Communicating Racial Theory in Effectiveness Work: A QuantCrit Imperative

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The inclusion of race in models that estimate the effectiveness of educational interventions presupposes a relationship between race and other variables of interest. However, we make the argument in this paper that left unexplained, this presupposition may contribute to the maintenance of essentialist theories that uphold racism. To rectify this problem, we outline an argument for more thorough engagement with racial theory to enact the imperative in QuantCrit to take responsibility for dismantling harmful ideologies. Supporting this argument is our empirical assessment of existing quantitative effectiveness research, in which we find that across the field, there is a dearth of racial theory that would justify the inclusion of race and work to combat essentialist assumptions about race. We conclude with recommendations for reflective practice with a primary focus on communicating racial theory explicitly in quantitative work. In other words, we emphasize that explaining why race would matter for inclusion in a model is important for both doing sound quantitative work and actively contributing to changing racial narratives in our current sociopolitical context.
Keywords: QuantCrit, critical race theory, race, writing, effectiveness

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One aspect of federal, state, and local educational accountability policy that has persisted through its iterations is the disaggregation of student performance data by race, supported by the idea that said analysis allows for closer attention to be paid to racial inequality in education (Fusarelli, 2004; Gordon, 2017; U.S. Department of Education, 2003). Further, the collection of student demographic information in educational administration and research has allowed for the proliferation of quantitative analyses of the differences that exist between racial groups in terms of educational experiences, achievement, and attainment (Viano & Baker, 2020). However, the *interpretation* of quantitative research that seeks to understand statistical relationships between

race and student, teacher, and school outcomes is fraught with questions about how to appropriately frame what it means for race to be associated with these outcomes.

Concurrent with increasing attention paid to the relationships between race and educational outcomes and experiences is the consideration of race as a relevant variable in the modeling of educational effectiveness. For works examining the extent to which educational policies, practices, and decisions lead to various types of outcomes (e.g., academic, social, behavioral), the inclusion of race in these studies serves an important methodological purpose. If used as a control variable, the race variable captures variation in the outcomes and/or treatment assignment variable, enabling enhanced precision of treatment effect estimates and/or aiding in causal identification. If used as a moderating variable, differences in treatment effects across racial groups are treated as a substantive question of interest, and again, the inclusion of race is assumed to capture statistical variation. In less technical terms, regardless of the methodological purpose, the inclusion of race in any statistical model for the vast majority of effectiveness research is based on the hypothesis that race *matters*, by which we mean that there are differences across racial groups (however defined) in terms of the constructs of interest. However, the *reason* why we presume that race matters has important implications not only for methodological practice but also for quantitative practitioners' active engagement in critical practice to dismantle racism.

This work rests in the vein of QuantCrit research and theory, here defined as a movement to employ perspectives from critical race theory ("CRT") in the transformation of quantitative research practice. In the briefest terms, this work calls on quantitative practitioners to recognize the centrality of racism and advance racial equity and justice by not only asking critical questions of the world but also interrogating and making choices in our methodology to resist institutional

and structural norms that uphold racism and White supremacy (e.g., Gillborn et al., 2018; Garcia et al., 2018; for a more in-depth discussion of CRT, see Delgado & Stefancic, 2012). In what some might consider a success, the work of QuantCrit scholars has indeed inspired a great deal of interest in QuantCrit and, from the perspectives of the authors, has increased interest among quantitative scholars about how to do QuantCrit well. However, we raise the same constructive critique as Cabrera (2018) in our reflection on the progress of QuantCrit: where is the racial theory?

By "racial theory," we are referring to specific theories of action for how the construction of race is developed and the mechanisms (e.g., organizational, sociological, psychological) through which that construction translates to other constructs. If we say that, for example, race is an important factor for the performance of students in mathematics, what is the actual story by which race is salient to mathematics performance? What organizational factors, psychological mechanisms, and/or policy histories have translated the construction of race into differences in mathematics performance? The lack of racial theory is especially notable in research where race may not be a central construct in the research questions but is included for methodological reasons. In effectiveness research, there is a prevalence of the use of race as included in statistical models. This work often takes great care in the explanation of statistical methods, point estimates, measures of variability, and elaboration of tables and figures. However, these communication choices are, indeed, choices, and we highlight the untapped power and responsibility quantitative practitioners have to make communication choices that more clearly explain the racial theories justifying their examination of race. The communication of quantitative work carries discursive power, and as such, much of the actual work of enacting

QuantCrit must happen through the theorization and writing of racial theory in quantitative research.

In other words, we argue that especially in our current social context, there is a pressing responsibility of any who use quantitative methods in practice and research (which we have the creative agency to fulfill) when using race as a variable to be clear about the racial theory we are employing, lest we leave dominating uncritical and essentialist racial theories unchallenged. As a point for reading this article, this article combines theoretical argument with an empirical analysis of effectiveness work. Our empirical investigation reviews existing quantitative effectiveness research and the given theoretical explanations for why race was included in analyses. The results highlight the relative dearth of efforts in this regard; the explanation of racial theory is very rare. As such, this article is structured pedagogically to inspire thoughtfulness and reflective change in quantitative researchers. The structure of the argument is as follows: We (1) establish the importance of racial theory in the concrete deployment of critical perspectives in quantitative methodology, (2) provide an explanation for how that theorization might operate to drive quantitative choices, (3) emphasize the agency of quantitative researchers to choose to communicate this theorization and use our empirical analysis of existing research to examine the extent to which scholars have exercised this agency, and (4) identify the current social context in which this explicit theorization is especially important. The audience for this paper is not only quantitative researchers producing academic scholarship, but also any who employ quantitative methods across sectors to assess the effectiveness of human interventions. As such, we use the term "quantitative practitioners" throughout to encompass organizational data analysts, social researchers using quantitative methods, evaluators, and more.

Foregrounding Critical Need for Critical Methods

Throughout this paper, we will often specify the importance of *context* for informing what decisions make sense for advancing justice through methodology. This context is not only the context of the given study but also the context of the current world in which we live. The choices made in how quantitative practitioners engage with the world should be informed by our understanding of the state of society, and right now, there is a dire need for responsible attention to engaging with racism and racial ideologies in the American context.

The presence of race within American social and political consciousness has flared in recent years. In the wake of the 2020 COVID-19 pandemic, online platforms saw a spike in hate speech directed toward Chinese and Jewish populations (Manavis, 2020). Concurrently, there has also been a rise in other forms of discrimination, such as physical and verbal assault against Asian Americans and Pacific Islanders as well as an increased spread of anti-Semitic propaganda (Anti-Defamation League, 2022; Jeung et al., 2021). The pattern of inciting racial aggression through communication has been a recent adaptation of hate organizations. This trend has been attributed, in part, to the emergence of alternative media platforms propagated by public figures, like former President Donald Trump, that hate organizations use as hubs to connect and spread their influence among the broader American public (Eddington, 2018).

Concurrently, as public and political figures take stances on radical and racist organizations, mere attention to racism in institutions has fallen under political pressure. Since 2021, states have continually passed Anti-Critical Race Theory (CRT) measures, restricting coursework related to slavery and African American studies (Alexander, 2022). Despite the rapid escalation in policies banning engagement with institutional racism, there is widespread uncertainty among Americans as to what CRT is, with a majority of adults neither supporting nor

opposing the policy and reporting little understanding of what the practice is (Polikoff et al., 2022). Still, the movement proceeds, with this paragraph being written as Florida Governor Ron DeSantis engages in a campaign to ban African American studies' Advanced Placement curriculum in the state on the grounds that this education, in and of itself, is a political agenda (Cineas, 2015).

Divided conceptualizations and comprehension of race and racial theory among the American populace further emphasize the need for expanding QuantCrit and critical studies broadly. Previous scholarship has established the ideological context in which race is understood, demonstrating how Americans often compartmentalize race from institutional imperatives for addressing inequality. Some scholars have called this discrepancy the American Dilemma (Myrdal, 1944), and others call it the principle-policy gap (Taylor & Parcel, 2019). Either way, they identify a persistent inconsistency in Americans' support for equality in general given prevalent resistance to race-conscious policy. Further scholarship on white attitudes towards race demonstrates a paradoxical perspective, with individuals harboring support for racial justice but resistance to policies that would bring about such change (Bobo & Fox, 2003).

Social and political psychologists have identified a multitude of reasons for this resistance, especially in education policy and among White individuals (for a review, see Blissett et al., forthcoming). Chief among many of these theoretical perspectives is a common understanding that how people understand inequality is both socialized and a determinant of attitudes toward racial policy. Across perspectives, scholars identify that socialized, individualistic understandings of inequality that primarily attribute disparities to individual effort and essentialist notions of race explain resistance to the race-consciousness in policy and much of American political ideology (e.g., Jost, 2009; Kluegel & Smith, 1986; Sears, 1988). In other

words, people's understandings of what race *is* and *why* differences in outcomes (e.g., educational, economic, health) exist across racial groups are critical to their support for race-consciousness in policy. To that end, what role might the narratives about race as generated by quantitative methodologies be contextually important for advancing racial justice? Given the world in which we live today, it is *particularly* important for quantitative practitioners to be more thoughtful about their racial theories given the influence of racial theory on the political possibilities for combating racist policy and advancing racial justice.

Racial Theory as a Part of Critical Deductive Methods

The legacy of incorporating critical race perspectives in quantitative methodology has been of particular interest recently among quantitative scholars, as evidenced by the works in this special issue, the increase in formal publications across fields in the area in recent years (e.g., Pearson et al., 2022; Van Dusen et al., 2022; Wofford & Winkler, 2022), and expanding opportunities for professional development offered by scholarly associations (such as the Society for Research on Educational Effectiveness' webinar series on critical perspectives on quantitative methods).

While we might trace the critique of traditional quantitative methodology and its history back to the works of Du Bois in 1899 and sociologist Tukufu Zuberi's work in 2001 (Garcia et al., 2018; Zuberi, 2001), the more organized work to advance critical perspectives in quantitative methods in education has thus far manifested in two waves in the last two decades. The first is that of quantitative criticalism, organized via authors of a special issue of *New Directions for Institutional Research* in 2007 who collectively worked to emphasize the role of quantitative methods in advancing justice. They defined an imperative for quantitative research to ask critical

questions that challenge existing narratives, contribute towards racial equality, and question analytic practices (Stage, 2007). The second is often termed "QuantCrit," which emerged from a conference panel in 2015 and a subsequent special issue in *Race Ethnicity and Education* in 2018. QuantCrit expands on this imperative to emphasize the transformation of quantitative methods beyond critical questions to a wholesale transformation of quantitative *practice*, which includes moving away from positivist epistemologies and challenging methodological norms, values, and choices (Garcia et al., 2018). While these movements are similar, Tabron and Thomas (2023) identify that an important contribution of QuantCrit is the more explicit embeddedness of critical race theory itself into QuantCrit, centering not only the rejection of traditional positivist view of quantitative methods but also working to center an understanding of race within that work.

QuantCrit scholars have often made reference to five tenets that guide the development of QuantCrit work: (1) understanding and acknowledging the centrality of racism as an organizing force in society; (2) identifying how numbers are not neutral and carry human values; (3) identifying that categories are also not neutral and that particularly for racial categories, they should be understood to have been generated through racism; (4) given that numbers cannot "speak for themselves" and that humans give voice to numbers, attention to the voices of those involved in the development of quantitative work is important; and (5) using numbers as a tool in social justice is both possible and an important position to take given statistical research has never been value-free, neutral, or apolitical (Gillborn et al., 2018).

As one aspect of the framework, QuantCrit recommends practitioners who care about racial inequality in education to pay special attention to instances where sweeping statements about the nature of educational inequality were made but failed to recognize the complexity of

other factors in a society that is structured in racial domination (Arellano, 2022; Garcia et al., 2018). The research questions themselves of a research paper need not center race as an operating construct for pracitioners to still have a responsibility to attend to racism in practice, as the discursive place of any work extends beyond the specific domain within which the central research questions emanate. As such, QuantCrit scholarship often identifies that there are many ways in which normed practices in statistical research regardless of research question, including quantitative effectiveness research, should be interrogated. Some examples include identifying alternatives to the use of the White group as a reference category in statistical regression models (Mayhew & Simonoff, 2015), decomposing statistical racial disparities into components that extract and name mediators of racialization (e.g., socioeconomic disparity, discrimination; Graetz et al., 2022), challenging the taken-as-given racial categories used in secondary data sets (Garcia & Mayorga, 2018; Viano & Baker, 2020), consistently reflecting on voice and power in who was able to contribute to data and analysis design (Castillo & Gillborn, 2022), conducting disaggregated analyses within racial groups (Jones et al., 2022), and the use of mixture modeling to complexify understandings of sample distributions (Suzuki et al., 2021).

We first take a moment to (re)conceptualize quantitative work as having an important role in justice by (re)defining what quantitative work is. While there are many different approaches toward thinking about educational justice, one major shared characteristic of many is the necessity of deconstructing systemic racism and the narratives that surround what race is (e.g., Garcia et al., 2018; García & Guerra, 2004; Museus & Kiang, 2009). The work of dismantling systemic racism is, at least in part, the work of resisting essentialist, positivist ideologies about race that take for granted that the racialized categories used in communication and research represent inherent differences between human beings. The traditional view of

quantitative research as being inherently positivist, which would also imply that a quantitative perspective on race assumes that race is a natural fact, has therefore often put quantitative methodology squarely in the sights of those seeking to fight systemic racism. It is this perspective that has framed critical quantitative work as somewhat inherently difficult if one views quantitative work as positivist (Hernández, 2023). Further, there is good reason to be skeptical of the role of quantitative work in justice, given historical associations between quantitative logics and the eugenics movement (Zuberi, 2001) and the development of scientific racism (Jackson & Weidman, 2005). How can a methodological approach that has so often been used to legitimize the logic of race-as-given ever be rehabilitated?

While acknowledging how institutionally, quantitative uses of racial classifications have produced harm, we argue that this use of race is not necessarily positivist, but instead can be thought of as deductive. In other words, the positivist treatment of race is not inherent to the use of quantitative methods and the use of racial categories in practice can simultaneously acknowledge the social construction of race while identifying the utility of the classifications for action. Arguably, the categorical treatment of race has long been central to much of justice work, where the practical manifestation of "race-consciousness" in many of the policies designated as such requires the *a priori* identification of people in racial categories, including race-conscious student assignment policies in K-12 school desegregation, the consideration of race in affirmative action policies in higher education, and the development of programs (e.g., mentoring, financial aid) that specifically target individuals of a certain race (e.g., Renbarger et al., 2021; Taylor & Frankenberg, 2021). While certainly, this work requires consistent caution and vigilance about the continued reification of racial categories (Appiah & Gutmann, 1996),

arguably, the path towards justice, at times, has required the deductive treatment of race.[1] A social constructionist approach to understanding the deductive use of race defines our identification of people within racial categories not as a claim about the inherent-ness of those categorical labels, but as operationally useful for our ability to make human decisions about how to understand the impact of racism and repair its effects.

As such, we start from the premise that the use of race *in deductive* quantitative research[2] can be reasonable, but that the reasons need to be made transparent to depart from quantitative research's history of racial harm. Unfortunately, many treatments of race use socially-normed categories without including racial theory—or an explanation of *how* and *why* the construct of race is relevant in content—to judge reasonableness. In other words, the use of race as a variable in study (and policy) *might* make sense but neglecting to attend to the *reason* for employing race, at best, renders its use meaningless and at worse, leaves traditional essentialist assumptions about race unchecked, perpetuating racist ideologies. A key example of neglect of racial theorization in quantitative research is in causal literature, which is especially important in effectiveness research. Within quantitative research, it is commonly asserted that when statistical relationships *are* identified between race and important outcome variables, it is inappropriate to claim that race "causes" the outcome (for seminal argument, see Holland, 1986). As a simple example, when a quantitative practitioner finds a difference in average math scores between Black and White students, this practitioner should *not* conclude that race "causes" math achievement.

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[1] A related though imperfect analogy is that the movement towards deconstructing binary gender ideologies exists in collaborative tension with the importance of acknowledging women as members of critically real, though socially constructed category that deserve focused attention in efforts to fight sexism and patriarchal domination. In other words, as noted by Lorber (1994), "The prime paradox of gender is that in order to dismantle the institution you must first make it very visible" (p. 10).

[2] Here, we specify deductive research to distinguish the scope of our argument from those more inductively-oriented forms of quantitative analysis, such as unsupervised machine learning models and certain exploratory forms of factor analysis and latent class modeling.

The argument combines two assumptions: one about the nature of causality and one about the nature of race. First, the definition of causality that is used proposes that something can only be called a "cause" if it is something that can reasonably be "manipulated," since saying that a cause produces an effect relies on being able to imagine alternative scenarios where the cause is present in one and not in the other. Second, this definition of cause is incompatible with the proposed definition of race, which is seen in this view as immutable. Holland (2008) says in later writing, "Those who wish a serious discussion of the meaning of race will have to look elsewhere. I take racial categories, however determined, as given" (p. 95). Beyond the conception of causality named here being only one epistemological perspective of many about how to define causality (what Illari & Russo, 2014 call "manipulations," p. 100), we (like Marcellesi, 2013 and Wenz, 2020) also question the conception of race used here, even if the categories are understood to be socially constructed. In particular, we argue that more detrimental to the critical transformation of quantitative work is the hand-waving of racial theory as irrelevant to quantitative epistemology.[3]

Cabrera (2018), in their review of higher education scholarship employing critical race theory in general, noted that "The lack of explicitly articulated racial theory becomes problematic because in its absence, Crits are only left with the core tenets of CRT for their analyses" (p. 214).[4] While lending support to the establishment of CRT as a lens for analysis, as we also do, Cabrera critiques the use of CRT as a theoretical framework because, largely, it does not include racial theory to explain the mechanisms through systemic racism and White supremacy operate. Our argument here is similar to that of Cabrera (2018) in that while the

[3] We address what we think would be a better reasoning for not calling race a cause later in this paper.

[4] Cabrera (2018), after a brief explanation of CRT, uses the term "Crits" to refer to "Those who engage in this anti-racist, oppositional form of research" (p. 210).

movement to name racism and decenter Whiteness as pathways towards incorporating critical race theory into quantitative study is laudable, what is missing is racial theory. This critique does not diminish the importance of CRT as a counter space from which scholars can conduct critical work (Delgado & Stefancic, 2012), and the creation of QuantCrit as a specific counter space for exploring ways to transform quantitative practice is important, but we suggest that there is a need to focus on racial theory due to its intellectual and sociopolitical impact.

In Cabrera's (2018) work, he suggests hegemonic Whiteness as a theoretical framework to supplement CRT, which lays out a mechanism for the way the use of race by White supremacy produces racial inequality through the assignment of value to racial background. This framework may be useful as a launching point for more theorizing in CRT more broadly, but in the use of race in deductive quantitative study (as is the case of most effectiveness research), the theories need to be even more specific given the need to be clear about the operationalization of race as a variable and the role it is playing in a given study. While our argument is specifically geared towards quantitative practitioners in the field of education, this same recommendation has been made by others; Jones et al. (1991), in a review of epidemiological work over multiple decades, included as their first recommendation on the use of race, "Provide justification when including 'race' as a variable. Define the presumed context of the variable in the context of the given study" (p. 1083).

What then, are the options for theorizing race more clearly in quantitative research and, therefore, making better and more principled decisions about operationalization and communication? In effectiveness research—here mostly focusing on those works evaluating the impacts of educational policy, programs, or practice—the use of race is typically either as a control variable or as a moderating variable to assess heterogeneous treatment effects across

racial categories. In the case of a non-experimental study accounting for race in a regression model, the operating assumption justifying the inclusion of race as a variable is that there are contextually-important relationships between the construct of race and both exposure to treatment and the outcome variable. In the case of a randomized controlled trial, the inclusion of control variables, like race, is typically intended to increase the precision of the estimate, which also relies on the theory that race is related to the outcome of interest. Finally, in the case of race as a moderating variable, whether analyzed via interaction effects or subgroup analyses, there is an inherent hypothesis that the effect of the treatment on the outcome differs across racial categories as defined in the data. In all cases, even the experimental case, there is a theory that the variables in the study are, somehow, related to the construct of race.

What we are calling for in greater use of racial theory is an explanation of what "race" means in the study and why it would be related to the other variables of interest. What is particularly important here is that "race" does not mean one thing, and how race "matters" for any given work are going to be a function of what that work is (e.g., Campbell, 2020; Cruz et al., 2021). As an example, we review several different theoretical explanations for what "Asian American" identity[5] means in the United States context. While these explanations below are abbreviated for brevity's sake, they provide a glimpse into the complexity of considering "race" as one construct (for a more in-depth review of Asian panethnicity, see Gogue et al., 2022). As readers reflect on these, they should note how these different frameworks have different implications for how race should be operationalized in a study as well as how race would be related to educational variables of interest (e.g., academic achievement, perceptions of campus climate, access to educational services).

[5] By "identity," we do not mean to imply that these are internally-determined identities, but rather that the identification of a person as a member of racial category is a human project and not inherent.

Sociolegal Treatment of Asian American Racial Identity. A sociolegal perspective on what "Asian American" means focuses on the extent to which the labeling of individuals by race has long been a function of government as a matter of deciding who has rights to citizenship, property, public services, and (un)equal treatment under the law. An illustrative case for this understanding of race is that of *United States v. Bhagat Singh Thind*. Thind, an immigrant from Northern India, had in 1920 been granted U.S. citizenship, which at the time was restricted to free White persons. At the time, his citizenship had been granted because under the system of scientific racism, technically speaking, Thind was classified as Caucasian. However, in the case above, the Court decided to change the system of race operating in determining citizenship, claiming that despite Thind's "true" claim to being Caucasian under scientific racism, the more important determinant of citizenship was Whiteness, a classification that Thind was argued to be excluded from because of his brown skin and Hindu religion (even though Thind was Sikh) (Joshi, 2006). Here, Indian people, today often identified as South Asian, were intentionally defined as non-White by the Court, and as such, the most relevant operationalization of race in this format would be linked to the operationalization used by systems of government to classify who received what rights. Any study where the justification of the role of race is theorized to be a function of sociolegal classifications of race and the choices of institutions to confer different rights, benefits, and punishments based on those classifications, therefore, would need to consider operationalizing race according to how the institutions in question define racial categories.

Political Treatment of Asian American Racial Identity. We cover two perspectives on the political development of Asian American identity. The first focuses on the self-determination of Asian American communities themselves to identify themselves as Asian American. Many

attribute the development of Asian American identity to the organizing efforts of groups like the Asian American Political Alliance (often cited as the source of the term "Asian American") in the 1960s to generate a panethnic label to mobilize action. These organizations worked not only in opposition to the Vietnam war but also in solidarity with groups like the Student Nonviolent Coordinating Committee and the Black Panthers to advance racial justice. It is for this reason that the term "movement" is often used to describe Asian Americans during this time, when the strategic merging of Chinese, Japanese, Filipino, and other Asian immigrants was meant to present a united front against racism and U.S. imperialism and address political representation issues in collective action (King, 2000; Maeda, 2011). Asian American-ness as a form of intergroup solidarity, as a variable, might be best operationalized through an assessment of perspectives on solidarity and understandings of political agency.

The other political perspective concerns itself with how Asian American identity has been intentionally mobilized by *non*-Asians to position Asian Americans as a wedge in civil rights. Many have attributed the development of the model minority myth (the stereotype of Asian Americans as uniquely and innately high achieving and hard working *in spite of* their minority status) as an intentional construction meant to use Asian American successes in the post-Civil Rights era[6] to discount the calls for action by Black communities (Jo, 2004; Park & Liu, 2014). Throughout history, non-Asian people have used the social construction of Asians to bolster their opposition to affirmative action on the basis that it discriminates against Asian people (Inkelas, 2003; Park & Liu, 2014; Takagi, 1996). Notably, this framing has still been used by conservative opposition in more recent arguments (Garces & Poon, 2018). Is the racial construct in a given study relevant to the perceived political position of Asian Americans? If so,

[6] Much of this success, structurally, has largely been attributed to 1960s immigration policies that placed strict restrictions on which Asian families were allowed to immigrate to the United States (Lee & Zhou, 2015).

the study design and data may consider capturing the construction of Asian American identity by others as well.

Cultural Treatment of Asian American Racial Identity. Finally, that individuals do identify *themselves* as Asian is important, but like all racial identity development, it is important to contextualize what that identification means. Indeed, empirical studies on how Asian American people define what it means to be "Asian American" contain elements that reflect shared cultural understandings, including interdependence with family, collectivism, food traditions, and connections to cultural heritage (Kwan, 2000). Importantly, also common in literature on Asian American identity is awareness of structural barriers and limitations for Asian Americans, racism and stereotypes, and complex relationships with the model minority myth (Oyserman & Sakamoto, 1997). This cultural identity is further complicated by the fact that attachment to Asian identity might not be considered uniformly. Junn and Masuoka (2008) identify that there may be significant malleability in the extent to which Asian identity is held as important to people, and Park (2008) further finds that the specific sense of what "Asian American" means to individuals has changed as the immigration status and demographic characteristics of Asian Americans have evolved. All of these understandings of what it means to personally "identify" as Asian are importantly embedded within historical contexts of U.S. immigration policy, foreign engagement, and domestic racial structures. As such, if it is one's *personal racial identity* that is presumed to matter for a given study, it may be worth operationalizing and deploying race in a way that is more closely aligned with someone's self-described relationship with their racial identity.

One key argument we make in this paper is that there is not one key theory or understanding of racialization that is the "most" important for effective practice. We cannot, in

this paper, cover every mental model, every organizational trend, and every social process through which racialized constructs and systems produce consequences for people's lived realities. The examples above do *not* constitute the full breadth of what is understood about the construction of Asian American identity. Further, we as authors do not claim to know all these models ourselves, nor do we claim that it is reasonable to expect oneself to do so. The specific racial theory that is relevant for a given study is going to be necessarily a function of the variables in the study itself and the audience for which the research is being produced.

However, there is one major shared characteristic of those racial theories employed in critical study: the focus on the structural and social construction of the racial category and resistance to essentialist theories that assume race as given and attribute racialized differences primarily to the choices, behaviors, and predispositions of individuals within a racial category. Cabrera's (2018) suggestion of hegemonic Whiteness does this, for example, through the examination of how the value of people is generated through White supremacy. In a similar vein, scholars like Rios-Aguilar (2014) emphasize greater use of asset-based conceptual frameworks to resist the domination of deficit-oriented frames. Our emphasis on understanding theories of racialization and the structural construction of race is aligned with the suggestions of QuantCrit and other critical scholars to replace "race" language with "racism" and acknowledge racism more directly in scholarship (Castillo & Gillborn, 2022; Harper, 2012) where here, we manifest the resistance to traditionally essentialist theories of race by making explicit the non-essentialist theories at play. This argument is similar to the one of Viano and Baker (2020), who during their discussion of race as measured in administrative data sources say,

> When describing quantitative work incorporating R/E [race/ethnicity], the researchers should explain why R/E is included in a model, why the R/E measures

> are operationalized the way they are, and/or why they are interested in heterogeneity by race. These explanations should avoid biological or genetics-based theories instead recognizing that race is not a cause, is socially constructed and can signify common social or environmental experiences. (p. 324)

Of course, in any given study, more than one construction of race is likely relevant. The engagement of scholars with that theorization should still produce benefits in the first place and enhanced consistent conversation in the field about what "race" actually means for the study is an important goal. The engagement with the question of "what do we mean by Black or Asian or White" is as important as the convergence of an acceptable answer for a particular content. As noted by Gogue et al. (2022), "The best we can do is to be thoughtful and engaged in relevant theories of race and panethnicity, reflective of one's research positionality, and mindful of unintended and intended, tangible and intangible inclusions and exclusions produced by the imperfect use of various racial terms" (p. 86). Further, deeper engagement with racial theory may also provide answers to even more complex questions about how to include identity in general, as some of these same points apply to other dimensions of social identity as well, such as gender and, especially, its intersections with race.

Finally, we emphasize that beyond the implications that these theories have for the inclusion of race in a quantitative study in the first place, the framing of race in said study, and the data collection methods used to capture racialization (which apply to all quantitative studies), the theorization of race has additional implications for effectiveness research in particular. The above theoretical examples, we hope, may trouble for readers the oft-held notion of race as "immutable." Take, for example, the case of the cultural construction of racial identity and personal identification with one's race. While all theoretical approaches described in this section

are constructed via human social action, we have concrete evidence that educational policies and programs can have direct effects on how people feel about their own racial identities (e.g., Piper, 2019; White & Wanless, 2019). As such, identifying a methodologically sound approach to "controlling" for race in effectiveness research requires a deep understanding of where the racial construct under analysis lies in the causal story of the intervention itself. Does the program itself affect the construction of race? If so, critical thought needs to be given to how race is modeled in the study.

Communication as Discourse and Method

Before we explain the context in which we are claiming the imperative to be clearer about racial theory exists, we first emphasize that quantitative pracitioners have the agency to make these choices. We do not necessarily presume in this paper that people do not have a racial theory in mind when they conduct quantitative research using race as a variable. While certainly, there are analyses to be conducted about the extent to which quantitative authors have effectively engaged with racial theory as people and scholars, the objective of this paper is to establish that the *praxis* of QuantCrit, in the context of current social trends, includes communicating this racial theory.[7] We as authors can identify colleagues, ourselves included, who may have clearly critically oriented racial theories in mind and have still neglected to articulate them. The work we propose in this paper is not just for those without racial theory in mind but also outlines work for us, as authors, as well as for those who may indeed consider themselves well-versed in the racial theories they are employing.

[7] We address the pedagogy and socialization of quantitative scholars elsewhere.

In particular, quantitative research is often treated as a technical skill in statistical coursework, with students spending a great deal of time learning the "correct" and "incorrect" ways to explain quantitative concepts.[8] However, what is often lost in this kind of teaching is that communication is art. As such, we especially emphasize that communication about quantitative research (henceforth referred to as "quantitative communication") cannot be treated as purely formulaic. This concept, in general, should not be foreign to quantitative practitioners, as the field of data visualization has long been concerned with the choices made in the visual display of quantitative information (including in evaluation; e.g., Azzam et al., 2013), why those choices are made, how those choices interact with human psychology, and the range of creative values that can be expressed in visualization (e.g., Gough, 2017; Li, 2018). In this work, significant attention is paid to how data graphics inform reasoning about quantitative information which includes foci ranging from the heaviness of graphical gridlines to the effective use of whitespace (Tufte, 2001). Users of R or Python statistical packages will be familiar with the concept of applying grammars to graphics as a way of making sense of graphics as design (Wickham, 2010), and data visualization practitioners have even paid attention to inclusivity through the development of colorblind-friendly palettes (Steenwyk & Rokas, 2021). These examples demonstrate the capacity of data analysis practitioners to make methodological choices informed by a desire to paint the world in new, creative, and principled ways.

[8] We do not argue that this is necessarily time poorly spent. For example, there are indeed important epistemological reasons for effort spent on ensuring students understand the distinction between "failing to reject the null hypothesis" and "accepting the null hypothesis." The broad misuses of concepts like statistical significance (Wasserstein & Lazar, 2016) necessitate a commensurate amount of caution in ensuring that students are socialized into cautious language. Though, in a separate essay, our first author argues that the authoritative ways in which statistical language are taught are likely hinderances to true learning and the transformation of quantitative methodology in general, similar to the critiques of some quantitative criticalists that adherence to best practice as pedagogy does not produce "good" quantitative research (e.g., Hernández, 2015).

Existing research employing critical perspectives of education policy discourse has already discussed the implications for racial justice of framing observable racial disparities in specific ways. For example, it has already been widely noted that there is a critical difference between the "achievement gap" and the "educational debt" (Ladson-Billings, 2006) in how to talk about racial inequality in education. In addition, concerns about how certain discussions of racial inequality might contribute to deficit-based thinking among consumers highlight the importance of taking care in the way that research presents race-relevant information (Carey, 2014; Quinn, 2020). One qualitative study by Lasater et al. (2020) highlights the potential dangers of improper educator analysis of data, including viewing students as numbers and prompting deficit thinking. While not framed explicitly as addressing quantitative research, the achievement gap has historically been operationalized quantitatively, and these scholarly investigations highlight existing concerns, with some recommendations for transformation, about the communication of quantitative information and race.

Where there is less discussion in the quantitative research field is in the practice of writing and communication. On the other hand, in *qualitative* research, especially when grounded in an interpretative paradigm, writing is seen as an essential part of interpretation. Writing, as a form of language, is a constitutive force that produces a particular version of reality and the self (Richardson, 2000). Therefore, writing is never seen as an objective act. Qualitative researchers often deliberately make their agendas, prior conceptions, and biases visible, and consider how different readers with varying backgrounds and contexts may view their data, theories, and findings differently. Articulating these biases and subjectivities through writing is thus constitutive of qualitative inquiry and is often seen as instrumental to the method (Langer, 2016). The act of writing can carry the entire meaning of qualitative inquiries, and qualitative

work often requires sensitive interpretive skills from the researcher (Richardson, 2000). The act of writing is thus more creative and personal in qualitative work such that there is no general set of techniques that are used widely across all studies (van Manen, 2006). Further, the acknowledgment of communication as an integral part of inquiry opens doors for more expansive opportunities to conduct inquiry through creative means. For example, Langer (2016) discussed the use of a research vignette as a means to intimately invite readers into the research process, open up the dialogue space between the researcher and reader, and treat readers as partners in the interpretation process. Others have raised artful ways of knowing by considering qualitative communications ranging from poetry to visual art forms (Flint & Toledo, 2021; Prendergast, 2009).

Quantitative work, on the other hand, traditionally involves more tables and summaries through which the main findings are often conveyed. The role, meaning, and significance of writing are rarely challenged because it is seldom seen as part of the research methods. Here we would like to argue that *writing* about quantitative research is equally important in the communication of information. Quantitative writing is not just a literal and purely objective translation of the tables and figures but carries meaning, interpretation, assumptions, and ideology. Discourse studies have long emphasized the role of communication in the generation and maintenance of systems of power. Discourse analysis sees texts as a negotiated outcome between the writer and the reader, that the writer's intentions and their relation with readers are constitutive of the meaning of the texts (Van Dijk, 1997). The consideration of writing as subjective and interpretative might bring discomfort to quantitative practitioners and readers if quantitative inquiries are perceived as an "objective" endeavor. However, with an understanding of quantitative inquiry as being equally as influenced by values as other forms of inquiry, writing

then becomes a principal site for making more principled choices about quantitative inquiry that can advance justice. Communication is an active part of the research process where in the writing itself meaning is produced, and agenda is set.

The reason we spend as much airtime as we do here to emphasize this point is to highlight for readers that the element of subjectivity and choice in quantitative work, as echoed in several of the tenets of QuantCrit, is not only ever-present but also an important tool for identifying the agency of quantitative practitioners to make more socially-responsible decisions. Quantitative work, when re-defined not only as statistical analysis but also as the meaning-making inherent in the organization and communication of that information, is laden with valued choices, and we argue that QuantCrit as a framework calls for adding the value of clearly communicated racial theorization to one's toolkit.

How Are We Doing?

In this paper, we have thus far at least partly emphasized the importance of quantitative practitioners to be thoughtful about engagement with racial theory and articulation of said theory in work. This imperative should not be taken as a mandate for individuals to incorporate an explanation of racial theory into every instance when quantitative work is discussed, as thoughtfulness about racial theory requires the flexibility to draw principled judgments about the role of that explanation in a given space and context (e.g., a publication, a presentation, a lecture, a dialogue). However, *regardless* of the immediate context, if there is a dearth of racial theory in quantitative effectiveness research as a whole, especially in a world where that racial theory matters for social justice, there becomes a *cultural* shift that is required of effectiveness research where individuals *and* institutions should be working to move the needle as a whole. In other

words, our argument is not that every single mention of a quantitative effectiveness study that included race needs an explanation of racial theory, but if the discursive field of effectiveness research is running on empty in terms of racial theory, the stakes are therefore higher for quantitative practitioners to try to err on the side of articulating theory much more than they are now. This point therefore raises the question, how are we doing now?

To answer this question, we supplement our argument here with an empirical analysis of published quantitative effectiveness research papers in education journals. Our inquiry probes, simply, the extent to which existing research articulates any racial theory to ground the choices analysts made for using race in their analytical models (either as a control variable or as a moderating variable. Further, among those theories that are given, we seek to understand the shape of those explanations and, in particular, assess those explanations against critical approaches to understanding racialization.

Methodological Approach

For this investigation and explanation, we have focused on studies on educational effectiveness that use quantitative methodology. More specifically, our analysis is not of the papers *as a whole*, but rather of how the paper frame race. Effectiveness is a broad term, and for this empirical work, requires specificity. Included in our definition of "effectiveness" are those articles that are assessing the impact (in intent) of policies, programs, and practices (as treatment) on observed experiences, states, or behaviors of educational stakeholders (e.g., students and teachers; as outcomes). In particular, to focus our discussion of the theorization of race in research, we limit our analysis to studies where the unit of analysis is an individual person (excluding articles where outcomes are measured at organizational, e.g., school, levels). We

came to this definition via multiple rounds of authors 1-3 assessing random samples of articles for applicability to the study and iteratively improving the precision of our definition until authors could code relevant articles consistently.

Further, to limit the scope to those studies to which QuantCrit applies, we use a very specific definition of what constitutes "quantitative" effectiveness research. We use the definition of causal study outlined by Maxwell (2004) that identifies that a major distinction of traditionally quantitative approaches to causality is that they employ a variance-based approach to causality (as opposed to process-based), whereby claims of causal inference are drawn from empirical observations that the outcome varies systematically with the treatment.[9] In other words, we include any effectiveness article where the method is some variation on comparing a quantified operationalization of outcomes (e.g., student achievement, retention rates) of those in a treated group to those in a non-treated group. This definition includes investigations where the determination of who is or is not treated was largely qualitative or post-comparison in nature, as in Estrada and Wang (2018), where the differences in rates of English Learner reclassification across two districts were attributed to district policies and practices after a thorough qualitative investigation. As a final delimitation on intent, we also exclude studies whose empirical investigations may have effectiveness implications, but whose writing is more clearly about methodological implications (as the imperatives for communication for a methodologically-focused paper are beyond the scope of what we discuss in this paper). While we originally included all top American Educational Research and Association (AERA) journals–*AERA Open*, *American Educational Research Journal* (AERJ), *Educational Evaluation and Policy Analysis*

[9] Importantly, our definition included papers whose questions are about effectiveness, *regardless* of the strength of causal identification. The communication imperatives we explain in this study are not dependent on strength of the causal design, and we do not engage in this paper in the question of whether a causally-intended paper with a weaker identification strategy can be identified as casual in nature. For us, the intent of assessing effectiveness suffices.

(EEPA), and *Educational Researcher* (ER)–from the decade spanning 2009 through 2019,[10] we decided based on this last delimitation to exclude articles from the *Journal of Educational and Behavioral Statistics*. Finally, given our inclusion in this special issue, we also added to our sample those works from the *Journal of Research on Educational Effectiveness* (JREE) that have been published from 2016 through 2022.

Regarding the outcome, we include studies of both intended and unintended outcomes of educational policies, programs, and practices. We include a broad definition of "practice" to also include studies where the treatments include environmental observations (e.g., school climate) that are ostensibly largely a function of practice by immediate school or district personnel. We do not include studies where the practice in question is largely a function of target population behavior; we do not include, for example, studies on how student studying behaviors affect student performance unless those behaviors were manipulated by school personnel. In addition, we only include studies where the study authors have direct control over the modeling choices, which excludes meta-analyses. Finally, while critical examinations of race are certainly applicable across international contexts, the cohesiveness of our explanation here requires limiting of scope to studies conducted within the United States to enable us in this explanation to refer to a more consistent sociopolitical context of how race has been theorized and inculcated in law, policy, and society.

The analysis detailed in this paper proceeded in several stages.[11] In the first stage, we screened the articles using the inclusion and exclusion criteria outlined above to identify the set

[10] This selection was intentional in order to parallel work conducted simultaneously by Baker et al. (2022) on the use of racial categories in educational research, and we greatly appreciate that team for sharing their sampling frame with us for our works to be able to speak to each other.

[11] Before the analyses covered in this paper, we had begun a much more expansive analysis of the full sample, aided by many of the individuals listed in the next footnote. However, upon learning from that analysis and deciding based on our continuous reflections to focus our argument on effectiveness work, we re-analyzed the data using the steps

of relevant quantitative effectiveness articles to be used for the analysis. Next, we focused on identifying the effectiveness articles that used race in the assessment of the causal impact of the treatment. These largely consisted of two cases. We included articles where race was explicitly used in the identification strategy as a control variable, which also included cases where race was used in experimental blocking or the construction of propensity scores. Importantly, we did *not* include cases when race was only used to describe the sample or as a part of balance checks or where the analytical sample consisted of individuals of only one identified minoritized group. We excluded from this stage of screening those articles that primarily used race in sampling design, including randomization. While certainly, the theory of why one would do so should also involve racial theory, the reasons to use race in those cases are often a function of generalizability, which constitutes a somewhat different argument than the "race matters" justification implicit in the use of race as a control or moderating variable.[12] We also included cases when subgroup or interaction effect analyses were conducted to identify heterogeneous treatment effects by race. Finally, when an article was identified that included race in analyses, research team members captured relevant quotes where the articles explained the use of race and if found, explained why.

In the non-JREE journals, approximately 20% of the articles were screened by two research team members as we were still orienting ourselves to and refining the criteria. The JREE articles, which were screened later after acceptance to this special issue, were double-

described here, where authors 2 and 3 were primarily responsible for the analysis for AERA journals, authors 1 and 4 were primarily responsible for the analysis for JREE, author 1 also reviewed the analysis of AERA journals, and all four authors engaged in shared discussion of our analyses resulting in adjustments mentioned in this paper.

[12] Following the logic of generalizability, one could certainly make the argument that a desire for generalizability on the basis of race could be a function of an inherent hypothesis that an *unrepresentative* sample or unbalanced treatment randomization in an experiment would bias the estimated treatment effect, which is only true if you expect that the treatment effect is a function of race. However, we exclude these cases from this analysis because of our speculation that this logic is less immediately transparent and that many treat generalizability as a desirable trait of research on its own, absent an underlying logic of why generalizability is methodologically important.

screened at a rate of approximately 10%, to ensure consistency. We iterated on this stage more than once. In particular, in the first couple rounds of searching for explanations, team members identified that it may be useful to consider that explanations may be *implicit* when authors cover the role of race in the front matter of a paper but do not tie that coverage to the inclusion of race. To cast the widest net (especially in light of the results), we ensured in this stage to double-check for the presence of explanations.

The second stage of our analyses, which was our central qualitative analysis of those explanations that *did* exist, consisted of two types of analysis: (a) a deductive analysis of the extent to which there was racial theory, and (b) an inductive analysis identifying themes in the explanations. For the deductive analysis, our a priori (Miles et al., 2020) coding framework was fairly simple: Was there any explanation of *why* other variables would be associated with race (statistically speaking)? Perhaps thankfully, we did not find many explanations that used explicitly racially essentialist reasoning (e.g., "because of work ethic").[13] As such, the majority of the explanations we found/were looking for were about the extent to which racial differences are a function of social and structural factors.

In the inductive analysis, we took both those articles with and without racial theory to further refine our understanding of the range of ways in which the inclusion of race was explained. The corpus of data we captured with all of the extracted quotes from the first stage was both (a) relatively short and (b) consisted of a series of fairly brief explanations (as most articles did not have explanations that extended beyond one or two sentences). As such, while we did conduct line-by-line analysis, each quote from each paper generally only conveyed one

[13] We did indeed find several papers (less than 5) that used language to describe race that we felt had potential to be more actively harmful. However, we decided not to focus on these papers (a) to not distract from the main point that there is a general lack of theory across the field and (b) to recognize that the evaluation of what we might consider to be distinctly essentializing lies outside of what our *a priori* frameworks were able to assess.

central justification for the inclusion of race. As such, we engaged in concept coding (Saldaña, 2021) to analyze the data, seeking not only to name what was said but also to tie that naming to central themes of reasoning communicated in what was said. Our naming of these codes operated both through our independent reflections informed by our own experiences with being taught quantitative methods across different disciplines as well as the collective conversations we had to share our independent analyses and synthesize our perspectives. This work, given the differing perspectives on our team, also allowed us to foreground the importance of our shared meanings and add nuances to our framework informed by differences.

All research team members independently assessed the articles both deductively and inductively, and definitions and categories were refined through deliberation and co-construction of a framework that effectively described the patterns identified iteratively through our reading and analysis/re-analysis. As a way of conveying transparency in our perspectives, and contextualizing the development of this analysis and this paper as a whole, we take the last part of this methodological explanation to illustrate our research team. The authors of this manuscript represent a diverse range of experiences in not only ethnic and racial identity but also scholarly and disciplinary backgrounds. However, while the four authors listed here have produced this argument, it is notable that the development of this work builds on the extensive reflections and intellectual contributions of many other individuals as well. What started as a more targeted inquiry into how certain quantitative communications might influence how educators make sense of quantitative outcomes was broadened as initial explorations of quantitative work raised concerns specifically about the treatment of race. Over time, and especially after a significant amount of coding and consistent reflection about the use of race in quantitative study as a whole, it became increasingly apparent that even without having fully completed analysis, there was an

emerging sense that engagement with racial theory was largely absent from the field, particularly when race was not the main focus of analysis. Concurrently, our continued engagement with questions about QuantCrit imperatives and group conversations allowed us to continually refine our positions and perspectives. As such, the development of this argument has come from a significant journey in personal reflections, group conversations and questioning, and the observations of all members of our research team, which extends beyond those listed as authors on this paper.[14] However, the authors of this paper were primarily responsible for the crafting of the argument as outlined in this paper, and as such, lastly, we provide readers with an opportunity to more fully understand our positionalities with individual statements included at the end of this manuscript.

Results and Conclusion

Before explaining our results, an important presentation note: While most content analyses of (mostly) public sources like ours will directly cite from where the presented examples are coming from, we actively have chosen not to do so here. The reason for doing so is that the quotes used throughout this section are meant to serve as illustrations of what we are talking about and, particularly when the examples are not good, *not* to identify that the "problem" lies with the decisions of one or more specific authors. Discussions of systemic and cultural norms that benefit racism are often clouded by participants' focus on the perceived bad behavior of specific individuals, which only serves to distance participants in that dialogue from the problem itself. While we think accountability for action is important, the focus on individual

[14] We are thankful for the thoughtful contributions to previous analyses and dialogues we have had with so many who contributed to this work, including: Samah Alshrief, Michael Carhart, Shreeya Chalasani, Brandon Clark, Kourtney Clark, Mariah Cooper, Caprial Farrington, Paola Garcia, Jori Hall, Allen Joseph, Mohona Mandal, Amanda McLaughlin, Ruth Payne, Lee Thomas Richardson, Olivia Sawyer, and Adam Starks.

authors' actions in this section would significantly distract from the thematic lessons we are trying to convey here. The takeaways from this analysis pertain to all engaged in quantitative research, not simply those whose works we have quoted in this paper.

Originally, our sampling frame consisted of 1,572 studies across the five journals (AERA Open, AERJ, EEPA, ER, and JREE). After screening for relevance to quantitative effectiveness research, screening for the use of race in analysis, and extracting quotes detailing the reason for including race, we ended up with a sample of 209 items of text in which authors detailed their use of race. Notably, many other articles did include race in analysis but included no explanation at all, largely having just named that they did control for race or, sometimes, only having indicated their use of race in a location as minor as the caption on a table. These articles were beyond the scope of our analysis here.

Racial theory of action. Originally, we positioned the field to which our argument spoke as those studies that use race as a part of the analysis, but are not centrally studying the role of race. One type of study we did not anticipate, however, consists of those evaluations of programs for which racial theory is critical to the theory of action for the treatment itself. For example, one study used propensity score matching to study the effects of youth participatory action research (YPAR) on academic achievement and school engagement. However, as the authors explain,

> YPAR is conceptually rooted in the critical pedagogy of Paulo Freire, wherein groups of people who suffer from political, economic, social, and other forms of oppression work to better understand the causes and contexts of their oppression and subsequently take action to mitigate it. Its applications may have particular relevance for youth who experience marginalization based on race, ethnicity, social class, and other areas of difference, since the problems in these youths'

communities and schools are often more systematic and obstructive of positive outcomes.

In this paper, variables capturing race were included in the propensity score matching method. It was not made explicit why race was included in that matching method, but these cases raise an important wrinkle in our argument. In our team, we spent significant time discussing whether these studies' explanations of racial theory, though they were not explicitly tied to the modeling choices, still were doing the work of injecting into quantitative discourse more critical perspectives on what race means. In other words, if you have already explained race through structural means elsewhere as a function of the treatment being racially relevant in the first place, is it still necessary to explain why race is being controlled for?

Our perspective on this question has two parts. First, this emergent category of studies indeed may not be as appropriately included in the audience of our argument as other studies, as there may be a legitimate case for considering how these studies occupy a different corner of the discursive world of quantitative research and have a different set of imperatives for action. Second, however, we note that there was still variation in the depth of this explanation as well, and therefore, there still might be room for racial theory in these studies. Another study of a dual enrollment program explained that "The underlying assumption of [program] is that engaging students from underrepresented backgrounds in a rigorous high school curriculum tied to the incentive of earning college credits (with reduced financial burden), and simultaneously supporting students academically and emotionally as they transition out of high school, will increase their access to and success in postsecondary education." However, this study did not particularly engage with *why* underrepresented students (vaguely defined) would differentially

benefit from this approach,[15] despite the use of racial variables as both moderators and covariates. While we reserve the discussion of how to more specifically address evaluations of treatments that are related to race to another time, there are still important overall implications of this argument for that discussion as well.

Explicit uses of racial theory. Originally, it was of interest to our research team not to just observe overall how explanations of racial theory were integrated into quantitative work, but also, when there was explicit racial theory named, to see if there might be differences across different sources, types of projects, or methodologies. However, our overall result precludes the utility of those secondary analyses, because, first and foremost, we find that across all of the literature we reviewed, thorough engagement in writing with racial theory was nearly absent, with only a small handful of articles (less than 10) even referencing structural explanations for why race would be a relevant variable to use in analysis. As a more expansive example, one study looked at the effect of a particular pedagogical approach–which notably was not, at least as explained, explicitly designed in such a way that is considerate of race–on learning and behavioral outcomes in computer science. Authors in this study investigated differences in treatment effects between racial groups but did so with a clear explanation of their equity lens that did not simply establish that differences in treatment effects are important, but also explained that the differences in outcomes that justify attention to these differences are a function of complex factors that affect outcomes for students of color.

> Likewise, Students of Color–specifically Black, Latinx, and Indigenous students–remain underrepresented in computer science programs [citations]. Racial

[15] This critique raises methodological questions, but is also relevant to general theoretical evaluation of programs purportedly meant to address "equity," as many modern programs do. To what extent do many of these programs have clear racial theories that would justify *how* their activities would achieve equity?

> underrepresentation is likely due in part to microaggressions and bias encountered in the learning environment, which Students of Color are more likely to experience [citation]. Some research has also linked a field's pervasive beliefs about innate brilliance and ability with levels of underrepresentation [citation], perhaps because this belief leads to classroom practices that are competitive and do not promote active participation. In such settings, underrepresentation may lead to tokenization and heightened pressure [citation] or stereotype threat [citation]. (p. 735)

Almost every case (which, again, was a very small set of cases) where we considered there to be a stronger contextualization of race as a variable was from a study using race as a moderating variable. Importantly, these authors could have, consistent with many of the other studies, just claimed in abstract that it is important to look at heterogeneous effects because students of color are less likely to enter computer science programs. However, this simple explanation might have left readers to their own conclusions about *why* these differences exist. Many of these conclusions might reinforce existing essentialist narratives, but by being explicit about their understanding of race in this study, these authors are possibly able to mitigate that interpretation.

Purely methodological explanations. In terms of the least detailed explanation, which some might hesitate to classify as an explanation at all, about a quarter of the articles used explanations of modeling race that were simple explanations of what statistical methods do. Most common among these examples were studies that included race as a control variable (among other variables) and simply explained that these controls were included to either (a) account for confounding factors or (b) improve the precision of estimates. These explanations sometimes

included that exact language (e.g., “to improve the precision of the treatment effect”), and sometimes would go a slight step further to say that the reason the estimation would improve is because race (often grouped with other demographic variables) is potentially related to the other variables of interest. As one article put it, “Many characteristics of children and their families are likely correlated with both mathematics achievement and kindergarten classrooms. Thus, we control for child race and ethnicity, age, sex, overall health, birth weight, whether the child was premature, and type of preschool care.” Though much less common, several studies justified racial interaction effects or subgroup analyses by simply identifying that the purpose is to observe heterogeneity in treatment effect estimates.

Arguably, these reasons are inherent to the methods involved, hence the hesitation noted above to classify this as an explanation. Is saying “We controlled for race to improve the model” adding any additional information to a reader’s understanding of the reason for including race if they already understood what a control variable does in a statistical model? While there may be a simple benefit for readers without quantitative methods knowledge to interpret what “control for” or “interaction effect” means, we would argue that even methodologically, these cases do not necessarily constitute effective pedagogy for why controlling for any variable is important. While those studies that note that the reason that controlling for these factors is important *because* of possible correlations with other variables of interest might be getting slightly closer in terms of methodological clarity, for our argument, they may simply be establishing that there is a relationship with race and other variables with no explicit reason given, nor any cited link to other studies that would provide context for the curious reader.

Citing extant research/evidence. The most common explanation (in about half of the articles) given for why race was included in a model is because of the presumption, cited or

otherwise, that race is important to account for. Some of these explanations cited prior research, highlighting existing literature establishing the importance of controlling for race. These explanations ranged in the depth of explanation. On the lower end in terms of depth were articles largely just claiming that the inclusion of race is justified for uncited theoretical reasons, for example: "We also adjusted for a theoretically relevant set of child-, household-, teacher-, and classroom-level variables. Child and household factors include: child gender, child race/ethnicity…" In another example, the authors wrote, "To improve the precision of our estimates, we included student-level, time-invariant covariates that prior research has shown to be associated with student math achievement at the start of first grade, including gender, minority status…", where this reference to prior research was not cited. In other instances, reference was made to other researchers largely to justify the inclusion of race as something that is expected, as in the following case:[16] "Child (i.e., race, gender, parent years of education) and teacher (i.e., age, years of education, years of experience teaching pre-k, race) demographic variables that are commonly used as covariates in developmental and educational research [citations] were included in our models to improve the precision of the estimate of the treatment effect [citation]." These examples seem to rely on the expected social norms of the field that race is important to account for in the study, but do not seem to engage with why.

Often, these explanations would indeed include a more direct statement about the role of race that cited other studies. Almost always, that explanation would simply be a statement that there is extant research identifying racial differences in relevant variables, as in the following: "National educational indicators continue to show significant racial and ethnic disparities in outcomes [citation] despite decades of reforms aimed at narrowing them. Because of the

[16] Actual citations containing individuals' names are not included here for similar reasons as the choice not to cite source papers in this section.

importance of student race as a predictor of outcomes, the study controlled for student racial background." Notably, given the already-established (though possibly concerning) rationale of Holland (1986) we reviewed earlier, some articles would use words like "predict" or "affect." One article, in explaining why factors such as race and gender were accounted for, said, "status attainment theory suggests that these characteristics significantly affect individuals' development of advanced educational aspirations [citations]." Another, in explaining the inclusion of the same variables, referenced that these variables "likely predict persistence at community colleges and, for those placed into [developmental education], progress through the full remedial sequence [citations]." In these cases, the authors functionally delegated the responsibility for explaining the statistical relationships between race and other variables to source articles.

The examples above were for the inclusion of race as a control variable; similar explanations appeared for the use of race as a moderating variable. One study that included a racial interaction effect to assess heterogeneous treatment effects by race explained in their paper (uncited), "From the Coleman report, through the Catholic school research, and up to private school voucher studies, there is a consistent strand of evidence that suggests that Black and disadvantaged students tend to benefit more from school choice and private schooling." Similarly, another that conducted subgroup analyses using race wrote, "[citation] further report that Black and Latinx students experience significantly more positive (less negative) achievement effects from [source school choice program] than do white participants." Again, the authors here mostly justify their use of race on the basis that previous research has identified differences in treatment effects across racial groups, but without an explanation of why.

Finally, a common feature of non-experimental effectiveness articles is for there to be a pre-analysis *before* the effect estimate about the extent to which access to/uptake of treatment

differs across racial groups. In other words, authors will often have a *first* research question predicting who does or does not get treatment. Then, having established that there is a difference, these articles justify their inclusion of race as a control variable based on this preliminary investigation of their data. For example, one paper accounted for race in their identification strategy when estimating treatment effects, informed by a prior analysis where they had found that "females and Black students in middle and high school are more likely to register for [treatment], whereas White and Asian students and Hispanic students in high school are less likely to register for [treatment]." Another identified in their analysis that "on average, [treatment participants] are more likely to be female, more likely to be Black (as opposed to White)..." Whether that prior analysis was framed as substantively interesting as a research question varied, where the first example above explicitly included differential treatment access as a topic of interest and the second did not. However, in both cases, the explanation of why there would be a relationship between race and treatment participation was not thoroughly explored in the text.

What is particularly concerning about the prevalence of this kind of justification is that they make explicit racial differences, but often treat these differences as inherent to our social context. Similar to the arguments made in the "achievement gap" language dialogue (e.g., Carey, 2014; Ladson-Billings, 2006), these justifications simply highlight for readers that racial differences exist, but do not provide any contextualization to combat potentially essentialist interpretations of why those racial differences exist. We, as a team, had different perspectives on how these cases compared, in terms of critical praxis, to not having any explanation at all. Whether this might be "better" or "worse" than not providing any explanation is likely a function of what we imagine readers are understanding when there is no explanation at all. Is it better to leave unaffected a casual reader's ideas, concerning as they may be, about what race means by

not addressing those ideas at all? Does explicitly naming that existing research and theory establish that race is associated with other variables challenge those ideas, or does it simply provide another instance in which we are reifying racial essentialism without any narrative to counter that interpretation?

Neither of these options–saying nothing or saying something superficial–seems particularly palatable in an ethic where we are trying to actively shift discourse about race to be more critical. These cases are prime examples of the kind of discursive trends we would like to advocate for change.

Perspective and Future Directions

Earlier in this paper, we argued that the perspective of some that race should not be called a "cause" may inspire essentialist thinking about race because the given reasoning chooses not to engage with the question of what race is and how it operates. Our argument here is not that race *should* be called a "cause," but rather that the explanation of *why* race should not be considered a cause is not critically oriented. A better argument for not calling race a cause may simply be that doing so–given the discursive power of the word "cause" regardless of our scientific understanding of the term–might reinforce racial ideologies to which we are morally opposed and strategically trying to resist to dismantle racism. This example is only one case whereby not engaging explicitly with racial theory, we miss the opportunity to engage with social insights that could not only enhance the quality of quantitative work but also contribute to social change through taking responsibility for the discourse that quantitative research creates. To summarize the main arguments we have made here:

- Making space for explicitly explaining the theory of *why* race should matter in a given statistical model is important in the current world in which we live.
- The deductive use of race in quantitative effectiveness study may be reasonable, but the reasonableness of that choice can only be assessed via racial theory.
- There is not one universally applicable racial theory, and the racial theories explained in quantitative research should be developed/explained in the context of the specific studies and analyses in which race is being used.
- Quantitative practitioners have largely neglected the articulation of clear racial theories justifying the use of race in statistical models.

One pedagogical priority we have here is to *not* provide readers with a specific how-to list about how to do critical quantitative communication. First, we avoid the presumption that there is a "correct" choice for how to understand and explain race in any given situation, as "correctness" would reemphasize the idea of quantitative science as having authoritative "rights" and "wrongs," which would violate our emphasis on quantitative practitioners as having the agency to make choices that are aligned with values.

Second, practically speaking, we understand that while we would like to see increased engagement with racial theory in the field, it is unlikely that *every* space in which quantitative research is discussed will be able to expand on this theory, and the context within which it is important to explain this theory will also shift for different individuals, at different times, for different audiences.[17] *Do you* explain the racial theory if accounting for race via an individual-level fixed effect in a dataset where, regardless of your understanding of the social construction

[17] Relatedly, *other* social constructions may need expansion in other circumstances. One might argue, for example, that in the case of quantitative research about the experiences of transgender students that engagement with gender theory is equally important given the role of binary gender ideologies in movements to restrict rights for transgender girls in schools (as we are finding in parallel work in our research ground).

of race, the coded racial identities of all participants are invariant over the time period of the study? *Do you* explain the racial theory when presenting the research in the context of a research meeting where the participants are predominantly critical scholars? *Do you* explain the racial theory in a study where you only used race in assessing balance across experimental conditions but not actually in the model? We cannot give authoritative "yes" or "no" answers to these questions, but are more so arguing that the asking of the question itself is an important step towards normalizing more critical racial ideologies in research. We aim to provide individuals with a set of considerations that should be engaged as they conduct quantitative work. We want people to be more thoughtful and engage with the question of how, as practitioners, they are engaged in the work to disempower essentialist racial ideologies.

It may be reasonable, at times, to make a well-justified decision to not invoke racial theory. However, if it is the case that across the portfolio of someone's ongoing research work, there is seldom any engagement with racial theory despite consistent use of race, we argue this predilection towards skipping that explanation contributes to the dearth of racial theory in quantitative methods as a whole. In other words, if someone decides in a specific instance to not talk about racial theory, that might be okay. But if they *never* engage in that discussion, some time for personal reflection and commitment to habit change is warranted.

To that end, we think that providing people with a set of reflective questions to consider when doing quantitative communication in effectiveness research will enable more thoughtful choices. In resisting the traditional, authoritative way in which quantitative methods are often taught, we hope that the lessons here become informative for people's reflection and practice in such a way that they will be able to apply these understandings to different contexts. The focus on effectiveness research is important here, as we would likely propose a modified set of

considerations for studies in which race *is* a central variable under study. Here are some important questions that quantitative practitioners should be able to answer if they are going to use race as a variable in a quantitative effectiveness study.

- If using race as a control variable (whether it is an experimental research design or not), what is my theory of action for why race would be related to my outcome of interest and/or my independent variable of interest? What are the *structurally-based* reasons why a race variable would capture variation (statistically speaking) in these variables?
- If using race to assess heterogeneous treatment effects, what is my theory of action why race would be related to the effect of the treatment? What are the *structurally-based* reasons why people labeled in the different racial categories would respond differently (again, statistically speaking) to the treatment?
- What construction of race is relevant for the racial theory I am using for *why* race matters in this study?
- Are the racial categories (both in terms of the categories used as well as how the categories were captured in the data collection) I have in my data usefully narrating the construction of race that is in my racial theory?

In all of the questions above, we are using "structurally based" to refer to those explanations that, even if they have direct implications for individual thought and behavior, are grounded in an explanation of how those individual experiences and actions are in a relationship with broader social and political systems that have constructed how race operates.

Finally, once the work to theorize race in the study is complete, we offer the following reflection questions for communication.

- By not explaining why race matters, but including race and therefore asserting that it does matter without explanation, what harmful ideologies might I be reinforcing?
- While I cannot avoid every harmful interpretation, what can I do to mitigate the chance that someone with essentialist ideologies about race (conscious or not) might misinterpret my use of race as supporting that ideology?

It would be remiss of us to ignore, in a critically-oriented argument, the structural constraints on quantitative practitioners to do the work we propose here. While the ultimate answer to many of these constraints may include some mixture of tenacity and collective action, we spend the remainder of this paper offering our thoughts on some major categories of constraints that may feel troubling to readers.

Time and space. First, pedagogically, there are real time barriers, combined with market pressures increasing the expectations of new doctoral graduates, that limit the amount people can realistically learn in coursework. Hernández (2015) argues that doing critical quantitative work well requires *both* strong quantitative skills to be able to understand one's options as well as strong critical theory knowledge, a task that may feel daunting for developers of graduate curricula. How can, for example, a quantitatively-oriented doctoral student be expected to learn over five years enough quantitative methods to be fully creative, enough racial theory to be fully versed in critical praxis, enough content knowledge in their field of study to accomplish a dissertation, and enough baseline content knowledge in other fields to be able to contribute to the field as a whole. Indeed, the increasing expectations of graduates and entry-level quantitative analysts contribute to this anxiety. There is some important collective work that those with power over curricula and quantitative workforce management need to do to ensure our increasing expectations do not outstrip realistic educational capacity, and organizations need to do better to

treat expertise as evolving and allow space for people to continuously grow. However, also, understanding that the goal of being a "perfect" critical quantitative scholar is not as tenable as the goal of always making the time to engage in personal growth and reflection is an important substrate of our argument.

Second, the constraints on space and word count in academic writing in a world where authors often struggle to find places to *remove* details are real, which may dissuade many from including articulation of racial theory. Some journals with more lax length requirements, like JREE (which as of this writing does not have a word count limit) may serve as models for how to address this issue, but there are still likely limits to how much information can be presented in a paper. Especially as people become more accustomed to reading on computers and digital devices, opportunities to use more creative and dynamic publication formats may also present themselves. Finally, publication and editorial boards themselves should engage in collective work to identify options for authors to include nuance when needed. We argue that individuals need not necessarily wait for this change, however. In the articles we read, we found little to no expanded discussions of racial theory, but quite a lot of airtime dedicated to explaining propensity score matching and other identification strategies, showing formulas estimating models that authors had already explained in the text, and tables and figures presenting sometimes redundant information. A major component of our argument here is that including those details is a choice, and a choice *could* be made to reduce, in the main body of articles, detail in those elements and increase detail in substantive elements that are more likely to be impactful for readers' interpretations and understood social implications, such as racial theory.

Secondary data. In addition, the obvious rebuttal to much of the above, especially as our argument affects the *measurement* of race as determined in data collection processes, is that

many quantitative studies make use of secondary data over which the practitioners themselves have little to no control over how the data was collected. This is especially true for effectiveness research, which often makes use of student and teacher-level data drawn from administrative data collections by institutions, districts, and states. On immediate practical grounds, we agree: When an analysis is based at least somewhat on human choices not directly under the analyst's control (as is also the case in meta-analysis), there are fewer directly methodological benefits to engaging with racial theory because, for the modeling itself, there are fewer things that the author can do. Maybe the author does have a clear racial theory that would, for example, necessitate identifying Asian participants differently as a function of diverse immigration histories. If the dataset does not include this information or disaggregate Asian individuals, what is the data analyst supposed to do?

The answer to this question should be the same as any other question regarding a data limitation: quantitative practitioners should talk about it and be transparent. First, that the data does *not* effectively capture race as aligned with a practitioner's racial theory is an important methodological note, as this mismatch is essentially a measurement error that should be made transparent to the reader. Second, to what extent are administrative data collections the way that they are *because* we as quantitative practitioners just take them as given and never engage in a consistent critique of their measurement? These data collections are created by people situated in institutions and networks *of which many of us are a part*. Many large-scale data collections involve, at a certain point, engagement with quantitative practitioners to request feedback. However, the tacit acceptance of secondary racial data as it exists now that results from our silence on the matter seems, at best, unhelpful. Of course, administrative data collections cannot practically be tailored to every kind of racial theory that data users might want to use (which also

raises the need for practitioners to become more comfortable with collecting their own data on occasion), but the consistent engagement of us as a quantitative field in these questions may contribute to holistic, continuous improvement like that aspired toward by Viano and Baker (2020).

Sociopolitical pressures. It is important to keep in mind that the production of this research exists in the context of a world in general that resists taking the time to be attentive to thorough racial theory. Several of the epistemological values raised in this paper are directly consistent with the critiques of those advocating for bans on teaching critical race theory, including rejection of objectivity and a persistent focus on race as relevant to life circumstances (e.g., Butcher & Gonzalez, 2020; Hess, 2021). While on one hand, we might argue that if anything, our presentation of race as not being unidimensional should assuage the stated (though, notably, misinformed) fears of critics that critical perspectives enforce a unified understanding of race, we also understand that the more salient barrier to this work for QuantCrit scholars is the ideological strand that opposes talking about race explicitly. To this, we cannot claim to have the answer, though organizations and initiatives like American University's *Summer Institute on Education Equity and Justice*,[18] the *Just Education Policy* institute,[19] or George Mason's *Revolutionizing Research for Social Change* workshop[20] are hopefully creating more spaces for people to tackle these questions directly. What we can offer is that this work requires not only intellectual commitment but also courage, and engagement with like-minded others in the community who can be mutually supportive of this kind of work.

[18] Website: https://www.american.edu/soe/summer.cfm

[19] Website: https://www.justeducationpolicy.org/

[20] Website: https://cssr.gmu.edu/initiatives/revolutionizing-research-for-social-change-workshop

That said, we take care to emphasize that transformation *also* requires the active work of those in positions of power to create more hospitable working environments for engagement with serious questions about race. As noted by Davis and Saunders (2022), “This is to say that the critical agenda should not be located solely within scholarly research, and there is much to be done in classrooms, professional associations, `promotion and tenure committees, and other faculty/research work that can support the goals of criticality" (p. 53). The institutions within which quantitative research is conducted, and the *people* with the current power to contribute to that change more rapidly, have a responsibility for enabling criticality in the face of a world that seeks to discourage it both explicitly and implicitly.

Finally, it would be irresponsible for us to treat the decisions about *how* to use race in study purely as what might seem like technical considerations about the explanation for race’s statistical relevance in a study. In particular, there are *other* pro-justice political considerations to keep in mind when deciding how to use race in a study and explain theory. For example, a sociolegal perspective on race that identifies that the effects of the traditional grouping of Asian Americans and Pacific Islanders under one panethnic label in the Census might justify the use of this category in data analysis. However, how would this choice perhaps violate the desires for self-determination of Pacific Islanders, who have long advocated for being labeled as separate to recognize the history of their racialization as importantly unique relative to many other racial groups (Perez, 2002)? How could the choice of one racial theory, and the communication of that theory in text, sometimes conflict with how a particular social group has been advocating for the dismantling and reconstruction of their identity? We argue that the considerations and questions we raise in this paper are important *alongside* those other considerations as we continuously deliberate about what choices make sense in a given moment.

There is no "answer" for how we can always make the "correct" choice. There are only modes of thought, reflection, and dialogue that permit us the deliberative space to ensure that our actions are informed by values. In this paper, a value we have proposed adding to the table is clear attention to racial theory and deeper engagement with how race operates. This value, we hope, will lead to not only more sound methodological choices with stronger theoretical justifications for certain operationalizations and uses of race, but also to the development of a normal discourse that rejects essentialist constructions of race in favor of a common sense understanding of race as dynamic and subject to our collective imaginations.

Positionality Statements

Richard Blissett

My primary engagement with quantitative work has been a series of conveniences, ranging from an early affinity for "technical" work, to undergraduate study in bioinformatics as a result of a light suggestion from a program recruiter, to heavy engagement in quantitative coursework in a graduate program that prioritized quantitative methods. As such, I have long been steeped in quantitative work, but developed concerns in graduate school as taken-for-granted ways of talking about social data felt inconsistent with my lived experience. Being consistently told that race is "immutable" felt particularly discordant. As someone whose mother is Chinese and whose father is Jamaican, I was aware that according to the United States government, my race had changed over my lifespan as a function of the labels that agencies used to identify racial categories, where I went from being classified as "Other" to "Asian" to "Black" to "Multiracial" to "More than Two Races" across institutions. Further, as someone whose ethnic makeup is not immediately obvious to others, I was fully aware that how people treated me was a

function of what race they *thought* I was, regardless of my identity. My experience as a racialized person was very distinct from the experiences of family members on both sides of my family, making it obvious to me that race and culture and heritage were different concepts. That within my own life, it was so easy to observe the multi-sourced construction of race made it all the more difficult to understand why the concept of race as complex and multifaceted seemed foreign to quantitative thinking.

As such, the mismatch between my quantitative education and my own life experiences planted a seed of doubt. However, I have been fortunate to have had, in my STEM and quantitative methods journey, clear examples of teachers who discussed the social construction of knowledge via quantitative methods. My first conversation about the construction of human sexuality, deeply validating to me as a queer teenager, was prompted by a high school biology teacher. My first exposure to the construction of medical diagnosis was via a college genetics professor, which helped me navigate my resistance to my initial depression diagnosis. While I was advocating for increased awareness of racism in graduate school, I found great value in a discussion by my latent class and mixture modeling professor about the construction of social categories like race. As such, this work stems from both my concerns about traditional quantitative thinking and my faith in the potential of a better quantitative paradigm as a function of having seen better examples in my life.

Shuyang Wang

I was born and raised in a northern mid-sized city in China. I did not remember having a "racial identity" until I moved to the U.S. for college and graduate school. I went to elite, private institutions in the south where I was exposed to a majority white environment. Being Asian and

an international student at the same time makes it hard to attribute any feelings of "otherness" to one cause. I began to learn and understand "race" as a social construct, and developed a "racial identity" and what that carries in the U.S. society. It was not until my doctoral training at UGA that I developed a more elaborate understanding of race, race theories, racialized systems, and broader inequities in society.

Prior to starting working on this project, I felt uncomfortable with studies in education where they use causal language to discuss results related to racial differences. I also did not fully understand why we default to controlling for race in our statistical models, but mostly followed what is "typically done" in our field. Getting to know the field of QuantCrit helped me put my uneasiness into a more conscious understanding and I felt that it is a systematic framework of knowing the limitations of statistics, measurement, and quantitative work in general. As a graduate student, I find working on this project to be tremendously helpful in challenging my own ignorance and laziness and feeling more empowered to engage in quantitative research in a more conscious way.

Roberto Ortiz

Despite growing up in a predominantly Latinx city in the South, racial and ethnic classifications were treated as inconsequential throughout my public school education; it was something never discussed outside of the home. As a result, I grew up with an aversion to publicly acknowledging my own background as a second-generation Mexican immigrant. However, following my own ethnoracial consciousness awakening during the Black Lives Matter movement in the summer of 2020, I became interested in research on race and ethnicity. Notably, this was one of the first projects I had the opportunity to work on.

Prior to engaging in this work, I had never critically considered or questioned why studies accounted for or controlled for race; it had simply been written off as "good practice," something you just had to do. However, once I began this work, the necessity for providing robust justifications for methodological decisions regarding race and providing robust explanations for statistical significance among racial/ethnic groups became clear. In other words, why do you believe it is important to account for race in your study? Based on your answer to the first question, how might you explain statistically significant differences across racial/ethnic groups in ways that are in line with your answer to the first question? Ultimately, what I've deduced is that by hand-waving off these two important questions, one ignores the systemic factors that have produced differences among racial/ethnic groups in the first place. It is this very hand-waving that produces and reifies the race-averse logic that I was indoctrinated into growing up, making me believe my background was inconsequential. Notably, I wish to acknowledge that the hand-waving process that I describe is a process that many of us, including myself, are trained to engage in, in our quantitative training. However, just because we are trained in a particular sort of way does not absolve us from our duty as researchers, particularly those of us interested in social justice, to adopt new methodologies and ways of thinking as they become available to us.

Daniel Schultz

I am a White American and for the majority of my childhood, I thought little of my race. In my elementary and middle school classes we discussed the Civil Rights Movement as the end of racism within the United States, and often my peers as well as my teachers would encourage us to disregard race in our daily lives. However, during my time in high school, I began to look

at my race through a material lens, speculating on my privileges and the ways in which my race may have played a role in getting extracurricular and professional positions, whether through my access to resources or employer biases. Since then, I have conceptualized my race, as well as race in general, within the broader context of institutional and historical positionality. I feel that everyone's connection to resources, community, ideas, and society stems from a vast web of branches determined by historical events, institutional pressures, and present day values. This perspective, I believe, was created through my observation of the immensity of social and material capital available to myself and others in my predominantly white community.

I became familiar with quantitative methods through my introductory statistics course in college, at which point I understood it simply as numerical data. Participating in research and continuing my coursework in statistics, I learned more about the technical aspects of quantitative data, its construction, implementation, and analysis serving to track a known phenomenon through a set numerical means. However, one of the most formative realizations in my study of quantitative methodology has been understanding its purpose and role within scientific study. Having primarily worked on mixed-methods projects, I often felt I needed to be particularly intentional and aware when designing quantitative study structures as its framework shaped the data we received. Without intentional and thorough consideration as to the quantitative methods I implement, I feel that I not only risk missing significant observational variance, but risk misconstruing my topic of study. Because of my upbringing in quantitative methods, I feel that my work in quantitative methods should always be highly catered and thoughtful, capturing precise data and focusing my analysis and conclusions exclusively on the reach of such data.

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