduate student participants to process. Lucky explained that all her life she’d been instructed in the exceptionality of Irish ancestry, but her test results indicated more Scottish ancestry. This led her to question how familial ethnic pride could skew the sense of self. She began tentatively questioning the pride that had been cultivated in her family:

There’s always this pride that comes with lineage and heritage and where you come from and the culture that comes with it. I’ve always wondered, what makes being from Ireland so special? What makes being from this region so special? Like grandparents or great grandparents are special, but what about this specific region is so special that we keep pushing it down the family line?

Similarly, Amanda Linden, a white cis woman, previously believed she was mostly of northern Italian heritage, yet her results reflected a very low percentage from that region. Not only did the results claim that Amanda had a higher percentage from southern Italy, but Italian ancestry was smaller than other, newer ethnicities that she was not expecting. This frustrated Amanda. She exclaimed:

If you asked me prior to getting my results, I’m Italian and my family’s Italian! My holidays are Italian, my traditions are Italian, specifically northern Italian! [But the results show that] I’m 30% Scottish, and I’m 15% southern Italian, and like 2% northern Italian. And I was like, “Everything’s a lie!!” I don’t know what to do now . . . quite frankly, my lowest [percentage] is Italian! And my highest was everything else that I never really thought about growing up!

For Amanda and many other participants with a majority of White European ancestry, their focus was on specific combinations and the distinguishability of different national origin groups that conflicted with what they initially believed to be true based on their family histories passed down to them, which reinforced the discourse around race being biological through heritability in discrete and calculable ways.

The participants reported often running to their parents, and their mothers in particular, to make sense of their DNA ancestry test results. These conversations were often the location where a sense of “surprise” was voiced and processed, along with other emotions that accompanied the surprise. Sometimes, the graduate students reported that their families found confirmation of family lore, and other times, there was confusion caused by a disruption of family narratives, as often indicated by laughter or disbelief of the test results. In a couple of more extreme cases, family secrets were revealed through discussion of the testing results. This running to the family aligns with the biological discourse of race because of underlying beliefs that race must be inherited in consistent ratios from parents and that all family members must match that same distribution. For example, Gigi described her experience as follows:

. . . my sister did the exact test two years ago, and our numbers and percentages look absolutely nothing alike—which was really odd . . . Like, our first reaction was like [beginning to chuckle,] “I know we have the same parents!” [With humor, some sarcasm] Like, well aware! . . . So we looked at our numbers, and my sister

came back significantly more Italian, with almost no traces of Portuguese—which was weird because my Dad was born and raised, like came over here when he was a little bit older from Portugal—and I came back with 40% Portuguese and almost no Italian! How did my sister, who is like two years older than me, like, [how did] we end up on such completely different ends of the spectrum? And we, like, still send pictures of our percentages back and forth and just laugh, and it's kind of like a little joke now within our family.

In this passage, Gigi indicated that percentages of various ancestries from each parent should have been inherited in consistent ratios both by herself and her older sister. When the results did not support this, Gigi expressed confusion to the point of wondering whether she and her sister had the same biological parents! This was indicated by the nervous laughter and the sarcastic inflection of her voice. This passage is one example of assumptions that the participants expressed about how lineage is passed down and how race is inherited. In this case, Gigi deferred to the legitimacy of the test over what her family had shared with her. Nonetheless, the processing of the test results with family was recurrent for the participants across all focus groups because of the importance of family lore and this commonplace understanding of the heritability of race in discrete ratios from parents and grandparents.

Participant stories about sharing the test results with family members demonstrated the ways in which the discourse of race as biology appears, signaling that there may indeed be a rebiologization of race happening for these graduate students. Many participants reported wanting to have their siblings, nephews, nieces, and other family members do the testing as well in order to confirm ancestry or to discover differences. This included Bella, Clarice, Gigi, and Madame Sekou. Clarice questioned familial relatedness: “I am more closely related to the second cousin than I am to my first cousins, which I think is very interesting.” She believed her test results should be more similar to those of her first cousins than to those of her second cousins. Clarice also explained, “I have four sisters, so I am like desperately trying to convince them to do this [test] because . . . me and my oldest sister look exactly alike, and then the three in between us look alike.” She went on to explain that the three sisters “in between” have darker phenotypic characteristics—dark hair, dark eyes, “they all tan in the summer.” The implication is that DNA results match to phenotype and racial presentation. Together, these findings connect the discourse around DNA ancestry and biology to monoracial conceptions of race that uphold monoracialism.

5.2. *Agentic Choice Discourses Ambivalently Unsettling Monoracialism*

A second discourse articulated throughout the focus group conversations was that of agentic choice around race. This emerging discourse in the U.S. society focuses on the importance of racial self-identification (Rockquemore et al. 2009). This is reflected not only in notions of the right to racial self-identification (Root 1996; Renn 2021), but also in the surge of language such as “I identify as . . . ” in everyday moments of introduction and interaction across social settings. This discourse seemed to hold sway as the study participants digested and made sense of their ancestry results. It is important to note that this discourse of agency has a significant strand of ambivalence woven throughout. Thus, while the participant narratives reflected initial articulations which might unsettle previously held monoracial assumptions about the nature of race and difference, they did so ambivalently, with uncertainty and sometimes contradiction. In particular, some Black women grappled with the test results, the lack of context of those results, and concepts of choosing race.

Madame Sekou, who identified as Black (racially) with Italian and Native heritage (ethnically) before receiving her ancestry testing report, oscillated between notions of choice and “stuckness.” She explained that her mother repeatedly asked her, “How are you going to apply [the results]?” and “What are you going to do with the information?” On the one hand, Madame Sekou stated that she is not going to apply the information because “I wouldn’t know where to start” applying the newly identified 41% of West African ancestry.

Moments later, however, Madame Sekou commented, “it’s cool, and I really do like it . . . but I feel like identity is stuck, more something that I have control over than everyone else on the outside.” This statement appears to include both notions of choice and lack of agency.

Carla’s family lore included both Black American and Native American ancestries, but her DNA test results included other information. Carla’s results did not include any Native ancestry but did include European ancestries. This caused a lot of confusion and ambivalence. For example, Carla shared how she felt she could not identify as Black anymore because now she knew the percentages of her ancestry. She exclaimed, “Because I can’t say ‘Black’ anymore just cuz I got . . . 20% European in me! That’s not gonna work anymore! I feel like that’s just making it harder to answer the question about race . . . ” In terms of her African ancestry, Carla continued to explain that her results “touch every part of West Africa, so I really didn’t know what to say because every part of it was not expected.” After “absorbing for several days, trying to figure out how to analyze and trying to figure out where I’m from,” Carla was still unsure of how to identify, sharing “So I don’t know what part to claim, I’m still trying to figure that out” especially because her test results did not have more than 30% in any single geographic area.

Across the focus group discussions, the agentic choice discourse seemed much more settled for White women, with most expressing notions of discovery, delight, and connection. Jennifer Robin, a White nonbinary participant, described their reinforced attraction to pagan practice as a result of ancestry testing:

For me, I don’t think it’ll necessarily change anything whenever it comes to my racial identity, like I’m white. And this agrees . . . I’ve been recently pulled more towards paganism and I was a lot as a kid as well . . . I feel like it’s come full circle, which just feels really cool and feels really nice . . . like there’s kind of an explanation, kind of deep down, about why I felt pulled . . . now I feel a lot more comfortable, and like maybe this is a place where I can grow my own spirituality, and find my place where I fit, which is a really nice feeling.

Jennifer’s narrative was replete with articulations of confirmation, connection, and affirmation. They employed their ancestry results to reinforce their exploration of paganism and expressed notions of welcoming and sense of belonging.

Some White participants did express some disquiet, but these participants still identified strongly with the specific monoracial categories that they had used before. For instance, Summie, a white cis woman, discovered all of these different European ethnicities in her results and started to wonder how white she really was. Her family lore claimed British and Native ancestries, and her test results confirmed British ancestry. However, the results also included Balkan, Greek, and German. Summie shared that as she perused her test results, she thought:

It was like, [to herself], “No, no, no, no, no, you’re like 30% German!? Like 7% Greek?” . . . so I’m, I’m going through like this identity crisis, but I’m like what, what really am I? Like how white really am I? Where should I, like, you know, plant my roots and try to identify?”

Summie was surprised by the percentages and mixture of her European ancestry and questioned her sense of self, but it appears that her whiteness remained somewhat settled.

Other participants shared how the results did not leave them in a sense of unknown or questioning, but actually pushed them to identify differently. Mia, a second-generation Ghanaian immigrant, shared:

I’ve spent a lot of time growing up distinguishing the difference between my race and like ethnicity and culture and background. Because, like, to be an African American is different from being a Ghanaian . . . but like now, even with the results, I have a clear view of “Yes! I am African American.” Nothing is going to change about that because I was born here, like, I’m not gonna write on the line [in a form] “Yeah, I’m Ghanaian too.” Like now, if you want to get to know

me more, then I'll tell you like, yes, this is where my family is from. And also now with these different places as far as like Benin and Togo, that's another conversation . . . and I actually learned that I have some percentage of here and there, but it doesn't change what my race is at all.

Only a few participants demonstrated clearly how the results could disrupt monoracialism. Towards the beginning of the focus group conversation, Christopher (Black cis male) explained that he identified as Black in terms of race, and this seemed to be a rather settled identity for him. During the focus group conversation, however, he spent a lot of time articulating a yearning for knowledge of his ethnic background and various ancestries. He described being envious of Jamaican, Nigerian, Dominican, and Ghanaian friends or even undergraduate students at the college he worked at who evinced a strong sense of their "culture, clothes, and flag." He exclaimed, "Wow, so many people are like connected to their background! I was like, damn, I wonder where I'm from!" Even as Christopher listed the racial identities of his parents and grandparents, and also described his ancestry test results and his eagerness to visit some of these countries in Western Africa, he was not able to use this information to disrupt notions of monoracialism in a coherent way.

Later on in the conversation, however, Christopher was discussing his soon-to-be brother-in-law's identities, and here, he was able to use the DNA ancestry results to disrupt monoracialism:

When it comes to race, it's not as black and white as the Census makes it seem . . . At my previous school, there'd be some students who are of Latin descent and African descent as well (AfroLatino), and some students may tell them, "Oh, you're not like Black, or you're not Black enough," or whatever the case may be. Um, and I don't think we walk around with like ancestry DNAs in our back pocket, so we don't know, maybe not fully know like our own roots, but I think when you know your ancestry DNA, you know exactly where you come from.

In this sense, Christopher is pairing DNA ancestry testing with the power of knowledge, but not just scientific validity. He further elaborates with a specific example:

I am thinking of my girlfriend's brother, for example. Like he's Dominican and Jamaican because of his mom and dad. But he doesn't look [Black,] and some people tell him, "Oh, like you're not Black!" But he actually is Black or like has that DNA. And sometimes, he gets discouraged. You know, like we went to dinner the other day, and he's all sad. And it's like, "Oh, what's wrong?" He said, my friends tell me like I'm not Black or I'm not Black enough." You know, his skin color. But if you look at his DNA, like I said, we share similar results! My girlfriend, my girlfriend's brother—we all have similar results, you know? We had like that similar background in common. Like I said, that is Black as well.

Here, it appears that Christopher is using DNA ancestry testing to find commonalities among different groups with shared ancestry to disrupt the assumptions surrounding monoracial categorization and the essentialist notions attached to monoracialism.

6. Discussion

This study sought to better understand the ways graduate students discussed their DNA ancestry test results in hopes of elucidating how these tests might play a role in unsettling monoracialism in higher education and the broader society. Based on the findings, there seems to be an opportunity for these tests to disrupt monoracialism by unsettling notions of identity tied to essentialist beliefs about what constitutes race. Since monoracialism and whiteness interact to maintain racial hierarchies (Malaney-Brown 2022; Mohajeri 2022), there may also be an opportunity to connect ancestry testing in efforts to dismantle white supremacy. Yet, the findings also suggest that the tests might also lead to upholding monoracial norms, particularly if racial boundaries are reinforced by biology.

Our first theme outlines how our graduate student participants were falling into common discursive practices that might reinforce essentialist notions of race and, therefore,

monoracialism. As previously identified in the literature, there is a tendency to make sense of DNA ancestry results in a way that reinforces outworn ideas of race as biological or essentialist in nature (e.g., [Phelan et al. 2014](#)). This discourse asserts that races are discrete entities, separate from one another, and a function of innate, stable biological differences among humanity ([McWhorter 2009](#)). Further, this discourse claims that race is heritable from parents, grandparents, and other ancestors ([Morning 2011](#); [Williams and Eberhardt 2008](#)). Our interpretation of this finding adds that the discourse does not engage in any serious attempt to organize the messiness of race, ethnicity, and nationality, although it freely uses language from all of these variables interchangeably and without articulating their relationship with ancestry. Connected to this discourse is that participants generally did not question the validity of the tests at all. There was a sense that since these tests engage biology and science, they are real and valid. As [Fitzgerald \(2014\)](#) argued, “racial genomics challenges notions of the social construction of race in new and problematic ways because genetics is treated as objective science, in ways social science is not . . . ” (p. 55).

What does it mean at the graduate level to take these tests? Ancestry testing conveys notions of a DNA mystique, and some postsecondary institutions have used it as part of either orientation or the co-curriculum. Graduate students are immersed in learning about racial identity development, critical race theory, and campus racial climate ([Perez et al. 2020](#)), yet more attention is needed to unpack the underlying conceptions of what race is and what it does through discourse, particularly through post-structural perspectives that question how power/knowledge operates through ancestry testing. Interpretations of the test results are shaped by both a rebiologization discourse and an agentic choice discourse. Our graduate student participants, who are often taught to critique the status quo and learn for themselves ([ACPA-College Student Educators International and NASPA-Student Affairs Administrators in Higher Education 2015](#)), found “truth” associated with the tests because in their eyes, the tests were based on biology. This is counter to the fact that these tests are also based on proprietary algorithms and datasets created by for-profit companies ([Abel 2018](#); [Benjamin 2019](#)).

Our second major finding demonstrated some potential for these tests to question students’ deep-seated beliefs about both who they are and what race is. Christopher demonstrated this by using the tests to make connections across different groups. Yet, even though it feels like there is some agency and choice, the findings overall demonstrate that the tests are not doing much to actually disrupt monoracialism. This ambivalence is likely due to how ingrained biology is in beliefs about race and phenotype or physical appearance ([Morning 2011](#)). In many participants’ eyes, phenotype is race, and the genotype (or biology) informs the phenotype. For instance, when Rose sarcastically jests about her ancestry results with the comment “ . . . the Irish we knew, if you couldn’t tell by looking at me” she is equating her looks with what her ancestry is.

Additionally, our findings outline how there seems to be a uniqueness around Blackness and biology that was distinct for our Black-identified participants. [Morning \(2011\)](#) also identified a sense of “Black biological exceptionalism” (p. 144) when it came to students’ racial conceptualizations. That is, Blackness tends to evoke more biological notions of race relative to others, emanating from the long legacy of white supremacist ideologies ([McWhorter 2009](#)). However, we found for many of our Black-identified participants, especially given some of the more poignant narratives from Black women participants, there was less a focus on biology itself, compared to the connection the test results gave them to a shared history. These test results seemed to give them opportunities to unsettle their beliefs about their ancestries while recognizing the shared sense of Blackness and making connections to historical legacies of slavery and oppression that helped explain why many of them had White/European ancestry. This finding has unique implications for Black graduate students who have to contend with the systemic racism and white supremacist norms operating on predominantly White campuses ([Mohajeri 2021](#)), which we discuss further in the implications below.

7. Conclusions and Implications

To conclude this paper, we offer several implications for practice and future inquiry based on our study. As more institutions of higher education seek out innovative ways to educate around racism and race relations, DNA ancestry testing might seem like a novel opportunity. Evidence has suggested some potential for elucidating new narratives of identity and helping make connections across different identity groups (Foeman 2012; Foeman and Lawton 2017). However, we caution the need to thoroughly prepare for integrating these kinds of tests, particularly for higher education and student affairs graduate programs. The preparation and design of the program should include both ethics around DNA ancestry testing and extensive scaffolding and education of ideas around race, ethnicity, nationality, scientific racism, and monoracism. Though we recognize curricular efforts that engage the first few constructs, education around monoracism is lacking, given its relative newness to the academic vernacular. Connected to monoracism is monoracialism as an underlying social force (Johnston-Guerrero and Renn 2016). Monoracialism is such a powerful, pervasive force in the U.S.A. that it often goes unmarked as an invisible driver and preference. Based on our study, much more education and troubling of monoracialism is needed, even well into the adult years of graduate schooling.

In addition to using these tests as potential ways to disrupt the biological boundaries of monoracial groups, educators must also consider ways to help students better make sense of new information gleaned from the tests. If these tests are used, what can we, as educators, do to move beyond the sense of “surprise–not surprise” into a deeper questioning of these two discourses? It seems important for educators to try to better capture the dynamics of both biology and social construction through students’ discourse. As Bliss (2020) argued, biological science in the age of genomics is setting forth a need to have a both/and perspective on race, i.e., that race is both biological and social. What might future higher education studies, such as those using critical frameworks that assume the social construction of race and racism, look like with both biological and social perspectives? Education is needed among students, faculty, and staff around the pervasiveness of both discourses.

We end with this quote from Christopher about the potential contributions of this kind of testing for educational settings:

Incorporating [ancestry testing] into schools and higher education in particular can be beneficial because there’s like a disconnect between you know, like racism, like ethnicities, based off skin color, and stuff like that. So I think it makes you more aware, maybe more educated. I think that’s the most important thing. And I think for Latinas, it can bring more unity in the community. So I think like this would be like a great, a great piece to add to higher education student affairs.

Author Contributions: Conceptualization, O.M., M.P.J.-G., A.F. and B.L.; Methodology, data collection, analysis, and writing, O.M. and M.P.J.-G. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted with approval by the Institutional Review Board of West Chester University (protocol ID 20181204A-R2 approved 8/11/20).

Informed Consent Statement: Informed consent was obtained from all participants involved in the study.

Data Availability Statement: The data that support the findings of this study may be available on request from the corresponding author. The data are not publicly available due to our commitment to the privacy and confidentiality of participants.

Acknowledgments: We would like to thank both West Chester University’s DNA Discussion Project for support and guidance, as well as the wonderful graduate students who shared their thoughts and stories with us.

Conflicts of Interest: The authors declare no conflict of interest.

Note

- ¹ We acknowledge the political identity of American Indians with nation-to-nation relationships with the U.S. government through tribal sovereignty as being different from ethnoracial categories. American Indians are both racialized and politicalized in their identities (Brayboy 2005), and monoracialism also influences these dynamics.

References

- Abel, Sarah. 2018. What DNA can't tell: Problems with using genetic tests to determine the nationality of migrants. *Anthropology Today* 34: 3–6. [CrossRef]
- ACPA-College Student Educators International, and NASPA-Student Affairs Administrators in Higher Education. 2015. Professional Competency Areas for Student Affairs Educators [Report]. Available online: https://www.naspa.org/images/uploads/main/ACPA_NASPA_Professional_Competencies_FINAL.pdf (accessed on 12 April 2023).
- American Anthropological Association. 1998. Statement of 'Race'. *American Anthropologist* 100: 712–13. [CrossRef]
- Ashlee, Aerial A., and Stephen John Quaye. 2021. On being racially enough: A duoethnography across minoritized racial identities. *International Journal of Qualitative Studies in Education* 34: 243–61. [CrossRef]
- Benjamin, Ruha, ed. 2019. *Captivating Technology: Race, Carceral Technoscience, and Liberatory Imagination in Everyday Life*. Durham: Duke University Press.
- Bliss, Catherine. 2020. Conceptualizing race in the Genomic Age. *Hastings Center Report* 50: S15–22. [CrossRef] [PubMed]
- Bloom, Mia. 2020. Far-right infiltrators and agitators in George Floyd protests: Indicators of white supremacists. *Just Security*, May 30.
- Brayboy, Bryan McKinley Jones. 2005. Toward a tribal critical race theory in education. *The Urban Review* 37: 425–46. [CrossRef]
- Byrd, W. Carson, and Matthew W. Hughey. 2015. Biological determinism and racial essentialism: The ideology double helix of racial inequality. *The ANNALS of the American Academy of Political and Social Science* 66: 8–22. [CrossRef]
- Byrd, W. Carson, and Victor E. Ray. 2015. Ultimate attribution in the genetic era: White support for genetic explanations of racial difference and policies. *The Annals of the American Academy of Political and Social Sciences* 661: 212–35. [CrossRef]
- Cabrera, Nolan L. 2018. Where is the racial theory in critical race theory?: A constructive criticism of the crits. *Review of Higher Education* 42: 209–33. [CrossRef]
- Condit, Celeste M. 2011. When do people deploy genetic determinism? A review pointing to the need for multi-factorial theories of public utilization of scientific discourses. *Sociology Compass* 5: 618–35. [CrossRef]
- Condit, Celeste M., Roxanne L. Parrott, Tina M. Harris, John Lynch, and Tasha Dubriwny. 2004. The role of "genetics" in popular understandings of race in the united states. *Public Understanding of Science* 13: 249–72. [CrossRef]
- Dache, Amalia, Jasmine Marie Haywood, and Cristina Mislán. 2019. A badge of honor not shame: An AfroLatina theory of Blackmimento for U.S. higher education research. *Journal of Negro Education* 88: 130–45. Available online: <https://www.muse.jhu.edu/article/802613> (accessed on 12 April 2023). [CrossRef]
- Daniel, G. Reginald. 2006. *Race and Multiraciality in Brazil and the United States: Converging Paths?* University Park: Penn State University Press.
- Daniel, G. Reginald, and Gary L. Haddow. 2010. All mixed up: A new racial commonsense in global perspective. In *Colorstruck: Essays on Race and Ethnicity in Global Perspective*. Edited by Julius O. Adekunle and Hettie V. Williams. New York: University Press of American, pp. 311–48.
- Dar-Nimrod, Ilan, and Steven J. Heine. 2011. Genetic essentialism: On the deceptive determinism of DNA. *Psychological Bulletin* 137: 800–18. [CrossRef]
- Donovan, Brian M. 2015. Putting humanity back into the teaching of human biology. *Studies in History and Philosophy of Biological and Biomedical Sciences* 52: 65–75. [CrossRef]
- Duster, Troy. 2003. *Backdoor to Eugenics*, 2nd ed. New York: Routledge.
- Duster, Troy. 2005. Race and reification in science. *Science* 307: 1050–51. [CrossRef] [PubMed]
- Fitzgerald, Kathleen J. 2014. The continuing significance of race: Racial genomics in a postracial era. *Humanity & Society* 38: 49–66. [CrossRef]
- Foeman, Anita. 2009. Science and magic: DNA and the racial narratives that shape the social construction of race in the USA. *Intercultural Communication Studies* 18: 14–25. Available online: http://digitalcommons.wcupa.edu/comstudies_facpub/2 (accessed on 12 April 2023).
- Foeman, Anita K. 2012. An intercultural project exploring the relationship among DNA Ancestry profiles, family narrative, and the social construction of race. *The Journal of Negro Education* 81: 307–18. [CrossRef]
- Foeman, Anita K., and Bessie L. Lawton. 2017. Shifting winds: Using Ancestry DNA to explore multiracial individuals' patterns of articulating racial identity. *Identity* 17: 69–83. [CrossRef]
- Foeman, Anita K., Bessie L. Lawton, and Randall Rieger. 2014. Questioning race: Ancestry DNA and dialog on race. *Communication Monographs* 82: 271–90. [CrossRef]
- Fredrickson, George M. 2002. *Racism: A Short History*. Princeton: Princeton University Press.

- Frey, William H. 2018. *The US Will Become 'Minority White' in 2045, Census Projects: Youthful Minorities Are the Engine of Future Growth*. Washington, DC: Brookings Institute, March 14, Available online: <https://www.brookings.edu/blog/the-avenue/2018/03/14/the-us-will-become-minority-white-in-2045-census-projects/> (accessed on 12 April 2023).
- Fuss, Diana. 1989. *Essentially Speaking: Feminism, Nature and Difference*. New York: Routledge.
- Galvan, Astrid, and Mike Schneider. 2021. Multiracial boom reflects US racial, ethnic complexity. *AP News*. August 13. Available online: <https://apnews.com/article/lifestyle-race-and-ethnicity-census-2020-7c10fabbb71b1a0aaf0db08a75b6fcb6> (accessed on 12 April 2023).
- Gans, Herbert J. 2017. Racialization and racialization research. *Ethnic and Racial Studies* 40: 341–52. [CrossRef]
- Gee, James Paul. 2014. *An Introduction to Discourse Analysis: Theory and Method*, 4th ed. New York: Routledge.
- Gubrium, Jaber F., and James A. Holstein. 2009. *Analyzing Narrative Reality*. Thousand Oaks: Sage.
- Hailu, Meseret F., and Molly Sarubbi. 2019. Student resistance movements in higher education: An analysis of the depiction of Black Lives Matter student protests in news media. *International Journal of Qualitative Studies in Education* 32: 1108–24. [CrossRef]
- Harmon, Amy. 2007. In DNA era, new worries about prejudice. *New York Times*. November 11. Available online: <http://www.nytimes.com/2007/11/11/us/11dna.html?ref=dnaage> (accessed on 12 April 2023).
- Harper, Shaun R. 2012. Race without racism: How higher education researchers minimize racist institutional norms. *The Review of Higher Education* 36: 9–29. [CrossRef]
- Haslam, Nick, Brock Bastian, Paul Bain, and Yoshihisha Kashima. 2006. Psychological essentialism, implicit theories, and intergroup relations. *Group Processes & Intergroup Relations* 9: 63–76. [CrossRef]
- Hebbar, Rohan. 2010. Genetic Testing on Students: Going Too Far or a Necessary Learning Experience? *Health Law Perspectives*. Available online: http://law.uh.edu/healthlaw/perspectives/2010/hebbar_genetic.pdf (accessed on 12 April 2023).
- Hughey, Matthew, and W. Carson Byrd. 2015. “Beautiful melodies telling me terrible things”: The future of race and genetics for scholars and policy-makers. *The Annals of the American Academy of Political and Social Sciences* 66: 238–58. [CrossRef]
- Johnston, Marc P. 2014. The concept of race on campus: Exploring the nature of college students’ racial conceptions. *Journal of College Student Development* 55: 225–42. [CrossRef]
- Johnston-Guerrero, Marc P. 2021. Who gets to choose? Racial identity and the politics of choice. In *The Complexities of Race: Identity, Power, and Justice in an Evolving America*. Edited by Charmaine L. Wijeyesinghe. New York: New York University Press, pp. 36–55.
- Johnston-Guerrero, Marc P., and Kristen A. Renn. 2016. Multiracial Americans in college. In *Race Policy and Multiracial Americans*. Edited by K. Odell Korden. Bristol: Policy Press, pp. 139–54.
- Jones, Nicholas, Rachel Marks, Roberto Ramirez, and Merarys Rios-Vargas. 2021. Improved Race and Ethnicity Measures Reveal U.S. Population Is Much More Multiracial. US Census Bureau. Available online: <https://www.census.gov/library/stories/2021/08/improved-race-ethnicity-measures-reveal-united-states-population-much-more-multiracial.html> (accessed on 12 April 2023).
- Krueger, Richard A., and Mary Anne Casey. 2015. *Focus Groups: A Practical Guide for Applied Research*, 5th ed. Los Angeles: SAGE.
- Lee, Jun-Ki, Rahmi Qurota Aini, Yustika Sya'Bandari, Ai Nurlaelasari Rusmana, Minsu Ha, and Sein Shin. 2021. Biological Conceptualization of Race. *Science & Education* 30: 293–316.
- Malaney-Brown, Victoria K. 2022. What is multiracial consciousness? Developing critically conscious multiracial students in higher education. In *Preparing for Higher Education's Mixed Race Future: Why Multiraciality Matters*. Cham: Springer International Publishing, pp. 125–44. [CrossRef]
- McWhorter, Ladelle. 2009. *Racism and Sexual Oppression in Anglo-America: A Genealogy*. Bloomington: Indiana University Press.
- Mohajeri, Orkideh. 2021. “Fly on the wall” moments reveal whiteness-at-work for contested white graduate students. *International Journal of Qualitative Studies in Education* 35: 393–409. [CrossRef]
- Mohajeri, Orkideh. 2022. Contested whiteness: Useful heuristic or reinscribing dominance? *Journal Committed to Social Change on Race and Ethnicity* 8: 1–38. [CrossRef]
- Morning, Ann. 2007. “Everyone knows it’s a social construct”: Contemporary science and the nature of race. *Sociological Focus* 40: 436–54. [CrossRef]
- Morning, Ann. 2011. *The Nature of Race: How Scientists Think and Teach about Human Difference*. Berkeley: University of California Press.
- Nelkin, Dorothy L., and M. Susan Lindee. 2004. *The DNA Mystique: The Gene as a Cultural Icon*. Ann Arbor: University of Michigan Press.
- Nelson, Alondra. 2008. Bio science genetic genealogy testing and the pursuit of african ancestry. *Social Studies of Science* 38: 759–83. [CrossRef]
- Omi, Michael. 2010. “Slippin’ into darkness”: The (re)biologization of race. *Journal of Asian American Studies* 13: 343–58. [CrossRef]
- Omi, Michael, and Howard Winant. 2014. *Racial Formation in the United States*, 3rd ed. New York: Routledge.
- Panofsky, Aaron, and Joan Donovan. 2019. Genetic ancestry testing among white nationalists: From identity repair to citizen science. *Social Studies of Science* 49: 653–81. [CrossRef] [PubMed]
- Patton, Lori D., Kristen A. Renn, Florence M. Guido, and Stephen John Quayle. 2016. *Student Development in College: Theory, Research, and Practice*. San Francisco: John Wiley & Sons, Jossey-Bass.
- Perez, Rosemary J., Claire K. Robbins, L. Wesley Harris Jr., and Cheryl Montgomery. 2020. Exploring graduate students’ socialization to equity, diversity, and inclusion. *Journal of Diversity in Higher Education* 13: 133–45. [CrossRef]
- Phelan, Jo C., Bruce G. Link, Sarah Zelnor, and Lawrence H. Yang. 2014. Direct-to-consumer racial admixture tests and beliefs about essential racial differences. *Social Psychology Quarterly* 77: 296–318. [CrossRef]

- Prentice, Deborah A., and Dale T. Miller. 2007. Psychological essentialism of human categories. *Current Directions in Psychological Science* 16: 202–6. [CrossRef]
- Ramanujan, Krishna. 2011. 200 students offer cheek samples for Cornell's genetic ancestry project. *Cornell Chronicle Online*. February 2. Available online: <https://news.cornell.edu/stories/2011/02/200-students-offer-dna-ancestry-project> (accessed on 12 April 2023).
- Renn, Kristen A. 2021. Multiracial identity on campus. In *Multiracial Experiences in Higher Education: Contesting Knowledge, Honoring Voice, and Innovating Practice*. Edited by Marc P. Johnston-Guerrero and Charmaine L. Wijeyesinghe. Sterling: Stylus, pp. 17–36.
- Riessman, Catherine Kohler. 1993. *Narrative Analysis*. Qualitative Research Methods Series; Newbury Park: Sage, vol. 30.
- Rockquemore, Kerry Ann, David L. Brunson, and Daniel J. Delgado. 2009. Racing to theory or retheorizing race? Understanding the struggle to build a multiracial identity theory. *Journal of Social Issues* 65: 13–34. [CrossRef]
- Root, Maria P. P., ed. 1996. *The Multiracial Experience: Racial Borders as the New Frontier*. Thousand Oaks: Sage.
- Roth, Wendy D., and Biorn Ivermark. 2018. Genetic options: The impact of genetic ancestry testing on consumers' racial and ethnic identities. *American Journal of Sociology* 124: 150–84. [CrossRef]
- Salinas, Cristobal, Jr. 2020. The complexity of the "x" in *Latinx*: How Latinx/a/o students relate to, identity with, and understand the term *Latinx*. *Journal of Hispanic Higher Education* 19: 149–68. [CrossRef]
- Smedley, Audrey. 2007. Antecedents of the racial worldview. In *Race and Racialization: Essential Readings*. Edited by Tania Das Gupta, Carl E. James, Roger C. A. Maaka, Grace-Edward Galabuzi and Chris Andersen. Toronto: Canadian Scholars' Press, pp. 31–44.
- Sunder Rajan, Kaushik. 2011. Two tales of genomics: Capital, epistemology, and global constitutions of the biomedical subject. In *Reframing Rights: Bioconstitutionalism in the Genetic Age*. Edited by Sheila Jasanoff. Cambridge: MIT Press, pp. 193–216.
- Suzuki, Kazuko, and Diego A. Von Vacano, eds. 2018. *Reconsidering Race: Social Science Perspectives on Racial Categories in the Age of Genomics*. Oxford: Oxford University Press.
- Tamboukou, Maria. 2008. A Foucauldian approach to narratives. In *Doing Narrative Research*. Edited by Molly Andrews, Corinne Squire and Maria Tamboukou. Los Angeles: Sage, pp. 88–107.
- Theunissen, Catherine Agnes. 2022. The effects of DNA test results on biological and family identities. *Genealogy* 6: 17. [CrossRef]
- Vargas, Nicholas. 2015. Latina/o whitening? Which Latina/os self-classify as white and report being perceived as white by other Americans? *Du Bois Review* 12: 119–36. [CrossRef]
- Vargas, Nicholas, and Kevin Stainback. 2016. Documenting contested racial identities among self-identified Latina/os, Asians, Black, and whites. *American Behavioral Scientist* 60: 442–64. [CrossRef]
- Wang, Hansi Lo. 2021. The Census Has Revealed A More Multiracial U.S. One Reason? Cheaper DNA Tests. *NPR*. August 28. Available online: <https://www.npr.org/2021/08/28/1030139666/2020-census-results-data-race-multiracial-dna-ancestry-test-mixed-biracial> (accessed on 12 April 2023).
- Wijeyesinghe, Charmaine L. 2021. *The Complexities of Race: Identity, Power, and Justice in an Evolving America*. New York: New York University Press.
- Williams, Melissa J., and Jennifer L. Eberhardt. 2008. Biological conceptions of race and the motivation to cross racial boundaries. *Journal of Personality and Social Psychology* 94: 1033–47. [CrossRef] [PubMed]
- Yuval-Davis, Nira. 2011. *The Politics of Belonging: Intersectional Contestations*. Washington, DC: SAGE.
- Zack, Naomi. 2016. The philosophical roots of racial essentialism and its legacy. *Confluence* 1: 85–98. Available online: <https://scholarworks.iu.edu/iupjournals/index.php/confluence/article/view/522> (accessed on 12 April 2023).

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.