



# Anti-racist Quantitative Research: Developing, Validating, and Implementing Racialized Teaching Efficacy and Racial Fragility Scales

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## Abstract

This research article reports on the initial findings of a critical quantitative study, which developed and implemented a series of quantitative scales utilizing conceptualizations of racial fragility and anti-racist teacher self-efficacy scales. The scales were administered through a survey and yielded a usable sample of 4770 teachers in Missouri. Specifically, we address the scale development process, theoretical framework, and validation of the developed scales. The process analyzes the Racial Fragility Scale and the Racialized Teaching Efficacy Scale across teacher demographics. Ultimately, this project seeks to better articulate the nuances of non-racist, colorblind teaching in pursuit of moving the field toward an agentic, anti-racist stance in classrooms.

**Keywords** Critical quantitative research · White fragility · Anti-racist teaching · Racial Fragility Scale (RFS) · Racialized Teaching Efficacy Scale (RTES)

## Introduction

Despite recent publicity surrounding white supremacy (Kohli et al. 2017; Matias and Newlove 2017), colorblind perspectives still shape understandings of race and racism within educational contexts. Colorblindness refers to a racism that shields white privilege and deploys justifications for racial inequality that distance white people from blame or responsibility while placing it solely on the shoulders of people of color (Bonilla-Silva 2010). Bonilla-Silva (2010) identified four intertwining frames used to minimize and avoid acknowledging contemporary iterations of racism and white supremacy that include abstract liberalism, naturalization, cultural racism, and the minimization of racism. Jayakumar and Adamian (2016, 2017)

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further developed this conceptualization by adding a fifth frame of the construct, the disconnected power-analysis frame. This view expanded understandings of colorblindness by attending to the ways white individuals connect themselves to racially progressive ideas, while simultaneously avoiding acknowledgement of the ways their own positionality, histories, experiences, or actions are shaped by whiteness. Bonilla-Silva (2010) warned that colorblindness has co-opted the language of culturally responsiveness, equity, diversity, and inclusion to support efforts that lead to more harm than good for communities of color (Leonardo 2009; Picower and Mayorga 2015; Sleeter 2011). As a result, teachers too often enact pedagogical approaches rife with deficit perceptions of students and their abilities, as well as a general sense of ignorance in terms of the nature of systemic oppression within educational contexts.

Based on these perspectives, this article details the development of two psychometric scales designed to provide insight into teachers' perceptions of confidence related to enacting pedagogies that directly challenge colorblind ideology as well as the barriers prohibiting them from enacting such approaches. First, these include measures examining teachers' discomfort with race-based interactions, utilizing concepts of *white fragility* (DiAngelo 2011, 2018). This Racial Fragility Scale (RFS) was designed to assess feelings of (dis)comfort associated with the six factors that contribute to white fragility (e.g., segregation, universalism and individualism, entitlement to racial comfort, racial arrogance, racial belonging, and psychic freedom). Secondly, we developed two-components to create the Racial Teaching Efficacy (RTES) scale that attends to teachers' feelings of efficacy relating to non-racist and anti-racist teaching, which were designed to be used in conjunction with Siwatu's Culturally Responsive Teaching Self-Efficacy Scale. The emergent three factor, Racialized Teaching Efficacy Scale (RTES) adds to the immense research conducted with Siwatu's (2007) scale to more directly examine teachers' feelings of confidence critically addressing issues related to race/ism in the classroom.

The creation of these scales has the potential to contribute to the scholarship of equitable teaching practices in urban education in a variety of ways. Firstly, building on Siwatu's (2007) Culturally Responsive Teaching Self-Efficacy scale by adding non-racist and anti-racist teaching self-efficacy subscales, the Racialized Teaching Efficacy Scale creates additional opportunities for more nuanced research in the future. Secondly, the creation of the scales based on the framework of DiAngelo's (2011, 2018) *white fragility* has the potential to provide empirical analysis of a popular conceptualization. DiAngelo's work has become common in undergraduate and masters education courses as a tool for anti-racist pedagogy, however the concept is under explored in the academic literature, specifically in the preparation of teachers for urban contexts. The creation of the Racial Fragility Scale can help educators understand complex questions including the efficacy of teacher education courses focused on promoting anti-racist perspectives of teaching. The scales presented here may be useful for challenging pre-service and in-service teachers' ethnocentric approaches toward urban education (Middleton 2002). Finally, the creation of these scales could provide a powerful heuristic for educators. These items could be introduced in conjunction with the aforementioned text describing white fragility or Matias and Mackey's (2016) frame of critical whiteness pedagogy. Teacher

educators or professional development specialist could use these items to drive conversations aimed at improving equity-based instruction within urban classrooms.

### **Quantitative Research and Critical Theories of Race**

The measures developed within this study rely on critical theories of race, white fragility, and anti-racist pedagogy (Bonilla-Silva 2010; DiAngelo 2011; King and Chandler 2016; Leonardo 2009; Pollock 2008; Sefa Dei 1995; Thompson 2003). Scholars considering the intersections of these theories and quantitative research often challenge paradigms of positivistic, empirical-analytic, or objectivist research strongly influenced by whiteness (Bonilla-Silva and Zuberi 2008; Garcia et al. 2018; Guiliano 2011; Westmarland 2001). With these issues in mind we reviewed literature to understand how to effectively use critical theories of race to inform quantitative analysis (Covarrubias and Velez 2013; Gillborn et al. 2018; Stage 2007; Walter and Anderson 2013). These works include conceptualizations of critical quantitative intersectionality (Covarrubias and Velez 2013), Indigenous statistics (Walter and Anderson 2013), “QuantCrit” (Lopez et al. 2017; Solorzano and Ornelas 2002; Solorzano and Villalpando 1998), critical race theory (Sablan 2019), and the use of intersectionality within quantitative methods (Solorzano et al. 2005; Zuberi 2001) offer evidence of successful pairings of quantitative methods and critical approaches to race and racism.

Just as Gillborn et al. (2018) articulated a series of principles to guide work that draws on critical race theory and quantitative methods, also known as QuantCrit, we feel it necessary to detail our understandings toward approaching this project. Foundationally, we consider racism to be a multifaceted system of oppression that influences both individuals and institutions in myriad ways. Research examining its construction and seeking its destruction should vary and embody multiple approaches, theoretical frameworks, and methodologies. Certainly, researchers drawing upon qualitative, quantitative, and mixed methods approaches, from a variety of epistemological and theoretical standpoints, have all successfully pushed the field forward through critique and examination. This study does not seek to privilege one approach over another, rather in pursuit of generating more complex understandings, we draw on methods typically associated with quantitative analysis through a framework informed by critical theory, commonly associated with qualitative research.

We are also cognizant that as authors that identify as white, we have been shaped by whiteness and this background and ideology informed the construction of items in the project. For Knowles, a white, straight man, and Hawkman, a white, queer woman, we acknowledge our identities have been shaped by whiteness differently—affording us varying levels of personal and institutional privilege. To push beyond the constraints of whiteness we consulted outside scholars whose work attends to the complications of race, racism, and whiteness as well as relevant literature on critical quantitative scholarship, critical theories of race, and the influence of whiteness in educational research throughout study design, survey implementation, and data analysis (Covarrubias and Velez 2013; Matias 2013; Stage 2007; Thompson 1997, 1999). We acknowledge that promoting an anti-racist, anti-white supremacist,

anti-oppressive, paradigm within education represents our primary motivation. Quantitative research can, and should, provide a useful tool to add new findings and perspectives related to this goal. With this in mind we seek to work “with/against numbers by engaging with statistics as a fully social aspect of how race/ism is constantly made and legitimated in society” (Gillborn et al. 2018, p. 17). Based on these criteria and our understanding of critical theories of race and statistical analysis, we sought to develop a research project to better understand how teachers’ values regarding race and racism manifest within the classroom.

### **Racialized Teaching Efficacy and Racial Fragility Scale Development**

To develop the series of scales to evaluate how teachers’ perspectives of race and racism manifest in the classroom, we first reviewed a variety of publications that demonstrated examples of scale development and survey construction (Boudreaux et al. 2018; Cabrera-Nguyen 2010; Lounsbury et al. 2006; Marszalek et al. 2017; Nytingnes et al. 2018; Piazza and Siebert 2008; Siwatu 2007; Worthington and Whittaker 2006). Of these publications, DeVellis’s (2012) model represented the most comprehensive and complete model of the scale development process. Based on these reviews, we followed the six steps put forth by DeVellis: (1) clarify the measure, (2) generate item pool, (3) determine the format of the measure, (4) expert review, (5) administer items to a development sample, (6) inclusion of validation items, (7) evaluate the items. Gehlbach and Brinkworth (2011) also recommendations for establishing scale development that place more explicit focus on the initial literature review, focus group and interviews, expert review, and cognitive pre-test. With these approaches in mind, we outline the scale development and conduct statistical analysis to explore the efficacy and fragility scales along with their relation to teacher context and demographic measures.

As suggested by DeVellis (2012) and Gehlbach and Brinkworth (2011) we solicited feedback at various stages in the scale development. Upon completing the review of literature and defining our constructs, we consulted with an expert of multicultural and critical theories in education to co-develop an initial list of survey items. Subsequently, we conducted six individual interviews with established scholars with familiarity with critical theory and/or quantitative research methods in addition to current and aspiring teachers. Next, we held a panel discussion with seven pre-service teachers, and individual meetings with two practicing teachers, to assess items for readability and connection to teacher practices. Based on these reviews we constructed our survey instrument which was reviewed by three researchers with familiarity with quantitative research methods and offered additional feedback on the completed survey. The survey was sent to pre-service teachers at the University of Missouri whom served as the developmental sample to test for the initial reliability of the items and troubleshoot any issues.

Through the development process, we created two subscales which add to Siwatu’s (2007) culturally relevant teaching efficacy inventory. Adding the two scales, non-racist and anti-racist, formed the Racialized Teaching Efficacy Scale. Adding the two sub-scales to Siwatu’s (2007) model allows for a multi-dimensional

exploration of teacher pedagogy not previously possible. Finally, we drew upon DiAngelo's (2011, 2018) scholarship on white fragility to develop a Racial Fragility Scale that may provide further context teachers' sensitivities to race and racism.

### **Racialized Teaching Efficacy Scale (RTES)**

In the mid-1990s and early 2000s, culturally responsive pedagogy was developed to promote more just and equitable schools (Ladson-Billings 1995b). In 2007, Siwatu developed Culturally Responsive Teacher Efficacy Scale and Culturally Responsive and Culturally Responsive Teaching Outcome Expectancy Scales to assess teachers' feelings of confidence related to culturally responsive teaching. These scales have been used in a variety of studies with important findings. For example, Leonard et al. (2018) used these scales to assess efforts to prepare teachers to engage rural students in STEM education in a manner that is culturally relevant to them. Additionally, Chu (2011) utilized Siwatu's scales focusing specifically on special education teacher. While Siwatu's work provided a useful framework, other scholars have worked to broaden the focus of the scale with new iterations. Fitchett et al. (2012) found that a social studies course focusing on multicultural content increased pre-service students' efficacy regarding culturally responsive pedagogy. Nadelson et al. (2012) developed the Multicultural Efficacy Scale. Flores and Smith (2009) implemented the Language Attitude Scale designed to assess teachers' attitudes toward diversity. Finally, Wang et al. (2014) utilized the Cultural Diversity Awareness Inventory and the Color-Blind Racial Attitude scale. While substantial overlap exists between each of these scales, an important limitation is that each of them are unidimensional measures that fail to account for differing and competing understandings of teaching for equity.

Research on culturally responsive pedagogy has deepened and sharpened since the publication of Siwatu's work. More specifically, research has emerged concerning the claim that culturally responsive pedagogy has been implemented in conjunction with racially colorblind ideological perspectives which hinder their effectiveness. In some instances, this combination resulted in simplistic (Sleeter 2011), commonsensical (Leonardo 2009), harmful (Matias 2013), and neoliberal versions in return (Picower and Mayorga 2015; Paris and Alim 2014; Watkins 2012). This ideological position asserts that ignoring racial identity, stratification, or institutionalized discrimination will advance racial justice aims (Bonilla-Silva 2010; Hayes and Juarez 2009; Lander 2011). Colorblind ideology allows white teachers who want to seem like "good white people" to acknowledge problems with white supremacy in education without reflecting on its impact on their own lives (Hayes and Juarez 2009; Jayakumar and Adamian 2016, 2017). Further, this ideological position works as a shield from encountering feelings of white fragility (Jayakumar and Adamian 2017). The criticism that culturally relevant pedagogy has been coopted by colorblind ideologies, further warrants the creation of a multidimensional set of items.

King and Chandler (2016) articulated the presence of colorblind instructional approaches in their work detailing the divide between non-racist and anti-racist teaching, by asserting that non-racist teaching promotes "a racially liberal

approach to race that favors passive behaviors, discourses, and ideologies and that rejects extreme forms of racism. These aspects reduce the definition of racism to a microanalysis of the individual and to immoral and prejudiced behaviors” (p. 4). We contend, the use of language related to culturally responsive teaching to justify colorblind approaches necessitates the creation of new scales to clearly distinguish non-racist and anti-racist approaches to support the purpose of Siwatu’s (2007) culturally relevant teaching-self efficacy scale.

To clarify the measures of non-racist and anti-racist teaching self-efficacy, we reviewed theory and research related to critical whiteness and anti-racist pedagogy (Lewis 2004; Matias 2013; Matias et al. 2014; Pollock 2008; Thompson 1997). We then created short definitions for non-racist and anti-racist teaching self-efficacy, building on Siwatu’s (2007) scale. This builds on Siwatu’s Culturally Responsive Teaching Self-Efficacy Scale which combined the ideas of Bandura (1997) to promote more equitable teaching (Ladson-Billings 1995a, b). Based on these definitions the two authors separately created items that combined to be 50% more than the targeted final number. Subsequently, we held a series of meetings to analyze the items based on our definition and the academic literature to reduce and improve individual items. We then reviewed Siwatu’s (2007) scale and selected 10 items that had high factor loadings and fit closely with our other subscales. The final survey included five answer categories for each scale. For the RTES items we used the same language as Siwatu (2007) by including categories ranging from extremely confident to extremely not confident. Table 1 and the subsections that follow provide additional context related to the constructs utilized in this scale and also provide sample items related to each subscale.

### **Culturally Responsive Pedagogy**

Research on culturally responsive teaching demonstrates the value of educators believing that all students are capable of success, view their pedagogy as ever-changing, invest in the community, and utilize principles put forth by critical theorist Paulo Freire (Freire 2000; Ladson-Billings 1995b). Further, culturally responsive educators work to maintain fluid student–teacher relationships, connect with all learners, encourage collaboration and responsibility, while understanding that knowledge is to be viewed critically and ever-evolving (Ladson-Billings 1995a, b, 2004). Ladson-Billings (1995b) articulated several strategies deployed by teachers that utilize culturally responsive pedagogy. Simply stated, teachers that deploy culturally responsive pedagogy believe that all students are capable of academic success, demonstrate passion and a commitment to their students, and honor and build upon the knowledge that students possess. Culturally responsive teachers also encourage collaboration between students, the school, and the community and take a critical approach to both teaching and learning.

### **Non-racist Pedagogy**

Shaped by white commonsense (Leonardo 2009) or the belief that the experiences, knowledge, and understandings of white people are universally

**Table 1** Teaching self-efficacy scale description and sample items

*Prompt: consider your teaching, please rate how confident you are in your ability to engage in the following practices*

**Non-racist teaching**

Acknowledging that racism is problematic yet avoiding direct dialogue or teaching related to its continued institutional features, and rather focusing attention on individualized acts of overt racism

*Sample items:*

Teach all students the same regardless of their racial identity

Adopt a colorblind stance in the classroom

Look past racial differences to promote harmony in the classroom

**Culturally responsive teaching**

This scale used a shortened version of Siwatu's culturally responsive teaching self-efficacy scale. Decisions on which items to include were based on the factor loadings presented in Siwatu (2007)

*Sample items:*

Use the interests of my students to make learning meaningful to them

Obtain information regarding students' academic interests

Help students to develop positive relationships with their classmates

**Anti-racist teaching**

Actively challenging the persistent institutional and structural aspects of race/ism while seeking to expose white supremacy

*Sample items:*

Analyze the social construction of race and racism

Examine the influence of whiteness in your course curriculum

Address student anxiety about controversial racial issues

understood as “just making sense,” colorblind or non-racist teaching leaves little room for the contrasting experiences of people of color or their allies. This approach promotes teaching of racism that favors passiveness and individuality over an acknowledgement of the network of systemic racialized oppression that shapes society (Bonilla-Silva 2010; King and Chandler 2016). Teachers that embody non-racism are more likely to allow the persistence of white silence and avoidance in order to limit the discomfort often associated with racial dialogue (Mazzei 2008). This approach only addresses racialized issues at an individual level and avoids the larger institutional concern associated with the ideology of white supremacy. For example, any teacher might condemn the killing of Heather Heyer, a protestor run over by white supremacists in Charlottesville, Virginia in August 2017. However, a non-racist teacher would also opt out of addressing the lack of an institutional response on the part of local officials and police that permitted the events to occur in the first place or the reemerging centrality of white supremacist rhetoric in public and political discourse that created the environment welcoming of white nationalist rally at one of the United States most visible public universities (Matias and Newlove 2017).

## Anti-racist Pedagogy

Conversely, anti-racism calls educators to situate structural forms of racism and white supremacy at the forefront of study. Unlike non-racism, anti-racism is an active, intentional approach in the classroom that addresses the historic, contemporary, institutional, and systemic ways in which racism contributes to oppression (Sefa Dei 1995). A teacher embodying anti-racism challenges the assumptions of white privileges, deconstructs race relations, articulates the influence of whiteness and white supremacy, and seeks to actively reject all manifestations (both individual and institutional) of white supremacy (King and Chandler 2016; Sefa Dei 1995; Thompson 1997). More specifically, active anti-racism directly interrogates the persistence of systems of oppression through building students' sense of racial literacy (Mosely 2010). Further, anti-racist approaches include real-world solutions for future work both in and out of the classroom (Gillborn 1995; Pollock 2008). Therefore, from an anti-racist perspective, teachers would not only condemn the killing of Heather Heyer in 2017, but would address the structural factors that allowed the protests of the Ku Klux Klan to persist. An anti-racist teacher would condemn the systemic nature of racial violence and work with students to consider actionable items that could be enacted in their local community to address the continued influence of white supremacy and inaction on the part of law enforcement to project the lives of justice-oriented protesters in Charlottesville.

## Racial Fragility Scale (RFS)

The second scale is based upon a construct known as white fragility, which DiAngelo (2011) defined as, “a state in which even a minimum amount of racial stress becomes intolerable, triggering a range of defensive moves” (p. 54). Drawing on the work of scholars attending to race/ism within and beyond education (i.e., Dyer 1997; Feagin 2006; Fine 1997; Frankenberg et al. 2003; McIntosh 1988; Mills 1999; Morrison 1992; Sleeter 1993; Whitehead and Wittig 2005), DiAngelo (2011) noted that white fragility is the result of a lack of racial stamina that is embodied through the outward display of emotions such as “anger, fear, and guilt, and behaviors such as argumentation, silence, and leaving the stress-inducing situation” (p. 54). White fragility represents common reactions that many white people experience when exposed to issues of race and racism. DiAngelo (2011) posited six aspects that comprise white fragility in response to exposure to issues of race and racism (See Table 2). The six aspects of white fragility included segregation, universalism and individualism, entitlement to racial comfort, racial arrogance, racial belonging, and psychic freedom.

With this in mind, we developed a series of items that were then reduced to four per aspect of white fragility. Each of the six aspects of white fragility are briefly introduced in Table 2 along with sample items. Participants were asked to respond to a prompt based on how they would feel if talking to a friend, whom made statements about race. The responses indicate how comfortable or uncomfortable the conversation would make them. Our resulting racial white fragility scale represents



**Table 2** White fragility sample descriptions and sample items

*Prompt: imagine you are talking to a friend that says the following statements about race. Below indicate whether the situation would make you feel more or less comfortable than is to be expected in typical conversation*

**Segregation**

Because white people live primarily segregated lives in a white-dominated society, they receive little or no authentic information about racism and are thus unprepared to think about it critically or complexly

*Sample items:*

It's best to avoid being in a group of people that are racially different

I dislike listening to a person of a different race talk about racism

**Universalism and individualism**

The belief in objectivity, coupled with positioning white people as outside of culture (the norm for humanity), allows whites to view themselves as universal humans who can represent all of human experience

*Sample items:*

Through hard work and determination anyone can succeed

I see the person, not their color

**Entitlement to racial comfort**

White people are almost always racially comfortable and thus have developed unchallenged expectations to remain so

*Sample items:*

Talking about race only encourages racism

I feel anxious when people of color talk about race and racism

**Racial arrogance**

The concept that White ways of thinking, learning, knowing, and doing are seen as the status quo and norm. Whiteness is normal. Blackness is odd, different, or abnormal

*Sample items:*

Black people need to take responsibility for their own communities

Many people of color blame racism for their personal failures

**Racial belonging**

Due to the pervasive nature of Whiteness, White people are rarely aware of feelings of racial belonging, unlike people of color who tend to seek racial fellowship as respite from White supremacy

*Sample items:*

Why do Black people always hang out together?

I don't go to places where I am the minority

**Psychic freedom**

As the burden of race tends to fall upon the shoulders of people of color, White people have the freedom to opt in and out of dialogue and work related to challenging racism

*Sample items:*

If a school is 100% White, there is no need to learn about racism

Its best to rarely or never think about race and racism

From DiAngelo (2011)

an emotional reaction, often anxiety and discomfort, based on unexamined perspectives of race. The resulting scale assesses teachers' comfort with potentially contentious conversations around race based on conceptualizations of white fragility.

## Methods

After reviewing the related literature, interviewing teachers, and developing the initial items, we developed a survey instrument into a Qualtrics survey with demographic and school context items. Finally, the survey was sent to a developmental sample allowing the scales to be evaluated through statistical analysis.

### Data Collection and Analysis

To evaluate the developed scales, we procured a sample of elementary, middle, and high school teachers from the Department of Elementary and Secondary Education from Missouri. Of the 56,126 teachers sent emails, 6621 began the survey resulting in a response rate of 11.8%. While 4770 teachers completed all of the teaching efficacy items and 4555 completed all of the fragility items. The survey results were pulled from a meaningful sample of teachers from a list provided by the Department of Elementary and Secondary Education in Missouri, which contained every K-12 teacher in the state.

The survey was implemented Spring of 2016 in the wake of large protests in Ferguson (a suburb of St. Louis) following the killing of Michael Brown and on the campus of the University of Missouri in the subsequent months. Indeed, ideological conflicts over education are well documented in the state, making Missouri a good case for exploring teachers' views regarding race and racism (Cornbleth and Waugh 1995; Cuenca and Hawkman 2018; Placier et al. 2002; Wells and Crain 1997).

We utilized STATA 15 to conduct the statistical analysis to evaluate individual items, optimize scale length, and finally make comparisons with the validation items (DeVellis 2012). To accomplish this, we first conducted an exploratory factor analysis (EFA) to determine the underlying latent structure of the data. EFA groups the items together based on the underlying factor and provides factor loadings, which are the correlation between the individual items and the latent variable. This process is superior to the commonly used Cronbach's alpha, since it does not require the assumption of unidimensionality across items (Sijtsma 2009). In the first round of data analysis we entered all items for self-efficacy (30) and fragility (24) into the model. The number of factors was determined through the use of eigenvalues and a scree plot (Cattell 1966). After running the EFA six self-efficacy items and one fragility items failed to substantively load at the .45 cutoff indicating a lack of substantial correlation between those items and any latent factor. These items were removed, and the EFA was rerun with the remaining items and are displayed within the results section. The "Appendix" provides a table with these items grouped with the means and standard deviations provided. The second step was to conduct a confirmatory factor (CFA) analysis to verify the factor structure, which allows us to evaluate the model based on various fit indices that individually assess different aspects of the model. We evaluated our model based on the commonly used cutoffs of the comparative fit index (CFI) above .9, the cutoffs of the Root Mean Square Error of Approximation (RMSEA) below .01 for excellent, .05 for good, and .08 for mediocre fit

(MacCallum et al. 1996), and the Standardized Root Mean Square Residual (Standardized RMR) uses a cutoff of .08 for good fit (Hu and Bentler 1999). The CFA demonstrated good model fit and the results are located in the “Appendix”.

Finally, we compared the teacher context and demographic measures to their teaching self-efficacy and fragility. Given the critical nature of this study, we allowed teachers to self-identify via textbox to the items asking for their gender and racial identity. After the analysis, we went back and recoded the variables and analyzed the results with a large enough sample size. For gender, those responding male/boy/man/cisgender-male were coded “0” while those responding female/woman/girl/cisgender-female were coded “1”. 17 observations had responses that could not be coded in these categories, while none of these could be categorized into a coherent third category.<sup>1</sup> We also allowed the respondents to self-identify based on race and we recoded responses of white/Caucasian/European (3986) descent to be “0” and in ascending order had separate codes for multi-racial (91), African-American/Black/African descent (175), Latino/Latina/Hispanic/Mexican (49), American (30), Native-American/American Indian/Indian/Pacific-Islander (25), Arab/Arab American (3), Asian/Chinese-American (19). In addition, we had a number indicate Human/other/no (40). Given the number of responses, we limited our analysis to the groups which had more than 40 usable responses. A *t* test was used to determine statistically significant differences ( $\alpha < .05$ ) for the dichotomous variables, while an analysis of variance (ANOVA) was used to determine statistically significant differences ( $\alpha < .05$ ) among categorical measures with more choices. The results of this analysis are presented in Table 5 with all differences not statistically significant omitted and replaced with “n.s.”.

## Results

The tables below demonstrate the results of the exploratory factor analysis (EFA), which identifies the latent constructs underlying a set of items and groups the items together based on the underlying factor derived from the teachers’ responses (DeVellis 2012). The numbers provided are factor loadings, which are the correlation between the individual items and the latent variable. In addition to the EFA, the corresponding results of the confirmatory factor analysis (CFA) will be presented. Subsequently, relationships between the both the Racialized Teaching Efficacy Scale and fragility scale are compared to teacher demographics and school context.

### Racialized Teaching Efficacy

The EFA presented in Table 3 found three dimensions of teaching efficacy that fit closely with the theorized model of anti-racist, culturally relevant, and non-racist

<sup>1</sup> Example responses that could not be categorized “it should be obvious”, “white”, “NA”.

**Table 3** Dimensions of teaching self-efficacy

Var. ID		Teaching self-efficacy		
		Anti-racist	Culturally relevant	Non-racist
ef1	Analyze the social construction of race and racism	0.82		
ef2	Examine the influence of whiteness in your course curriculum	0.71		
ef3	Address student anxiety about controversial racial issues	0.71		
ef4	Use classroom content to challenge racial bias	0.71		
ef5	Discuss current radicalized events within their historical contexts	0.65		
ef6	Encourage students to explore their racial identity	0.62		
ef7	Examine the curriculum to determine whether it reinforces negative cultural stereotype	0.59		
ef8	Revise instructional material to include a better representation of cultural groups	0.57		
ef9	Make race relevant in an all white classroom	0.56		
ef10	Serve as the expert when talking about race and racism in the classroom	0.56		
ef11	Engage in cross race dialogue with colleagues	0.52		
ef13	Use the interests of my students to make learning meaningful for them		0.73	
ef14	Obtain information regarding students' academic interests		0.69	
ef15	Help students to develop positive relationships with their classmates		0.57	
ef16	Use my students' cultural background to help make learning meaningful		0.56	
ef17	Develop a community of learners when my class consists of students from diverse backgrounds		0.55	
ef18	Identify ways in which students communicate at home may differ from the school norms		0.53	
ef19	Use examples that are familiar to students from diverse cultural backgrounds		0.52	
ef20	Teach all students the same regardless of their racial identity			0.64
ef21	Adopt a colorblind stance in the classroom			0.62
ef22	Look past racial differences to promote harmony in the classroom			0.61
ef23	Draw on common sense beliefs in the classroom			0.54
ef24	Implement a non-biased approach to teaching content			0.53

**Table 3** (continued)

Var. ID	Teaching self-efficacy		
	Anti-racist	Culturally relevant	Non-racist
ef25			0.51
	72.40%	17.70%	9.88%
Help students think of people as American, not African American, Mexican American, or Italian American			
Variance explained			
Principal axis factor analysis with orthogonal rotation, $N = 4770$			

notions.<sup>2</sup> The three constructs were titled correspondingly. Most of the items loaded with the construct they were designed for, with the exception of 3 items.<sup>3</sup> Supporting previous research, the items correlating most with anti-racist teaching self-efficacy were related to analyzing the social construction of race and racism, examining the influence of whiteness, and addressing student anxiety regarding controversial racial issues. Culturally relevant pedagogy was most related to teachers using the interest of their students to make learning meaningful, obtaining information regarding students' interests, and helping students develop positive relationships with their classmates. Finally, non-racist teaching efficacy was most associated with teaching all students the same regardless of their racial identity, adopting a colorblind stance, and looking past racial differences to promote harmony.

### Racial Fragility

Table 4 presents the results of the EFA based on the items developed to measure teachers' fragility to race based interactions. While DiAngelo (2011) theorized six triggers of white fragility, the EFA yielded only two distinct latent factors that were titled racial discomfort and colorblind individualism. A close examination of the items uncovers that the items correlating with racial discomfort all depict struggles with aspects of race and racism in contemporary society. However, the colorblind individualism factor differs, as these items reject or diminish the notion that race plays a fundamental role in an individual's identity and success in life. For example, notions correlating with racial discomfort include, if a school is 100% white, there is no need to learn about racism, rarely or never thinking about race and racism, and avoid being in a group of people that are racially different. In contrast, colorblind individualism includes concepts such as racial identity having very little to do with accomplishments, through hard work and determination anyone can succeed, and that the United States is not racist even if some people are. The items related to racial discomfort require the acknowledgement of racism as a real and pressing issue, while the items relating to colorblind individualism deny the significance of race and/or racism.

### Teacher Context: Self-Efficacy and Racial Fragility

Table 5 compares the mean values of individuals' racialized teaching efficacy and racial fragility across various demographic measures. The numbers in this table are means of summary variables, which were extracted via EFA and were standardized with an overall mean of 50 and standard deviation of 10 to aid in comparisons. The analysis found significant differences based on gender, years teaching, teacher race, community type, and grade level. Each of these results warrant much more elaborate

<sup>2</sup> Cronbach's alpha results: Anti-racist = .907, Culturally relevant = .854, Non-racist = .758.

<sup>3</sup> The items "examine the curriculum to determine whether it reinforces negative cultural stereotypes" and "Revise instructional material to include a better representation of cultural groups" were part of the culturally relevant scale and loaded on the Anti-racist scale. The item "serve as the expert when talking about race and racism in the classroom" was developed for non-racist and loaded on anti-racist teaching self-efficacy.

**Table 4** Results of exploratory factor analysis exploring teachers comfort with race-based stress

Var. ID		Fragility	Colorblind individual-ism
		Racial discomfort	
wf1	If a school is 100% White, there is no need to learn about racism	0.738	
wf2	Its best to rarely or never think about race and racism	0.727	
wf3	It's best to avoid being in a group of people that are racially different	0.719	
wf4	Why do people of color always hang out together?	0.714	
wf5	I don't go to places where I am the minority	0.713	
wf6	It just makes sense that people live in neighborhoods with other people that look like them	0.707	
wf7	I didn't like attending that social event because I was the only white person and it made me feel like a minority	0.704	
wf8	Learning is best achieved in racially homogeneous groups	0.678	
wf9	People of color talk about racism too much	0.678	
wf10	If we ignored racism it would go away	0.672	
wf11	I dislike listening to a person of a different race talk about racism	0.659	
wf12	Why isn't there a White History Month?	0.641	
wf13	Conversations about racism don't consider white people's feelings	0.626	
wf14	People of color need to take responsibility for their own communities	0.625	
wf15	Many people of color blame racism for their personal failures	0.617	
wf16	Talking about race only encourages racism	0.608	
wf17	I feel anxious when people of color talk about race and racism	0.560	
wf18	I tend not to think about race or racism	0.549	
wf19	My racial identity has very little to do with my accomplishments		0.677
wf20	Through hard work and determination anyone can succeed		0.667
wf21	The United States is not racist but some people are		0.645

**Table 4** (continued)

Var. ID	Fragility	Colorblind individual-ism
wf22	I see the person, not their color	0.625
wf23	My racial identity does not have a large influence on the way I live my life	0.591
Variance explained	85.9%	14.1%
Principal axis factor analysis with orthogonal rotation, <i>N</i> = 4770		



**Table 5** Teaching self-efficacy and racial comfort by teacher/school variable

	Teaching self-efficacy			Fragility		
	Non-racist	Cult-re1	Anti-racist	Rac. dis.	Col-ind	N
<i>Gender</i>						
Male	49.07	47.66	52.97	47.90	50.90	791
Female	50.19	50.46	49.44	50.69	49.78	3506
<i>Years teaching</i>						
1–4	48.37	n.s	n.s	50.52	n.s	1125
5–10	49.77	n.s	n.s	50.54	n.s	893
11–15	50.20	n.s	n.s	50.18	n.s	791
16–20	51.44	n.s	n.s	49.94	n.s	684
20+	50.71	n.s	n.s	48.85	n.s	1277
<i>Teacher race</i>						
White	50.04	49.67	49.60	50.49	49.86	3824
Muti-racial	49.78	51.38	53.54	50.75	49.55	88
African American/Black	47.11	53.33	56.47	44.92	56.61	165
Latino/a	47.85	50.82	52.94	49.10	50.63	48
<i>Teacher education</i>						
Bachelor's degree	n.s	n.s	n.s	n.s	49.03	1205
Professional degree	n.s	n.s	n.s	n.s	50.37	3079
<i>Community type</i>						
Rural	51.89	49.34	49.46	49.48	47.21	1626
Suburban	49.27	49.91	49.42	50.84	51.13	1943
Urban	48.01	51.12	52.71	49.96	52.57	878
<i>Grade level</i>						
Elementary	n.s	n.s	n.s	50.42	n.s	1962
Middle	n.s	n.s	n.s	49.90	n.s	952
High	n.s	n.s	n.s	49.29	n.s	2673
<i>School race</i>						
Almost all white	n.s	n.s	n.s	n.s	n.s	812
Mostly white with some non-white	n.s	n.s	n.s	n.s	n.s	2074
Almost 50–50	n.s	n.s	n.s	n.s	n.s	722
Mostly non-white	n.s	n.s	n.s	n.s	n.s	299
Almost all non-white	n.s	n.s	n.s	n.s	n.s	371

Standardized variables displayed with a mean of 50 and a standard deviation of 10. All displayed data demonstrated a significant difference across corresponding level of teaching self-efficacy or racial comfort (ANOVA,  $p < .05$ ) ( $t$  test,  $p < .05$ )

analysis than possible in this paper, and results of pairwise testing are available upon request. However, the results on teacher race are particularly interesting and problematic. Race was broken down into four groups based on the number of teachers needed for analysis. White teachers demonstrated statistically significantly higher sense of self-efficacy relating to non-racist teaching in comparison to African American and Latino/a teachers ( $\alpha = .05$ ). In turn, the African American, Latino/a, and multi-racial

teachers indicated a significantly higher sense of their ability to teach culturally relevant and anti-racist pedagogy compared to white teachers. Similar results were also found in community type, which were nearly categorical with rural teachers scoring significantly higher non-racist pedagogy, while urban teachers were more likely to support culturally-relevant and anti-racist teaching. In regards to racial fragility, results demonstrated that African American teachers were statistically significantly more comfortable on items relating to racial discomfort than teachers of other races, but were significantly less comfortable with statements related to colorblind individualism, which downplay the significance of race in contemporary society.

## Discussion

This study developed a series of psychometric scales to assess teachers' interactions with race and racism, as well as to garner additional understanding of the levels of confidence teachers maintain in their ability to engage with pedagogies that address race and racism in the classroom. Future research can utilize and adapt these scales to further our knowledge of how aspects of race and power are enacted in the classroom. Based on our analysis, we outline major implications for future scholarship.

First, we found evidence that teachers responded in ways relevant to the theoretical literature we used to develop the measures. Although Siwatu's (2007) scale examining culturally responsive teacher efficacy has been a useful resource to assess teacher confidence, it provides limited context to the ways in which colorblind ideology has distorted equity-oriented approaches to teaching. Our findings contributed to Siwatu's (2007) culturally responsive teaching research by adding new dimensions of anti-racist and non-racist approaches. Moving forward, future scholarship can determine the implications of teachers using these three dimensions to make additional connections. For example, if a teacher enacts a non-racist version of culturally relevant pedagogy their approach might result in simplistic (Sleeter 2011), commonsensical (Leonardo 2009), non-racist (King and Chandler 2016), and neoliberal versions in return (Picower and Mayorga 2015; Watkins 2012). In contrast, a teacher may view their role as a teacher toward an anti-racist approach toward culturally relevant pedagogy utilizing explicitly anti-oppressive pedagogical (see Kumashiro 2000, 2009; Pollock 2008; Sefa Dei 1995) or curricular approaches (see King 2016; King and Chandler 2016) within both teacher education and K-12 classrooms.

In addition, our findings provided additional insights into DiAngelo's (2011) model of white fragility by identifying two dimensions of racial discomfort and colorblind individualism. Based on our findings related to racialized teaching self-efficacy, teachers' level of racial fragility may create such barriers that limit their sense of capability, or desire, to engage in anti-racist or culturally relevant teaching. Particularly, when anti-racist or culturally relevant teaching relates to discomfort associated with the fifth frame of colorblind ideology, disconnected power-analysis (Jayakumar and Adamian 2016, 2017; Middleton 2002). Future research should consider teacher identity (particularly race) to explain the relationships between racial fragility and other important factors. For example, African-American teachers demonstrated more discomfort with colorblind-individualism, while white teachers were more uncomfortable with racial

discomfort. This discomfort likely manifests in different ways for the different groups across contexts. Research could consider whether this racial discomfort creates a barrier to anti-racist pedagogy for the white students, while in contrast discomfort with colorblind-individualism may contribute to anti-racist teaching self-efficacy among the African American teachers.

The findings of this study also indicate the importance of teacher context. This supports Sleeter's (1993) assertion that aspects of a teachers' racial identity shape the way they construct, talk, and teach about race/ism. In addition, Leonardo and Boas (2013) points to the dominance of white female school teachers and argues that the relationships between them and their students of color remain under-theorized. Therefore, any attempt to unpack the implications of teachers' racial fragility requires an intersectional approach to understand key relationships. The findings in this article, and future work with these scales, can provide additional evidence related to these concerns. In addition to race, this study found differences across the two dimensions of racial fragility across community type, grade level, gender, teaching experience, and degree type.

Our study builds on research exploring the interaction between critical theory and quantitative research developed our understanding of critical quantitative research from perspectives including critical race theory (Covarrubias and Velez 2013), indigenous statistics (Walter and Anderson 2013), and feminist perspectives of quantitative research (Westmarland 2001). Based on these works, and others, it became clear since racism is a multifaceted system of oppression, dismantling it requires an intersectional approach. As a result, quantitative analysis can support other models of inquiry to serve as a valuable tool to challenge notions of race and racism in contemporary contexts. Our results suggest teachers' efforts to expose this racial tax vary tremendously depending on teacher context. For example, we found significant differences across racialized teaching self-efficacy dimensions across teacher contexts including gender, years teaching, teacher race, and community type. This finding adds to the study conducted by Farinde-Wu and Fitchett (2018) who found that Black female teachers had higher levels of satisfaction in urban contexts. Taken together, the findings demonstrate students are likely receiving instruction based on disparate assumptions of race depending on their teacher and school contexts. Given these divisions, we argue future scholarship should use an intersectional lens to better understand how these racialized notions of teaching manifest.

## Conclusion and Implications for the Classroom

The instruments developed in this study can be used to inform PK-12 and teacher education practice in several ways. First, use of RTES and RFS with practicing teachers can inform specific, targeted professional development related to the influence of race/ism and whiteness on teacher pedagogical decision making. In their review of 30 years of scholarship on professional development, Darling-Hammond et al. (2017) found that successful professional development: (a) is content focused; (b) incorporates active learning; (c) supports collaboration; (d) uses models of effective practice; (e) provides coaching and expert support; (f) offers feedback and reflection; and (g) is of sustained duration. Results from the present study would provide professional development facilitators with nuanced

information related to how teachers interact with race/ism in the classroom. This would allow facilitators to understand the limits and possibilities of the professional development so the experience can lead to a greater sense of racial literacy and an embodiment of anti-racist praxis.

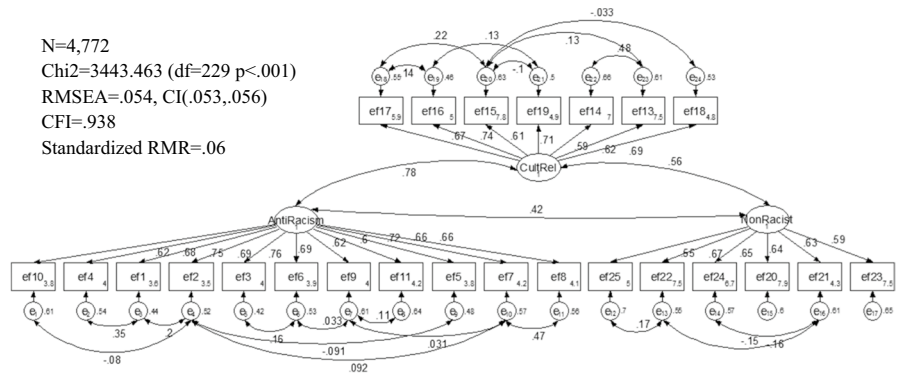
Within teacher education RTES and RFS can be used to inform programmatic and curricular decisions. Teacher education programs can utilize these instruments as a pre/post assessment of pre-service teacher dispositions, the RTES and RFS could inform teacher educators about the barriers their students face in terms of enacting anti-racist pedagogies. As Levine-Rasky (2001) suggested, faculty within teacher education programs should be aware of the racialized dispositions of their students. With each group of teacher candidates, instructors could tweak their racialized curricular materials to meet the needs and challenges of students. Further, sharing results of RTES and RFS with teacher education students would help them to understand the complicated stranglehold that whiteness has over education. Additionally, a teacher educator could create an instrument where students consider their ability to implement the activities within the racialized teaching self-efficacy items or consider their racial fragility. These could be effective when used in conjunction with DiAngelo's (2011) work on white fragility, anti-racist literature (Pollock 2008; Thompson 2003), or Kumashiro's (2000, 2009) theory for anti-oppressive education. Using these items with pre-service teachers may influence their feelings and confidence to directly challenge the persistence of institutional, structural and individualized iterations of racism in the classroom. As the assertion of colorblindness continues in K-12 classrooms, future educators must examine the nuanced ways in which it can impact teachers' feelings of confidence in the classroom. Efforts in teacher education, curriculum development, urban education and research should consider these divisions and how best to move teachers away from non-racist approaches toward culturally relevant and anti-racist teaching.

Finally, the analysis within this project calls attention to methodological and epistemological divides that pervade the field of educational research. Often ignored, a stark methodological divide exists despite calls from critical scholars for more quantitative work driven by critical theory, particularly critical racialized theories (Covarrubias and Velez 2013; Stage 2007). We support challenges regarding whether certain theories are suited solely for specific research designs by designing a study that includes literature based from multiple epistemological perspectives, while using critical theory to drive our quantitative analysis. Our primary goal of this study is to provide useful measures and conceptualizations to promote future waves of critical quantitative research. Within the field, results from the RTES and RFS can serve as meaningful data to inform decision makers and shape education policy.

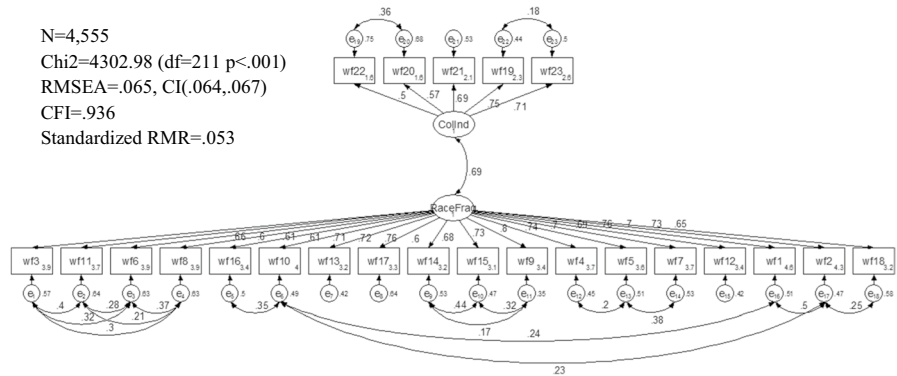
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## Appendix

See Figs. 1 and 2.



**Fig. 1** Confirmatory factor analysis of scales measuring self-efficacy of anti-racist, culturally relevant, and non-racist teaching



**Fig. 2** Confirmatory factor analysis of scales measuring racial fragility and colorblind individualism

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